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# DEVELOPMENT OF CHEMICAL COMPATIBILITY CRITERIA FOR ASSESSING FLEXIBLE MEMBRANE LINERS

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# DEVELOPMENT OF CHEMICAL COMPATIBILITY CRITERIA FOR ASSESSING FLEXIBLE MEMBRANE LINERS

by

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PO Box 1468
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Laboratory testing was conducted to develop chemical resistance data using immersion tests. Six FML materials (polyvinylchloride, chlorinated polyethylene, chlorosulfonated polyethylene, high density polyethylene, epichlorohydrin and ethylene propylene diene terpolymer) were tested. Twenty chemical solutions providing a range of chemical challengers; acid and base, polar and non-polar, organic and inorganic, and increasing chemical concentration, were used. Duration of immersions were 1, 7, 14, 28, and 56 days, and four month increments for up to two years. All immersion tests were conducted at two temperatures, 23° and 50°C. Liners were evaluated for changes in appearance, weight, dimensions, and tensile properties. Procedures and criteria for evaluating immersion test results were developed using data from this study and comparing these data with comparable data from other studies, published reports and criteria, and liner manufacturer recommendations. The criteria for chemical resistance include the need for a liner response to have stabilized, retention of minimum physical properties, and maximum percent change of physical properties. A mathematical curve fitting method is proposed for evaluating immersion data as a function of time. The method assumes the liner approaches a limit of physical property change (stability) asymptotically. The method can be used to predict the ultimate end point of physical property change and sampling time intervals for continued immersion testing.

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## FOREWORD

Today's rapidly developing and changing technologies and industrial products and practices frequently carry with them the increased generation of solid and hazardous waste. These materials, if improperly dealt with, can threaten both public health and the environment. Abandoned waste sites and accidental releases of toxic and hazardous substances to the environment also have important environmental and public health implications. The Hazardous Waste Engineering Research Laboratory assists in providing an authoritative and defensible engineering basis for assessing and solving these problems. Its products support the policies, programs, and regulations of the EPA; the permitting and other responsibilities of State and local governments; and the needs of both large and small businesses in handling their wastes responsibly and economically.

Flexible membrane liners (FMLs) are used as lining materials for hazardous waste containment, in landfills and surface impoundments. A double-liner system, including at least one synthetic liner, is required in all new installations. The FML used in a waste containment application must show long-term chemical resistance to the waste stream. The EPA requires that FML selection be based on evaluation of changes in physical properties resulting from the immersion in the actual waste to be contained.

This report discusses results of immersion tests of six liner materials in twenty chemical solutions at two temperatures. Procedures and criteria for evaluating immersion results are presented.

For further information, please contact the Land Pollution Control Division of the Hazardous Waste Engineering Research Laboratory.

Thomas R. Hauser, Director
Hazardous Waste Engineering Research Laboratory

## ABSTRACT

Laboratory testing was conducted to develop chemical resistance data using immersion tests. Six FML materials, polyvinylchloride, chlorinated polyethylene, chlorosulfonated polyethylene, high density polyethylene, epichlorohydrin and ethylene propylene diene terpolymer were tested. Twenty chemical solutions providing a range of chemical challengers; acid and base, polar and non-polar, organic and inorganic, and increasing chemical concentration, were used. Duration of immersions were 1, 7, 14, 28, and 56 days, and four month increments for up to two years. All immersion tests were conducted at two temperatures, 23° and 50°C. Liners were evaluated for changes in appearance, weight, dimensions, and tensile properties.

Procedures and criteria for evaluating immersion test results were developed using data from this study and comparing these data with comparable data from other studies, published reports and criteria, and liner manufacturer recommendations. The criteria for chemical resistance include the need for a liner response to have stabilized, retention of minimum physical properties, and maximum percent change of physical properties.

A mathematical curve fitting method is proposed for evaluating immersion data as a function of time. The method assumes the liner approaches a limit of physical property change (stability) asymptotically. The method can be used to predict the ultimate end point of physical property change and sampling time intervals for continued immersion testing.



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## CONTENTS


| | PAGE |
|---|---|
| FOREWORD | iii |
| ABSTRACT | iv |
| CONTENTS | v |
| FIGURES | viii |
| TABLES | xiii |
| ACKNOWLEDGMENTS | xv |
| ABBREVIATION AND SYMBOLS | xvi |
| ENGLISH TO METRIC CONVERSION TABLE | xvii |
| 1. INTRODUCTION | 1 |
| 2. CONCLUSION AND RECOMMENDATIONS | 4 |
| 3. METHODS OF PREDICTING CHEMICAL RESISTANCE OF POLYMERS | 7 |
| BASIC PRINCIPLES OF POLYMER INTERACTION IN SOLVENTS | 7 |
| Polymer Types | 7 |
| Chemical Attack vs. Solvation | 9 |
| General Guidelines For Polymer Solubility | 10 |
| THEORETICAL SOLUBILITY PARAMETERS | 11 |
| CHEMICAL COMPATIBILITY TABLES | 18 |
| TEST METHODS FOR COMPATABILITY DETERMINATION | 21 |
| 4. TECHNICAL APPROACH | 24 |
| OBJECTIVES | 24 |
| PROJECT ADVISORY COMMITTEE | 24 |
| EXPERIMENTAL DESIGN | 25 |
| SELECTION OF FMLs FOR TESTING | 28 |
| Selection Criteria | 28 |
| FMLs Selected | 28 |
| Description of FMLs Received | 30 |
| FML "As Received" Properties | 32 |
| SELECTION OF IMMERSION CHEMICALS | 39 |
| Criteria for Selection of Chemicals | 39 |
| Seven Day Screening | 40 |
| Chemicals Selected | 41 |
| TEST EQUIPMENT | 45 |
| Immersion Jars | 45 |
| Weight and Dimension Tools | 47 |
| Die Punch | 48 |
| Test Chambers | 48 |
| Universal Test Machine | 48 |
| Data Handling | 49 |
| Data Evaluation | 51 |
| 5. TEST PROCEDURES | 52 |
| MATERIAL STORAGE AND SAMPLE TRACKING | 52 |
| SAMPLE PREPARATION | 53 |
| IMMERSION PROCEDURE | 55 |
| 6. QUALITY CONTROL | 59 |
| MEASUREMENT OBJECTIVES | 59 |
| WEIGHT AND DIMENSION | 61 |

TENSILE PROPERTIES MEASUREMENT . . . . . 64
COMPLETENESS . . . . . 65
CONTROL OF IMMERSION CHEMICAL CONCENTRATION. . . . . 69
DATA CONTROL . . . . . 76
REPLICATE TEST RESULTS . . . . . 76
7. SAFETY . . . . . 78
DESCRIPTION OF HAZARDS . . . . . 78
ACTIONS TAKEN TO PREVENT HAZARDS . . . . . 79
Chemical Handling . . . . . 80
Protective Clothing. . . . . 80
Location of Safety Equipment . . . . . 80
Transport Route . . . . . 81
Work Area . . . . . 81
Sample Handling. . . . . 81
Chamber Entry and Exit . . . . . 81
Waste Disposal . . . . . 82
8. RESULTS AND DISCUSSION . . . . . 83
OVERVIEW OF DATA PRESENTATIONS AND DISCUSSIONS . . . . . 83
Process for Determining Chemical Resistance Criteria . . . . . 83
Curve Fitting Response Stabilization as a Function of Time . . 86
Temperature and Concentration Effects . . . . . 95
Response as a Function of Liner Grain (Direction). . . . . 97
Units of Measurement . . . . . 99
Figures . . . . . 99
POLYVINYL CHLORIDE (PVC) . . . . . 100
Criteria for Determining FML Chemical Resistance . . . . . 100
Response Time and Stability. . . . . 101
Magnitude of Liner Response. . . . . 101
Types of Effects . . . . . 101
Indicators of Non-Resistance . . . . . 105
CHLORINATED POLYETHYLENE (CPE) . . . . . 114
Criteria for Determining FML Chemical Resistance . . . . . 114
Response Time and Stability . . . . . 118
Magnitude of Liner Response . . . . . 118
Types of Effects . . . . . 122
Indicators of Non-Resistance . . . . . 123
ETHYLENE PROPYLENE DIENE MONOMER (EPDM). . . . . 130
Criteria for Determining FML Chemical Resistance . . . . . 130
Response Time and Stability . . . . . 131
Magnitude of Liner Response . . . . . 133
Types of Effects . . . . . 136
Indicators of Non-Resistance . . . . . 137
EPICHLOROHYDRIN (EPI-CO) . . . . . 145
Criteria for Determining FML Chemical Resistance . . . . . 145
Response Time and Stability . . . . . 148
Magnitude of Liner Response . . . . . 149
Types of Effects . . . . . 152
Indicators of Non-Resistance . . . . . 153
HIGH DENSITY POLYETHYLENE (HDPE) . . . . . 161
Criteria for Determining FML Chemical Resistance . . . . . 161
Response Time and Stability . . . . . 163
Magnitude of Liner Response . . . . . 164
Types of Effects . . . . . 167

Indicators of Non-Resistance . . . . . 167
CHLOROSULFONATED POLYETHYLENE-LOW WATER ABSORPTION (CSPE-LW) . . 172
Criteria for Determining FML Chemical Resistance . . . . . 172
Response Time and Stability . . . . . 175
Magnitude of Liner Response . . . . . 176
Types of Effects . . . . . 180
Indicators of Non-Resistance . . . . . 182

REFERENCES . . . . . 188
APPENDICES . . . . . 190

A. ADVISORY COMMITTEE MEMBERS . . . . . 190
B. INITIAL SCREENING RESULTS . . . . . 194
C. WEIGHT AND DIMENSION PROCEDURE . . . . . 205
D. PERCENT OF TARGET CONCENTRATION . . . . . 214
E. IMMERSION RESULTS . . . . . 220

FIGURES


| Number | | Page |
|---|---|---|
| 1. | PVC in brine and 0.5 percent DCE | 2 |
| 2. | Project diagram | 26 |
| 3. | One quart and two gallon immersion jars | 46 |
| 4. | Sample coding system | 50 |
| 5. | FML material storage | 52 |
| 6. | Sample tracking system | 54 |
| 7. | Pattern for typical immersion sample die cutting | 57 |
| 8. | Percent of target concentration of 4 percent phenol solution versus days in solution | 72 |
| 9. | Percent of target concentration of 4 percent furfural solution versus days in solution | 73 |
| 10. | Percent of target concentration of 13 percent MEK solution versus days in solution | 74 |
| 11. | Percent of target concentration of saturated DCE versus days in solution | 75 |
| 12. | CPE in four percent furfural at 50°C, predicted versus observed values | 92 |
| 13. | EPDM in eight percent furfural at 50°C | 94 |
| 14. | Relationship of change in physical property to furfural concentration at 23°C for PVC | 96 |
| 15. | Relationship of breaking factor and weight change for PVC | 103 |
| 16. | Effect of temperature on weight change for immersion in hydrochloric acid and sodium hydroxide at 23°C and 50°C | 104 |
| 17. | Relationship of breaking factor, S-100 modulus and weight change for PVC | 106 |
| 18. | Relationship of elongation at break and weight change for PVC | 107 |

19. Physical property change with immersion in saturated salt solution at 23°C for PVC . . . . . 108
20. Physical property change with immersion in 10 percent hydrochloric acid solution at 50°C for PVC . . . . . 108
21. Physical property change with immersion in 8 percent furfural solution at 23°C for PVC . . . . . 110
22. Physical property change with immersion in 10 percent salt solution at 23°C for PVC . . . . . 110
23. Weight change with immersion in phenol solution at 23°C for PVC. . 111
24. Physical property change with immersion in 1 percent phenol solution at 50°C for PVC . . . . . 112
25. Physical property change with immersion in 4 percent phenol solution at 50°C for PVC . . . . . 113
26. Physical property change with immersion in 8 percent phenol solution at 50°C for PVC. . . . . 113
27. Relationship of breaking factor and weight change for CPE. . . . . 120
28. Relationship of elongation at break and weight change for CPE. . . 120
29. Relationship of S-100 modulus and weight change for CPE. . . . . 121
30. Physical property change with immersion in saturated (35 percent) salt solution at 23°C for CPE . . . . . 125
31. Physical property change with immersion in water at 23°C for CPE . 125
32. Physical property change with immersion in water at 50°C for CPE . 126
33. Physical property change with immersion in 1 percent furfural solution at 23°C for CPE . . . . . 127
34. Physical property change with immersion in 4 percent furfural solution at 23°C for CPE . . . . . 127
35. Physical property change with immersion in 8 percent furfural solution at 23°C for CPE . . . . . 128
36. Physical property change with immersion in 1 percent furfural solution at 50°C for CPE . . . . . 128
37. Physical property change with immersion in 4 percent furfural solution at 50°C for CPE . . . . . 129
38. Physical property change with immersion in 8 percent furfural solution at 50°C for CPE . . . . . 129

39. Relationship of tensile strength (breaking factor normalized for thickness) and weight change for EPDM. . . . . 135
40. Relationship of elongation at break and weight change for EPDM . . 135
41. Physical property change with immersion in 10 percent sodium hydroxide solution at 23°C for EPDM . . . . . 139
42. Physical property change with immersion in ASTM #2 oil at 23°C for EPDM . . . . . 139
43. Physical property change with immersion in ASTM #2 oil at 50°C for EPDM . . . . . 140
44. Percent weight change with immersion in 10 percent hydrochloric acid solution at 23°C and 50°C for EPDM. . . . . 140
45. Physical property change with immersion in 1 percent furfural solution at 23°C for EPDM. . . . . 142
46. Physical property change with immersion in 4 percent furfural solution at 23°C for EPDM. . . . . 142
47. Physical property change with immersion in 8 percent furfural solution at 23°C for EPDM. . . . . 143
48. Physical property change with immersion in 1 percent furfural solution at 50°C for EPDM. . . . . 143
49. Physical property change with immersion in 4 percent furfural solution at 50°C for EPDM. . . . . 144
50. Physical property change with immersion in 8 percent furfural solution at 50°C for EPDM. . . . . 144
51. Physical property change with immersion in 8 percent phenol solution at 50°C for EPDM. . . . . 145
52. Relationship between breaking factor and weight change for EPI-CO . . . . . 151
53. Relationship between elongation at break and weight change for EPI-CO . . . . . 151
54. Relationship between tear resistance and weight change for EPI-CO . . . . . 152
55. Physical property change with immersion in saturated (35 percent) salt solution at 23°C for EPI-CO. . . . . 154

56. Physical property change with immersion in water at 23°C for EPI-CO . . . . . 155
57. Physical Property change with immersion in water at 50°C for EPI-CO . . . . . 155
58. Physical property change with immersion in 10 percent hydrochloric acid solution at 50°C for EPI-CO . . . . . 156
59. Physical property change with immersion in 1 percent phenol solution at 23°C for EPI-CO. . . . . 157
60. Physical property change with immersion in 4 percent phenol solution at 23°C for EPI-CO. . . . . 158
61. Physical property change with immersion in 8 percent phenol solution at 23°C for EPI-CO. . . . . 158
62. Physical property change with immersion in 1 percent phenol solution at 50°C for EPI-CO. . . . . 159
63. Physical property change with immersion in 4 percent phenol solution at 50°C for EPI-CO. . . . . 159
64. Physical property change with immersion in 8 percent phenol solution at 50°C for EPI-CO. . . . . 160
65. Relationship between tensile strength (normalized for thickness) and weight change for HDPE . . . . . 166
66. Percent tensile, yield and tear resistant change with immersion in 10 percent sodium hydroxide solution at 50°C for HDPE . . . . 169
67. Percent elongation at yield, elongation at break, and modulus of elasticity change with immersion in 10 percent sodium hydroxide solution at 50°C for HDPE. . . . . 169
68. Percent weight change with immersion in ASTM #2 oil at 50°C for HDPE . . . . . 171
69. Percent tensile yield and tear resistance change with immersion in ASTM #2 oil at 50°C for HDPE. . . . . 171
70. Percent elongation at yield, elongation at break, and modulus of elasticity change with immersion in ASTM #2 oil at 50°C for HDPE 172
71. Relationship between breaking factor and weight change at 23°C for CSPE-LW. . . . . 177
72. Relationship between S-100 modulus and weight change for CSPE-LW . 178

73. Relationship between tear resistance and weight change at 23°C for CSPE-LW. . . . . 179
74. Relationship between elongation at break and weight change for CSPE-LW. . . . . 180
75. Relationship between elongation at break and S-100 modulus at 23°C for CSPE-LW . . . . . 181
76. Relationship between elongation at break and tear resistance at 23°C for CSPE-LW . . . . . 181
77. Physical property change with immersion in saturated (35 percent) salt solution at 50°C for CSPE-LW. . . . . 184
78. Physical property change with immersion in 10 percent sodium hydroxide solution at 50°C for CSPE-LW . . . . . 184
79. Physical property change with immersion in ASTM #2 oil at 23°C for CSPE-LW. . . . . 185
80. Physical property change with immersion in ASTM #2 oil at 50°C for CSPE-LW. . . . . 186
81. Physical property change with immersion in 8 percent phenol at 23°C for CSPE-LW . . . . . 186
82. Physical property change with immersion in 8 percent phenol at 50°C for CSPE-LW . . . . . 187

TABLES


| NAME | | PAGE |
|---|---|---|
| 1. | CHEMICAL RESISTANCE CRITERIA | 6 |
| 2. | SOLUBILITY PARAMETER DATA | 14 |
| 3. | COMPARISON OF IMMERSION RESULTS AND SOLUBILITY PARAMETER DIFFERENCES | 16 |
| 4. | SAMPLE GUIDELINES FOR EVALUATING POLYMER CHAMICAL RESISTANCE TEST DATA | 20 |
| 5. | FML MATERIALS SELECTED FOR CHEMICAL RESISTANCE TESTING | 29 |
| 6. | AS RECEIVED PROPERTIES: 30 MIL POLYVINYLCHLORIDE (PVC) | 33 |
| 7. | AS RECEIVED PROPERTIES: 30 MIL CHLORINATED POLYETHYLENE (CPE) | 34 |
| 8. | AS RECEIVED PROPERTIES: 30 MIL ETHYLENE PROPYLENE DIENE MONOMER (EPDM) | 35 |
| 9. | AS RECEIVED PROPERTIES: 60 MIL EPICHLOROHYDRIN (EPI-CO) | 36 |
| 10. | AS RECEIVED PROPERTIES: 30 MIL HIGH DENSITY POLYETHYLENE (HDPE) | 37 |
| 11. | AS RECEIVED PROPERTIES: 30 MIL CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION (CSPE-LW) | 38 |
| 12. | INITIAL SCREENING CHEMICALS AND CONCENTRATIONS | 40 |
| 13. | CHEMICAL IMMERSIONS SELECTED FOR FML IMMERSION TESTS | 41 |
| 14. | PHYSICAL PROPERTIES TEST FOR IMMERSION SAMPLES | 58 |
| 15. | QUALITY CONTROL OBJECTIVES FOR MATERIAL PROPERTIES TESTS | 60 |
| 16. | REPLICATION SYSTEM FOR PHYSICAL PROPERTIES TESTS | 61 |
| 17. | MEANS AND STANDARD DEVIATIONS FOR EACH TECHNICIAN | 62 |
| 18. | PRECISION OF TECHNICIANS | 63 |
| 19. | COMPARISON OF NSF AND MANUFACTURER TENSILE PROPERTIES TEST RESULTS | 66 |
| 20. | COMPARISON OF NSF AND USBR TENSILE PROPERTIES TEST RESULTS | 67 |
| 21. | PERCENT COEFFICIENT OF VARIATION OF TENSILE PROPERTIES TESTS FOR UNIMMERSED MATERIAL | 68 |
| 22. | PERCENT COMPLETION OF DATA | 69 |

23. LOW AND HIGH PERCENT TARGET CHEMICAL CONCENTRATIONS AFTER INITIAL MIXING . . . . . 71
24. POTENTIAL HAZARDS OF IMMERSION CHEMICALS . . . . . 78
25. RESPONSE SUMMARY FOR CHEMICAL RESISTANCE: PVC . . . . . 102
26. RESPONSE SUMMARY FOR CHEMICAL RESISTANCE: CPE . . . . . 115
27. COMPARISON OF MANUFACTURER'S DATA TO NSF DATA FOR CPE RESISTANCE TO SODIUM HYDROXIDE . . . . . 117
28. RESPONSE SUMMARY OF CHEMICAL RESISTANCE: EPDM . . . . . 132
29. RESPONSE SUMMARY OF CHEMICAL RESISTANCE: EPI-CO . . . . . 146
30. RESPONSE SUMMARY OF CHEMICAL RESISTANCE: HDPE . . . . . 162
31. VARIABILITY IN HDPE TEST MEASUREMENTS. . . . . 166
32. RESPONSE SUMMARY OF CHEMICAL RESISTANCE: CSPE-LW . . . . . 174
33. COMPARISON OF MANUFACTURER'S DATA TO NSF DATA FOR CSPE-LW RESISTANCE TO PHENOL . . . . . 175

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## ABBREVIATIONS AND SYMBOLS

| | |
|---|---|
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| CPE | CHLORINATED POLYETHYLENE |
| CSPE-LW | CHLOROSULFONATE POLYETHYLENE - LOW WATER ABSORPTION |
| EPDM | ETHYLENE PROPYLENE DIENE TERPOLYMER (SOMETIMES CALLED ETHYLENE PROPYLENE DIENE RUBBER) |
| EPI-CO | EPICHLOROHYDRIN |
| FML | FLEXIBLE MEMBRANE LINER |
| HDPE | HIGH DENSITY POLYETHYLENE |
| PVC | POLYVINYLCHLORIDE |
| SD | STANDARD DEVIATION |
| $\delta$ | SOLUBILITY PARAMETER |
| DCE | 1,2-DICHLOROETHANE |
| MEK | METHYL ETHYL KETONE |
| ANOVA | ANALYSIS OF VARIANCE |
| RMSE | ROOT MEAN SQUARED ERROR |

## ENGLISH TO METRIC CONVERSIONS

| TO CONVERT FROM | TO | MULTIPLY BY |
|---|---|---|
| $BTU/Ft^3$ | $CAL/cm^3$ | .0089 |
| °F | °C | (T-32) x 0.555 |
| Ounces | Grams | 28.349 |
| Inches | Centimeters | 2.540 |
| Foot Pounds | Joules | 1.356 |
| PSI | MPa | .0069 |
| Mil | Millimeters | 0.0254 |
| Ounces | Milligrams | 0.028 |
| Ounces (U.S. fluid) | Milliliters | 29.573 |
| Pound | Grams | 453.592 |
| PSI ($pounds/in^2$) | $Grams/cm^2$ | 70.307 |

## SECTION 1

## INTRODUCTION

Flexible membrane liners (FMLs) are used increasingly as lining materials for hazardous waste containment, in landfills and surface impoundments. A double-liner system, including at least one synthetic liner, is required in all new installations (1). The FML used in a waste containment application must show long-term chemical resistance to the waste stream.

Waste streams are mixtures of chemical substances, with some chemical components present in small or trace quantities. The presence of some trace components may be unknown at the time a liner is being selected. Published chemical resistance tables generally list only pure components, or mixtures of one component in water. A small amount of a substance deleterious to the liner could be present in a mixture whose major component has no effect. Looking only at the effect of the major component in tables, the liner would appear to be resistant. The presence of the incompatible chemical could mean the difference between success and failure of the installation. As an example of the effect of a small amount of an incompatible chemical, Figure 1 compares the change in weight of the PVC liner used in this study in two solutions of very different concentrations. Percent weight change is shown as a function of immersion time. While a saturated brine solution (approximately 35% by weight) causes very minor changes in FML weight, a 0.5% solution of 1,2-dichloroethane (DCE) results in much greater weight gain. A waste containing both components might be classified as a brine waste, and chemical resistance predicted.

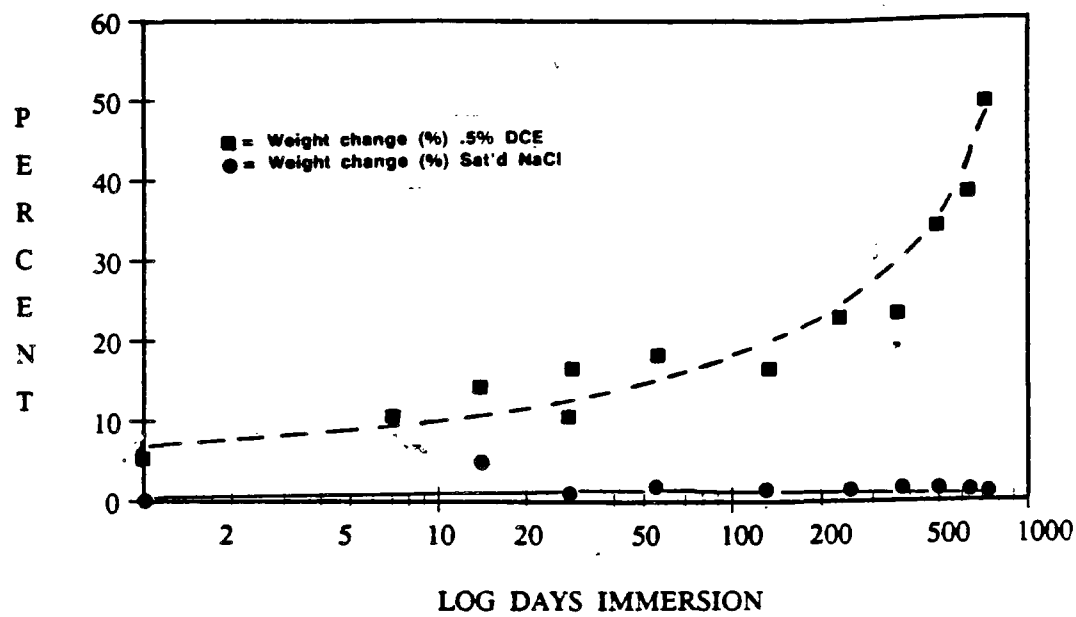



**Figure 1. PVC in brine and 0.5 percent DCE**

For these reasons, the EPA requires that FML selection be based on evaluation of changes in physical properties resulting from immersion in the actual waste to be contained. Several similar immersion test methods have been developed to determine chemical resistance, with guidance on duration, temperature, and types of tests to be performed (2). Evaluation of the test results has not been well defined, however, the EPA considers "any significant deterioration in any of the measured properties to be evidence of incompatibility unless a convincing demonstration can be made that the deterioration exhibited will not impair the liner integrity over the life of the facility" (3).

More guidance information is needed to be made available to FML users, who must select the most appropriate lining material and demonstrate its resistance to the wastes. Theoretical methods of predicting chemical resistance such as Hansen solubility parameters and cohesive energy density numbers (4) are not yet well developed for FMLs, and expert systems for data interpretation (5)

are not currently refined and available. Acceptable changes in a physical property such as tensile strength at a given temperature and immersion time may be different for different FML materials. This project was initiated by the EPA (cooperative agreement #CR 810727) to help develop chemical resistance selection guidance information for FML users.

In this project, immersion testing of six FMLs was conducted at two temperatures (23° C and 50° C) with a broad range of chemical exposures. FML property changes were measured for exposure periods from one day to two years. Results were studied to determine the basic FML responses to combinations of chemical challenge, concentration, temperature, and time. The focus in data interpretation was on the types of degradation encountered, stabilization of the material response, the extent of property change, and indicators of non-resistance (6). The method of interpretation can then be generalized to provide guidance to FML users testing FMLs with specific waste streams.

## SECTION 2

## CONCLUSIONS AND RECOMMENDATIONS

- Immersion testing of a liner in the waste it is intended to contain is essential for determining chemical resistance. Low concentrations of some chemicals can cause more significant change in FML physical properties than higher concentrations of other chemicals. Testing with major constituents would not be satisfactory.

- The stabilization of a material's response to a chemical challenge, when considered in conjunction with the magnitude of that response, is an important parameter in the evaluation of chemical resistance.

- The proposed method of determining stability may be useful in determining longevity of service based on chemical resistance, and also for comparing FMLs for relative suitability for waste containment.

- Increasing the immersion temperature may be used to accelerate the FML response to determine chemical resistance. For some chemical/material combinations, however, increasing the immersion temperature to 50° C produced a different response from the FML, instead of an accelerated response. An elevated temperature may provide a test that is too aggressive for some FMLs to simulate anticipated use (e.g., elastomers).

- Not all materials are suitable for service at 50° C. Heat degradation is an important consideration in conjunction with chemical resistance.

- Water is sometimes an aggressive medium in itself, especially in conjunction with an elevated temperature. The effect of water alone on an FML must be evaluated when evaluating chemical resistance.

- Increasing the concentration of organic solvents in water solution in general increased the magnitude of the FML response (physical changes).

- Weight change is a valuable indicator of material change for all FMLs tested.

- Minimum as-received property values listed in NSF Standard 54 for Flexible Membrane Liners (7) can be useful as benchmarks in evaluating chemical resistance test results.

- Compatibility tables can best be used to screen FMLs to find possibly incompatible combinations. The limitations of compatibility tables are that materials are usually rated qualitatively: (good, fair, poor) and the test conditions used to determine resistance are not always detailed.

- The proposed criteria for chemical resistance of the FMLs tested in this project generally agree with ratings given in existing chemical resistance tables. The criteria may possibly be expanded to evaluate immersion data for USEPA Method 9090 (8).

- Generalization of the criteria and chemical immersion responses of the FMLs tested in the project must be done with caution. Similar liner materials (such as two polar elastomers) may be expected to respond similarly, but the degree of the response (amount of property change) may change with different formulation and fabrication techniques.

  Chemical resistance criteria for the six materials tested are shown in Table 1.

## TABLE 1

## CRITERIA FOR DETERMINING FML CHEMICAL RESISTANCE

| Criteria | Material Type | Material Type | Material Type | Material Type | Material Type | Material Type |
|---|---|---|---|---|---|---|
| | PVC (Plasticized Thermoplastic) | CPE* (Thermoplastic) | HDPE (Partially Crystalline) | EPDM ("Non-polar" Cross-linked Rubber) | EPI-CO ("Polar Cross-Linked Rubber) | CSPE-LW (Vulcanized Rubber) |
| Stability | Yes | Yes | Yes | Yes | Yes | Yes |
| Weight gain Stability | -10% ≤ Wt. change ≤ 5% | ≤ 25% | ≤ 3% | ≤ 30% | ≤ 20% | ≤ 5% |
| Breaking Factor | ≥ 80% of initial and ≥ NSF Std. 54 | ≥ 75% of initial and ≥ NSF Std. 54 | ≥ 80% of initial and ≥ NSF Std. 54 | ≥ 80% of initial and ≥ NSF Std. 54 | ≥ 80% of initial and ≥ NSF Std. 54 | ≥ 80% of Initial |
| % Elongation at Break | ≥ 70% of initial and ≥ NSF Std. 54 | —— | ≥ 80% of initial and ≥ NSF Std. 54 | ≥ 75% of initial and ≥ NSF Std. 54 | ≥ 70% of initial and ≥ NSF Std. 54 | > 125% of Initial |
| Yield Strength | —— | —— | ≥ 80% of initial and ≥ NSF Std. 54 | —— | —— | —— |
| % Elongation at Yeild | —— | —— | ≥ 80% of initial and ≥ NSF Std. 54 | —— | —— | —— |
| Tear Resistance | —— | ≥ 70% of initial and ≥ NSF Std. 54 | ≥ 80% of initial and ≥ NSF Std. 54 | —— | —— | ≥ 80% of Initial |
| Modulus of Elasticity | —— | —— | ≥ 70% of initial and ≥ NSF Std. 54 | —— | —— | —— |
| S-100 Modulus | 60% < S-100 Modulus < 140% | ≥ 70% of initial and ≥ NSF Std. 54 | —— | —— | —— | ≥ 70% of Initial |

* *All criteria for 23°C immersion tests*

## SECTION 3

## METHODS FOR PREDICTING CHEMICAL RESISTANCE OF POLYMERS

### BASIC PRINCIPLES OF POLYMER INTERACTION IN SOLVENTS

This section discusses types of polymers, methods of chemical attack, and general guidelines for determining polymer resistance. This is a general treatment of polymers, not specific to flexible membrane liners.

#### Polymer Types

A polymer molecule is a large molecule composed of repeated smaller units (monomers) joined together by covalent bonds. The word polymer also applies to the materials made up of these molecules.

Polymeric materials can be classified in several ways. Most often they are classified on the basis of response to heat, method of synthesis, response to force, and chemical structure. A complete list of terms and definitions relating to polymers can be found in ASTM D883-83 (9).

**Response to Heat—**

Polymers are either thermoplastic or thermosetting. A thermoplastic material is one which can be repeatedly made to flow when heated and subjected to stress. A thermosetting material can be heated and made to flow under stress only once. It undergoes a curing reaction caused by the heating, in which chemical bonds are formed between polymer chains. The resulting network is unable to flow under stress.

**Method of Synthesis—**

Two basic methods of synthesizing polymers are addition and condensation. Addition polymers are those polymers in which the monomers are joined together

in what is called an addition reaction. Addition reactions have two characteristics: First, that the reaction involves breaking a double bond, and second, that the polymer has the same chemical formula as the monomer (nothing is split off during the reaction). Condensation polymers are polymers formed by a condensation reaction. A condensation reaction is one in which a small molecule (usually water) is split off when the joining bonds are formed.

**Response to Force—**

Two types of behavior in polymers, elastic and plastic, are used for classification. Elastic behavior involves deformation under stress, with a return to original form when the stress is removed. Plastic behavior involves irreversible flow under stress. Polymers classified as plastics (thermoplastics) have an elastic response to a small stress, but as the stress is increased they show irreversible plastic deformation of flow. Polymer materials classified as elastomers have a much greater ability to reversibly deform when force is applied. They will not show appreciable plastic deformation before failing.

**Chemical Structure—**

Terms such as linear, branched, crystalline and crosslinked are used in classifying polymers according to their chemical structure. A linear polymer is made from monomers able to join only on the ends, and the resulting chain, although in reality quite convoluted, if stretched out would be linear. Branching occurs when the monomers can form bonds at different points on the polymer structure in addition to at the beginning and end. A chain with many branches, long or short, can be formed. The difference in linear and branched structure will affect the polymer properties.

A polymer which is partially crystalline (no polymer is 100% crystalline) has areas in which the chains are lined up in a regular arrangement, with secondary associative bonds holding this arrangement together. These areas are the crystalline regions, and the rest, where the chains are randomly tangled, are called the amorphous regions. In general, linear polymers have a greater ability to form crystalline regions, because it is easier to align the

chains. Branching tends to obstruct the chains, keeping them in an amorphous form. The degree of crystallinity of a polymer also affects its properties, including chemical resistance.

Crosslinking refers to covalent bonds formed between adjacent polymer chains. These bonds are much stronger than the secondary bonds of crystalline structure. Vulcanization is one kind of crosslinking, done by adding sulfur and heat. Most elastomers have been crosslinked to improve their elastic response. This crosslinking holds the chains together so that they cannot slip and flow with applied stress.

A thorough discussion of flexible membrane liner technology, the different types of polymers used to make them, and their properties can be found in the EPA document "Lining of Waste Impoundment and Disposal Facilities" (10)

**Chemical Attack vs. Solvation**

A polymeric lining material may be chemically degraded by two basic mechanisms, chemical attack and solvation. Chemical attack involves making and breaking covalent bonds in the polymer structure, thus producing irreversible chemical changes in the polymer chain. Chemical attack is generally caused by acids, alkalies, oxidizers, and salts. The susceptibility of a polymer to be attacked by a chemical is determined by the structure of the polymer chain (11).

Polymers with polar groups are more likely to be attacked by acids, alkalies, and salts, which are polar, while nonpolar polymers are more resistant to attack by polar compounds. The resistance of reactive groups on the polymer to chemicals is also important. An alkaline chemical may saponify ester groups in a polymer such as polyvinyl acetate. It could hydrolyze a cyano group in acrylonitrile, or react with acidic functional groups in phenolic resins. Acids can also hydrolyze reactive groups, and hydrochloric acid can react with double bonds to form a chlorinated polymer different than

the original. Polymers, as organic compounds, are subject to oxidation, in air or by an oxidizing agent. Chemicals such as chromic acid, nitric acid, chlorine dioxide, and fuming sulfuric acid can oxidize many functional groups. Unsaturated polymer chains are especially vulnerable (12).

Solvation occurs when a substance (the solvent) penetrates the polymer and disrupts the secondary bonds between chains, replacing them with secondary bonds between polymer and solvent. The polymer chain itself remains the same, and can be recovered by evaporation of the solvent; however, additives (e.g. plasticizers) may be lost in the process. The susceptibility of a polymer to solvation by a solvent depends on the relative similarity between the polymer and the solvent. This similarity can be predicted, based on structure/activity relationships, by the solubility parameter, discussed later.

## General Guidelines For Polymer Solubility

The solubility of a polymer in a solvent decreases with increasing density and molecular weight of the polymer. An increase in branching of the polymer tends to increase solubility. This is partially because the density of the polymer is usually decreased with branching, making it easier for solvent molecules to penetrate the polymer. With polymers that are crystalline to some extent, an increase in branching also provides steric hindrance to crystallinity. This will also tend to increase the solubility of the polymer in the solvent.

The more crystalline the polymer, the less likely it is to be soluble in a given solvent. This is partially caused by the increased density seen with increasing crystallinity, making it harder for the solvent to penetrate the polymer structure. Crystallinity occurs when strong secondary bonds form between adjacent polymer chains, keeping the chains close together and lined up in a regular arrangement. The solvent must overcome these secondary bonds in order to separate the chains and dissolve the polymer.

As with chemical attack, the rule "like dissolves like" applies in general to polymer/solvent systems. A polar solvent is more likely to dissolve a polymer with polar groups, while a non-polar solvent is more likely to dissolve a non-polar polymer. For example, water with the polar (OH) group will dissolve polyvinyl alcohol (13), while natural rubber, a nonvulcanized hydrocarbon rubber, will be dissolved by gasoline.

Crosslinking, or forming covalent bonds between adjacent polymer chains, reduces a polymer's solubility by reducing its capacity to expand (swell) and take up solvent within the polymer matrix (13). Swelling does not always indicate polymer destruction or incompatibility. The amount of swell exhibited by a polymer exposed to a given solvent can be used as a measure of the extent of polymer crosslinking (10). The more crosslinked a polymer is, the less it will swell.

Additives used to alter the properties of a polymer, for example, to enhance its resistance to ultraviolet light, may alter its chemical resistance. The types and amounts of additives, such as plasticizers and fillers, vary from manufacturer to manufacturer and from one intended application to another. Additives may affect a polymer's suitability for use with a given chemical waste.

The solubility of a polymer in a given solvent increases with increasing temperature.

**THEORETICAL SOLUBILITY PARAMETERS**

One way of predicting the solubility of a polymer in a solvent is with the solubility parameter, developed by Hildebrand and Scott (12). The solubility parameter is a measure of the compatibility of a solvent and solute based on the change in enthalpy on mixing. The closer the solubility parameter for a solvent and solute, the more likely they are to be mutually soluble.

The solubility parameter is defined as the square root of the cohesive energy density, a measure of the strength of intermolecular forces in the liquid state. The cohesive energy density is the molar change in internal energy on vaporization divided by the molar volume of the liquid (4). Solubility parameters for solvents can be calculated from the energy of vaporization, and for polymers are measured empirically by finding the solvent that is most compatible (that is, that most easily dissolves the polymer). Solubility parameters are measured in $(MPa)^{1/2}$ or hildebrands $(cal/cm^3)^{1/2}$. The equation for the solubility parameter is:

$$\delta = (CED)^{1/2} = [E_v/v]^{1/2}$$

where $\delta$ = solubility parameter $(MPa)^{1/2}$
CED = Cohesive Energy Density (MPa)
$E_v$ = molal change in internal energy of vaporization (J)
v = molal volume $(cm^3)$

Solubility parameters are used extensively in the paint and coatings industry to predict the dissolving power of multi-solvent blends. Solubility parameter data exists for many substances, including pure chemicals, blends (such as ASTM #2 Oil), and polymer resins.

Some of these values have been determined empirically, some have been calculated. For mixtures where no chemical interaction occurs, the effective solubility parameter for a binary mixture can be calculated using the following equation:

$$\delta_{mix} = (\delta_1 \phi_1 + \delta_2 \phi_2)$$

where $\delta_{mix}$ = mixture solubility parameter $(MPa)^{1/2}$
$\delta_1$ = solubility parameter component 1 $(MPa)^{1/2}$
$\delta_2$ = solubility parameter component 2 $(MPa)^{1/2}$
$\phi_1$ = volume fraction component 1
$\phi_2$ = volume fraction component 2

There are several types of solubility parameters. The original is the Hildebrand parameter. This is the overall solubility parameter as described above. While this parameter is useful in many situations, polymer solubility is generally too complex to be described by a single parameter. Supplementary solubility parameter methods have been developed which take into account the effect of dipole interactions and hydrogen bonding. One of these is the Hansen parameter.

The Hansen solubility parameter ($\delta$) is a three-dimensional representation of a substance's solubility potential. The solvent represents a point in space, with the solubility parameter defining the vector from the origin to this point (4). The three components of the Hansen parameter represent dispersion (van der Waals forces) ( $\delta_d$), the permanent dipole interactions ( $\delta_p$), and hydrogen bonding ( $\delta_h$). The overall magnitude of the solubility parameter is then represented as:

$$\delta^2 = (\delta_d)^2 + (\delta_p)^2 + (\delta_h)^2$$

The absolute magnitude of the solubility parameter does not show how generally soluble the substance will be. The difference between the solubility parameters of two substances indicates the likelihood of mutual solubility. The smaller the difference between the two parameters, the more likely they are to be mutually soluble. For example, water, with an overall solubility parameter of 48 $MPa^{1/2}$, is not likely to dissolve ASTM Oil #2, which has an overall solubility parameter of 15.5 $MPa^{1/2}$ (see Table 2).

For Hansen parameters, the magnitude of the difference between two solubility parameters is calculated by subtracting the two vectors according to the following equation:

$$^{ij}A^{1/2} = [ ( {}^{i}\delta_d - {}^{j}\delta_d )^2 + ( {}^{i}\delta_p - {}^{j}\delta_p )^2 + ( {}^{i}\delta_h - {}^{j}\delta_h )^2 ]$$

where $^{ij}A^{1/2}$ = magnitude of difference
$^{i}\delta$ = parameter of component i
$^{j}\delta$ = parameter of component j

## TABLE 2. SOLUBILITY PARAMETER DATA

| LIQUID | HANSEN SOLUBILITY PARAMETERS (MPa)[1 2] | | | | |
|---|---|---|---|---|---|
| Pure Chemicals | $\delta_d$ | $\delta_p$ | $\delta_h$ | $\delta_t$ | Source |
| Water | 12.3 | 31.3 | 34.2 | 48 | (1) |
| ASTM Oil #2 | 15.6 | 0.6 | 0.2 | 15.5 | (1) |
| Methyl Ethyl Ketone | 16.0 | 9.0 | 5.1 | 19 | (1) |
| Phenol | 18.0 | 5.9 | 14.9 | 24.1 | (1) |
| Furfural | 18.6 | 14.9 | 5.1 | 24.4 | (2) |
| 1.2-Dichloroethane | 19.0 | 7.4 | 4.1 | 20.9 | (2) |
| Chemical/Water Solutions | | | | | |
| MEK 3% | 12.44 | 30.47 | 33.12 | 46.7 | (3) |
| MEK 13% | 12.88 | 27.82 | 29.66 | 42.7 | (3) |
| MEK 26% | 13.42 | 24.52 | 25.35 | 37.7 | (3) |
| Phenol 1% | 12.35 | 31.06 | 34.02 | 47.7 | (3) |
| Phenol 4% | 12.52 | 30.33 | 33.47 | 46.9 | (3) |
| Phenol 8% | 12.73 | 29.37 | 32.73 | 45.8 | (3) |
| Furfural 1% | 12.35 | 31.16 | 33.95 | 47.7 | (3) |
| Furfural 4% | 12.51 | 30.74 | 33.21 | 47.0 | (3) |
| Furfural 8% | 12.73 | 30.18 | 32.22 | 46.0 | (3) |
| DCE 0.1% | 12.31 | 31.28 | 34.18 | 47.9 | (3) |
| DCE 0.5% | 12.33 | 31.2 | 34.08 | 47.8 | (3) |
| DCE 0.9% | 12.35 | 31.13 | 33.98 | 47.7 | (3) |
| Polymeric Materials | | | | | |
| Polyethylene | 17.3 | 0 | 0 | 17.3 | (4) |
| PVC | 18.7 | 10.0 | 3.1 | 21.4 | (4) |
| Nat. Rubber | 18.4 | 2.1 | 7.2 | ---- | (4) |
| Ethylene Propylene Copolymer | 18.0 | 0.8 | 2.1 | | (4) |

(1) Table 6. Chapter 8. Reference 4
(2) Table 5. Chapter 8. Reference 4
(3) Calculated from above values
(4) Table 14. Chapter 14. Reference 4

Table 2 presents solubility parameter data for the chemicals used in this project, and for some polymeric materials used to make flexible membrane liners. The first part of the table presents Hansen parameters for the pure chemicals used. These values were taken from the literature, and the sources are listed. The second part of the table presents calculated values for the chemical/water solutions used in immersion testing. The third part of the table gives Hansen parameters for some polymeric materials.

Solubility parameters such as this may be useful for predicting the compatibility of wastes and polymeric lining materials for combinations where solvation is the primary or only interaction between the waste and the liner. In cases where the difference between solubility parameters is small, the liner could soften, swell, lose strength, or become permeable to the waste. A comparison can be made of the data generated in this EPA/NSF project and published solubility parameter values.

For example, the difference in solubility parameters for PVC and for methyl ethyl ketone is calculated by subtracting the two parameters, using vector arithmetic. Using the previous equation, the difference is:

$$^{ij}A^{1/2} = [\ (18.7 - 16.0)^2 + (10.0 - 9.0)^2 = (3.1 - 5.1)^2\ ]^{1/2} = 3.5\ \mathrm{MPa}^{1/2}$$

Table 3 shows one way that the project data can be compared to solubility parameter predictions. The differences in solubility parameters between a polymer and a chemical are calculated for two materials, polyethylene and polyvinyl chloride, and for three chemicals: MEK, ASTM Oil #2, and water. Also shown are summaries for weight and percent retention of breaking factor data. The average and maximum weight and percent retention of breaking factor for the material/chemical combinations are listed. (These data represent all time exposures and both temperatures). Solubility parameter differences are calculated using the above equation and the values listed in Table 2.

It must be noted here that the solubility parameters are given for pure compounds. A PVC liner is not a pure compound, but contains additives to

**TABLE 3. COMPARISON OF IMMERSION RESULTS AND SOLUBILITY PARAMETER DIFFERENCES**

| Material | Chemical | Concentration | Maximum Percent Weight Change (%) | Average Percent Weight Change (%) | Maximum Percent Retention Breaking Factor (%) | Average Percent Retention Breaking Factor (%) | Difference Between Solubility Parameters $(MPa)^{1/2}$ |
|---|---|---|---|---|---|---|---|
| HDPE | Oil | 100% | 7.0 | 3.5 | 100.6 | 92.6 | 1.8 |
| | MEK | Saturated | 2.2 | 1.6 | 116.6 | 91.1 | 11.1 |
| | Water | 100% | 1.1 | 0.07 | 112.8 | 102.6 | 46.6 |
| PVC | MEK | Saturated | 134.4 | 41.5 | 131.0 | 21.3 | 3.5 |
| | Oil | 100% | -0.6 | -7.4 | 188.1 | 100.8 | 10.3 |
| | Water | 100% | 2.7 | 1.2 | 105.7 | 98.1 | 38.2 |

improve its flexibility and biological resistance. A HDPE liner has additives to improve its ultraviolet resistance. Also, the data given for MEK is for a water-saturated solution.

Nevertheless, several interesting things are apparent looking at the table. For polyethylene, as the difference between the solubility parameters for polyethylene and a chemical increases, the magnitude of change in weight and volume decreases. This is the expected relationship. Oil, with the smallest difference in Hansen parameters from polyethylene, causes the largest change in weight and volume. Water, with the largest difference, causes the smallest changes.

At first glance, this does not seem to hold for polyvinyl chloride. Looking again at Table 3, the large weight and volume changes for PVC in methyl ethyl ketone correspond to a small difference in solubility parameters. The small change in water correspond to a large difference in solubility parameters. But for oil, the relationship does not hold. Where one would expect to find weight and volume changes somewhere between those for MEK and for water, one finds instead a net loss in weight and volume.

Observations of PVC liner samples after oil exposure showed that they became smaller and stiffer with time. This evidence suggests that a plasticizer added to the formulation was extracted by the oil. The migration of plasticizer was the predominant change in the liner samples, rather than oil. Plasticizer removal by oil is a well-known phenomenon (14,15). One might expect to find that the solubility parameters for the plasticizer and oil are even closer than for the polymer and the oil.

As mentioned before, substances added to a liner formulation to modify the polymer properties can affect the solubility properties. Also, this shows that the reaction of a liner sample can sometimes depend on the properties of the additives more than on the base polymer itself.

Another limitation of using solubility parameters to predict the compatibility of complex wastes and polymeric lining materials is that the possibility of chemical attack is not taken into account. The solubility parameter is limited to predicting the likelihood of mutual solubility between liner and waste.

Solubility parameters are intended to predict the ability of a solute to be dissolved in a solvent. Normally, the solute is present in much smaller quantity than the solvent, and is dispersed homogeneously in the solvent (or solvent blend). This is not the case in chemical immersion testing, or in liner/waste contact situations. The 'solvent' (the waste) may be present in dilute form in water solution, while the 'solute' (the polymeric liner) is a solid sheet in contact with the waste.

A solvent of interest (such as MEK in water solution) may be preferentially absorbed by the liner making its effective concentration in the polymer matrix much higher than that in the waste solution. The net effect may be much more severe than predicted using a calculated solubility parameter for the binary solution (such as MEK/water, see Table 2).

Although solubility parameters should not be used as the only tool for making predictions of compatibility, however, they can be used as a screening tool to eliminate obvious incompatible liner chemical combinations. Some general rules have been suggested (4). Non-crystalline and uncrosslinked polymers will usually dissolve in a solvent which has a solubility parameter within $\pm$ 1.8 Hildebrand units of the polymer. Polymers will tend to swell in solvents with solubility parameters within $\pm$ 3.2 of the polymer.

**CHEMICAL COMPATIBILITY TABLES**

There are many existing chemical compatibility tables for polymers, both from textbooks and from manufacturers. Some of the tables refer to the pure polymer, and some to a specific manufacturer's formulations.

The chemical compatibility or chemical resistance tables currently available do not clearly define compatibility. Terms such as good, fair, and poor are used to describe resistance of polymeric materials to chemicals without specifying chemical concentrations, exposure conditions, or how distinctions between good, fair, and poor are made.

However, chemical compatibility tables which provide information of sufficient specificity to make intelligent compatibility decisions would be infinitely large, and would not eliminate the need for testing a liner with the mixture it is intended to contain. Tables cannot replace testing because tables cannot take into account synergistic or antagonistic effects of mixtures of chemicals found in waste streams.

Initial chemical compatibility screening can be accomplished with some understanding of the polymer/chemical interaction principles briefly discussed in this document and the use of some currently available tables. Although current tables cannot be used to make final liner waste compatibility decisions, some tables may be used to determine which liner-waste combinations are unacceptable.

Specific liner waste compatibility testing is required by regulation, but procedures for evaluating results of testing to predict performance are not documented. A chemical compatibility evaluation table could be designed to assist the table user in evaluation of immersion test results. The testing results for this and other concurrent projects should provide the basis for a chemical evaluation table(s).

The project results will be evaluated in terms of material property changes versus time of exposure, concentration of exposure, temperature of exposure, and various combinations of time, concentration, and temperature. In addition, when possible, laboratory data should be correlated with field experience. With these data, specific criteria will be developed for property changes which will provide a common base of evaluation. For example, tensile

property changes of less than 20 percent for polymer A in a waste or leachate is satisfactory performance for an immersion of seven days at 23°C.

This concept is advocated in the 1982-83 edition of the Modern Plastics Encyclopedia (16). The following table of guidelines for evaluating the extensive chemical resistance chart in the encyclopedia is fashioned after the one on Page 44 of the encyclopedia.

**TABLE 4.**

**SAMPLE GUIDELINES FOR EVALUATING POLYMER CHEMICAL RESISTANCE TEST DATA**

| Level of Significance | Change in Weight, % | Change in Dimension, % | Change in Tensile Strength, % |
|---|---|---|---|
| Usually not Significant | <5 | <2 | <10 |
| Significant but usually not conclusive | 5-10 | 2-4 | 10-20 |
| Usually significant | >10 | >4 | <20 |

Polymer properties may differ, consequently changes in properties may have different significance for different polymers. The chemical compatibility evaluation table must take this into account.

A table of this nature could be used in more than one way. Because the basis for distinction between levels of significance of test results is specified, a knowledgeable and experienced designer could make a final selection with some degree of confidence even if some test results were borderline.

This evaluation table approach could be further expanded to incorporate weighting factors for different tests. For example:

| Test | Weight | Dimension | Tensile |
|---|---|---|---|
| Weighting | 0.4 | 0.2 | 0.4 |
| Percent Change | | | |
| Acceptable | <5 | <2 | <10 |
| Marginal | 5-10 | 204 | 10-30 |
| Unacceptable | >10 | >4 | >30 |

The sum of the weighting factors would always equal one. An overall grade for polymer A of less than 6.4, [ (0.4x5)+(0.2x2)+(0.4x10) ] would indicate overall acceptability, 6.4 to 16.8 would be marginal, and greater than 16.8 would be unacceptable. Conceivably, a material might be marginal for one test, but still be acceptable overall.

The weighting factors might be different for different materials because the significance of say, dimension or tensile change is not necessarily the same for all materials. Consequently, a system, such as just described, would allow direct comparison of materials of different polymeric structures because the relative importance of each test is considered for all materials.

**TEST METHODS FOR COMPATIBILITY DETERMINATION**

The U.S. Army Toxic and Hazardous Materials Agency conducted compatibility tests for FMLs with explosives and trichloroethylene. They studied alternative test methods and chose the initial screening method of the NSF Proposed Standard for FMLs. They felt that this method represented a compilation of the views of manufacturers, users, and regulatory agencies (17).

Their comments on using this test method were that it was easy to use and reproducible but that specific test procedures had to be developed before using it. They found weight measurements quite reproducible, dimension measurements less so. The Agency also commented that data interpretation was somewhat subjective due to the lack of established evaluation criteria.

The test method selected for this study was similar to the NSF method used by the Army. EPA Method 9090 is also similar. But at the time this study was started, neither immersion procedure (Method 9090 and NSF Standard 54) was available.

When evaluating a polymer for its resistance to a particular chemical, several criteria can be used. Visual observations give valuable information about the condition of the polymer exposed to a chemical. Changes measured in mechanical properties can also indicate whether the polymer is suitable for use with the chemical.

Visual effects noted can include swelling, discoloration, blistering, embrittlement, and softening. Of these, softening and swelling, usually found together, are the most indicative of loss of useful properties. Swelling occurs as a solvent penetrates the polymer structure, loosening secondary bonds between polymer chains and replacing them with solvent-polymer associations. This can result in loss of mechanical properties.

Changes in mechanical properties include tensile strength, tear strength, hardness, permeability, puncture resistance, elongation and environmental stress cracking. One or more of these properties may be measured when evaluating a polymer for chemical resistance.

Several test methods are available for testing. ASTM D543 is a standard method used for all plastics (18). It is an immersion test listing 51 standard chemicals at standard concentrations. Properties measured include change in weight, dimensions, tensile strength, and elongation.

EPA Method 9090 is also an immersion test, but it is designed specifically to evaluate flexible membrane liner material for use in the containment of chemical wastes, it specifies that the actual waste be tested. Properties measured include change in weight, dimension, tensile strength, elongation, hardness, and tear resistance (8).

The National Sanitation Foundation Proposed Standard for flexible membrane liner material also has an exposure test for evaluating chemical resistance of liner material (7). This test is modeled on ASTM D543, the more general plastics evaluation procedure. The test program is two-phased, with an initial evaluation that measures change in weight and dimensions while observing visual changes in material exposed to the waste chemicals. The second phase of testing, for those materials which look promising based on the initial evaluation, is a longer immersion followed by physical properties testing which includes tensile strength, tear resistance, and elongation.

Manufacturers of polymers and of FMLs use either their own test methods or some form of the above methods.

All of the above test methods can be run at either room temperature, or at elevated temperatures. It has been suggested that a temperature of 50°C be used as the higher temperature unless the actual intended application is at an even higher temperature, in which case the actual intended temperature should be used (2). However, results from this study indicated that elevated temperatures may not give realistic results for some liners.

The test method selected for this project closely paralleled the NSF immersion procedure, including additional immersion periods. The NSF immersion procedure was best suited to the objective and number of samples of this project. The current EPA immersion test, Method 9090, was not written at the time the study began. However, the procedures in Method 9090 are essentially equivalent to the procedures used in this study. Consequently, it is anticipated that the data evaluation criteria from this project could be used for evaluating data from tests using Method 9090.

## SECTION 4

## TECHNICAL APPROACH

### OBJECTIVES

The purpose of the project was to investigate the chemical resistance of flexible membrane liner materials using immersion tests. The results from this study will help liner users select the most appropriate liner for their waste containment application.

To accomplish this, the project had the following objectives:

- to expose liner materials to a range of chemicals typical of waste streams and challenging to the liner under controlled laboratory conditions
- to measure changes in the physical properties of these exposed liners
- to evaluate the liner material response (changes in physical properties) to determine the indicators of liner chemical resistance or non-resistance
- to determine, for each liner material, the basic material response and degree of response indicative of nonresistance so that the criteria can be applied to the evaluation of immersion test data for liner specimens in real waste (e.g., Method 9090 results)

### PROJECT ADVISORY COMMITTEE

An advisory committee made up of individuals from academia, regulatory agencies, and industry was formed. The purpose of the advisory committee was to provide guidance on liner and chemical selection, test methods, and data interpretation. The advisory committee provided input through correspondence.

Individuals were selected for the advisory committee based on expressed interest in the project and known expertise in hazardous waste containment or treatment and FML technology. Thirty-four individuals were contacted, and twenty-nine agreed to participate. The names and affiliations of the participants are listed in Appendix A.

## EXPERIMENTAL DESIGN

The project was divided into three parts: planning, testing, and reporting. The testing phase extended for twenty-eight months, and was divided into four sections (see a diagram of the testing in Figure 2). The four sections for the testing phase were initial screening tests, tests of unexposed (as-received) material properties, measurement of weight and dimension changes after long immersion periods, and measurement of changes in mechanical properties after immersion periods of 1, 7, 14, 28, 56 days and two years. Each section is described below:

- Initial Screen Tests. The initial screening tests were performed to aid in the selection of organic chemical concentrations for FML immersion tests. Coupons of FML materials were exposed to five concentrations of five organic chemicals (including pure solvents) for seven days at room temperature. Changes in weight, dimension and appearance were noted. The samples were allowed to air dry for another seven days. After drying, coupon weight and dimension were measured again.

  Results from these initial screening tests were evaluated and used to select organic concentrations for testing. The goal was to select the highest test concentration, one with sufficient chemical strength to produce measurable, but not catastrophic, changes in most of the liners within seven days. Two lower concentrations of incremental dilutions were then selected to give a total of three concentrations of organic chemicals for immersion.

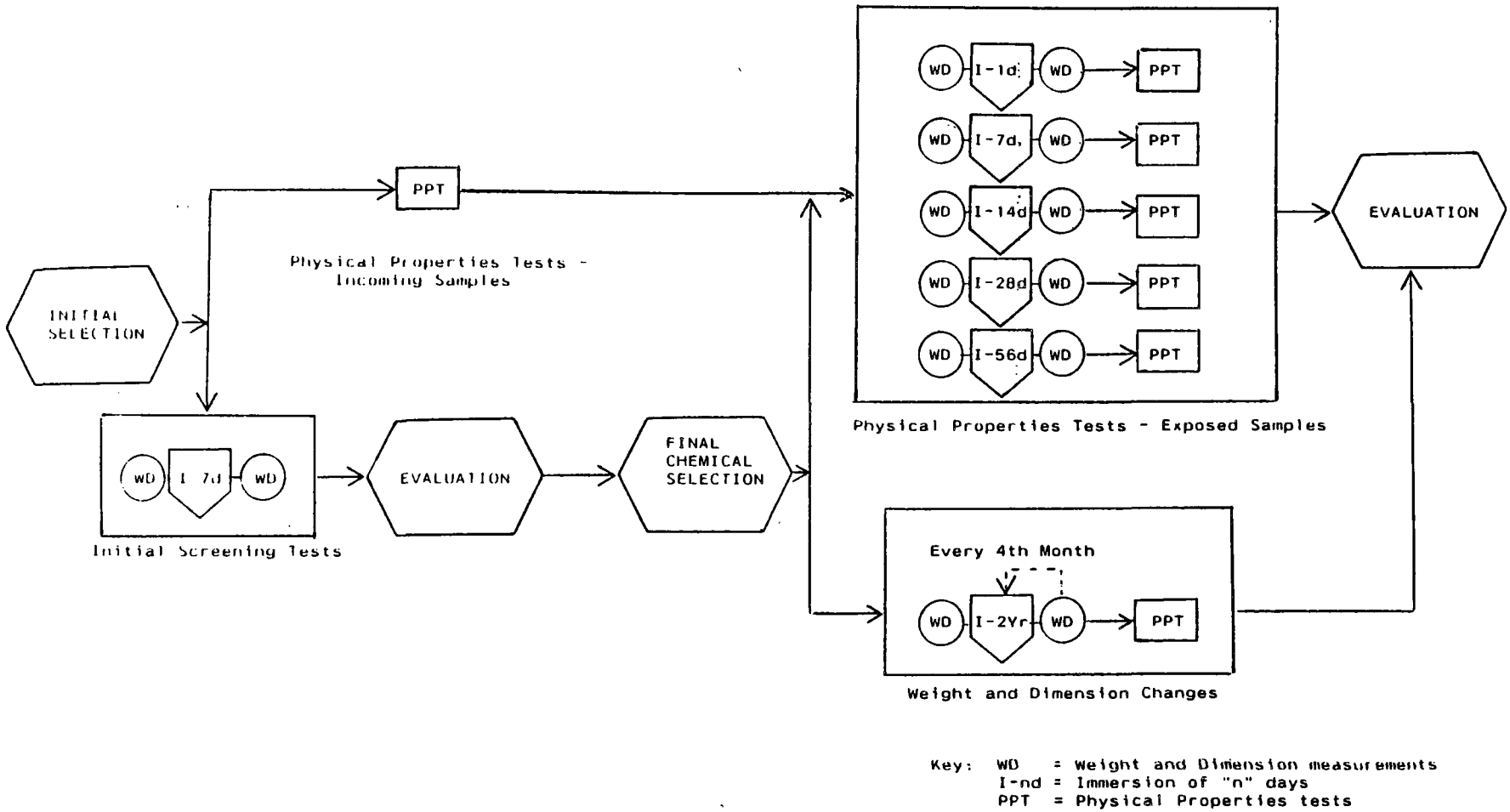



**Figure 2. Project diagram**

- Unexposed Material Property Tests. As-received liner samples were tested against NSF Standard 54 (Flexible Membrane Liners) requirements (7). Results were compared both to the Standard 54 tables and to manufacturers' test results. The properties measured included, but were not limited to, the properties measured after chemical immersion (tensile properties and tear resistance).

  These as-received measurements served as a control and baseline for material changes after chemical immersion. They were also a quality assurance tool, showing that the liner material was of good manufacture, and that the test methods produced results within the expected range for the materials.

- Long-term Weight and Dimension Changes. Samples of each liner were immersed in all of the selected chemicals at all concentrations. Each sample (composed of three die-cut specimens) was measured for changes in weight and dimensions every four months for up to two years. The tensile strength and elongation of these weight and dimension specimens were measured at the end of the test period.

- Mechanical Property Changes. Coupons of all FMLs were immersed in all of the selected chemical exposures for periods of 1, 7, 14, 28, or 56 days. Two exposure temperatures were used: 23° and 50° Centigrade. Weight and dimension were measured before and after immersion, and percentage changes were calculated. Test specimens were die-cut from the coupons after exposure and tensile properties and tear resistance were also measured. Ten test specimens were cut for tensile properties testing (five in the machine direction and five in the transverse direction) and five specimens were cut for tear resistance testing.

## SELECTION OF FMLs FOR TESTING

### Selection Criteria

Six FML materials were used for immersion testing in this project. All materials used were donated by manufacturers. The criteria for FML selection were:

- to have at least one material from each of three polymer classifications; thermoplastic, crosslinked elastomer, and partially crystalline thermoplastic
- to choose material types that are in use in the field, based on the information in SW-870 "Lining of Waste Impoundment and Disposal Facilities" (10)
- to choose materials similar to those used in the U.S. Bureau of Reclamation (USBR) study of FML seam chemical resistance (19)
- to select liners so that, if possible, no manufacturer would provide more than one FML for testing

### FMLs Selected

Table 5 lists the materials tested in this project. Six manufacturers provided material. Industrial grade chlorosulfonated polyethylene (CSPE-LW) replaced the potable grade CSPE initially selected. This change was made because the CSPE-LW better represented liner material used in waste containment applications (21).

All materials except epichlorohydrin (EPI-CO) were 30 mils thick (0.03 inch). Epichlorohydrin was not available in 30 mil thickness, and a 60 mil liner was used. The 30 mil thickness was chosen primarily to correspond to the liner thickness used in the USBR project.

Only unsupported FML liners were tested (material with no reinforcing scrim). It was decided that the chemical resistance of the scrim was not of primary concern and was beyond the scope of the study. Having a scrim present

would be a complicating variable in the testing, and would have required much work to eliminate (that is, sealing all cut edges of samples to prevent contact between the solutions and the scrim). Immersion testing is an acclerated test procedure, not designed to simulate actual use conditions. Using scrim and flood coating edges adds variables which are hard to control, does not enhance the quality of the immersion data, and may only retard but not change the final results.

**Table 5. FML MATERIALS SELECTED FOR CHEMICAL RESISTANCE TESTING**

| FML NAME | SYMBOL | THICKNESS (mils) |
|---|---|---|
| CROSSLINKED ELASTOMER: | | |
| Ethylene Propylene Diene Monomer | EPDM | 30 |
| Epichlorohydrin | EPI-CO | 60 |
| THERMOPLASTICS: | | |
| Polyvinyl Chloride | PVC | 30 |
| Chlorinated Polyethylene | CPE | 30 |
| PARTIALLY CRYSTALLINE: | | |
| High Density Polyethylene | HDPE | 30 |
| UNVULCANIZED RUBBER: | | |
| Chlorosulfonated Polyethylene (industrial grade) | CSPE-LW | 30 |

## Description of FMLs Received

**Polyvinyl chloride (PVC)**--is a thermoplastic polymer made by polymerizing vinyl chloride monomer, or vinyl chloride/vinyl acetate monomers. PVC is a rigid material, and to make flexible liners, plasticizers must be added (3). From 25 to 35 percent of plasticizers and 1 to 5 percent by weight of heat stabilizers are added to the liner formulation (7).

A medium grey 30 mil unsupported PVC liner was used. The liner had a smooth surface with no observable defects. The roll stock received was approximately five feet wide.

**Chlorinated polyethylene (CPE)**,--a saturated polymer, is produced from a reaction between polyethylene and chlorine. The polymer contains 25-45 percent chlorine by weight and 0-25% crystallinity (3,7). An FML bearing the name CPE contains CPE resin as at least 50 percent of the total polymer content.

The CPE liner supplied was a 30 mil unsupported thermoplastic material on a five foot wide roll. It was charcoal grey with an embossed texture on one side. Tiny streaks of entrapped air were visible, randomly distributed throughout the liner. The manufacturer stated that these streaks are an effect of the manufacturing process, and would not effect immersion results (22).

**Ethylene propylene diene monomer (EPDM)**--is a synthetic elastomer terpolymer based on ethylene, propylene, and a third monomer of diene hydrocarbon that provides sites for crosslinking (3). EPDM liners are available in both thermoplastic and crosslinked (vulcanized) forms (7).

The EPDM liner used was a grey vulcanized liner of nominal 30 mil thickness. Actual thickness varied from 31 to 48 mils (average 40 mils). Seams occurred on the roll approximately every five feet, and were avoided when cutting test samples. The roll received was ten feet wide, and was cut into two five feet sections for storage (see Section 5).

**Epichlorohydrin rubber (EPI-CO)**--is a synthetic organic polymer made from epichlorohydrin (1-chloro 2,3-epoxypropane) (12). The polymer is a saturated polyether with chloromethyl side chains. Epichlorohydrin liners are generally vulcanized (3).

The EPI-CO liner received and tested was of nominal 60 mil thickness (30 mil was not available). The roll was ten feet wide; it was cut in two for storage. Seams occurred approximately every five feet and were avoided when obtaining test samples.

**High density polyethylene (HDPE)**--is a polymer prepared by low pressure polymerization of ethylene as the principal monomer. This material is partially crystalline in nature and is stiffer than other types of membrane materials. Two to three percent carbon black is added to improve ultraviolet light resistance (3).

A 30 mil black HDPE liner was used. The three rolls received were approximately five feet wide. The liner outside surface had shallow lengthwise calender marks, which were not considered a defect. Because of the relative stiffness of the roll stock, the liner retained a 'curve' from the roll when cut into samples.

**Chlorosulfonated polyethylene - low water absorption (CSPE-LW)**--is a specific formulation of CSPE. This polymer is made by a reaction between polyethylene and chlorine and sulfur dioxide. FMLs contain 24 to 43 percent chlorine and 1 to 1.4 percent sulfur by weight (7). There are two grades of liner produced: potable (also called standard) and low-water absorption (also called industrial). The two grades have significantly different properties, and the low water absorption grade (CSPE-LW) is more suitable for waste containment applications (20). Most CSPE and CSPE-LW liners are supplied as thermoplastics, but the liner crosslinks with time in response to heat, moisture, and light (3). These liners are usually reinforced with a scrim to improve strength and temperature-related properties.

A 30 mil unsupported CSPE-LW liner was used. The liner was black rubber with a smooth surface similar to rainboots, and had no observable defects. The roll was approximately five feet wide with no seams.

**FML "As Received" Properties**

The six flexible membranes selected for exposures were tested for selected physical properties by NSF and by the manufacturer that provided the material. NSF presented results to each manufacturer prior to seeing the manufacturers' results. There were three objectives for this testing: 1) to establish that the materials used in this study met the physical properties requirements in NSF Standard 54; 2) to establish comparability of test methodology between NSF and the manufacturers; and 3) to provide interlaboratory QC results. The results are presented in Tables 6-11.

All materials met the requirements of the current NSF Standard 54 where applicable. Unsupported 30 mil chlorosulfonated polyethylene (CSPE-LW) is not covered under Standard 54 and could not be compared to it. The HDPE results were reviewed by the manufacturer, but manufacturer test results for this sample were not available for comparison.

Two properties differed consistently from manufacturers' results. The first was tear resistance. In three out of the four cases where manufacturer's data was available, NSF's value for tear resistance was lower than the manufacturer's value. Average difference was two and one half pounds. Three of these five materials were tested in round robin testing with the U.S. Bureau of Reclamation (USBR). Tear resistance values were very close, NSF's results averaging one half pound higher.

**Table 6. AS RECEIVED PROPERTIES: 30 MIL POLYVINYLCHLORIDE (PVC)**

| PROPERTY | NSF RESULTS | MANUF. RESULTS | STANDARD 54 SPEC |
|---|---|---|---|
| THICKNESS (inches) | .0307 | .0306 | minimum .0285 |
| SPECIFIC GRAVITY | 1.26 | 1.26 | minimum 1.20 |
| DIMENSIONAL STABILITY (percent) | | | |
| Machine | -1.7 | -1.7 | maximum 5 |
| Transverse | +0.9 | +1.0 | maximum 5 |
| VOLATILE LOSS (percent) | 0.48 | 0.61 | maximum 0.7 |
| HARDNESS | 90 | 93 | N.R.[1] |
| TENSILE PROPERTIES BREAKING FACTOR (pounds/inch width) | | | |
| Machine | 88.3 | 90.6 | minimum 69 |
| Transverse | 84.6 | 84.2 | minimum 69 |
| ELONGATION AT BREAK (percent) | | | |
| Machine | 449.6 | 480 | minimum 300 |
| Transverse | 462.6 | 475 | |
| S-100 MODULUS (pounds/inch width) | | | |
| Machine | 50.8 | 46.4 | minimum 27 |
| Transverse | 47.3 | 43.7 | |
| TEAR RESISTANCE (pounds) | | | |
| Machine | 10.6 | 12.1 | minimum 8 |
| Transverse | 10.5 | 13.4 | |

[1] N.R. = Not required

**Table 7. AS RECEIVED PROPERTIES: 30 MIL CHLORINATED POLYETHYLENE (CPE)**

| PROPERTY | NSF RESULTS | MANUF. RESULTS | STANDARD 54 SPEC |
|---|---|---|---|
| THICKNESS (inches) | .0296 | .0298 | minimum .0285 |
| SPECIFIC GRAVITY | 1.358 | 1.350 | minimum 1.20 |
| DIMENSIONAL STABILITY (percent) | | | |
| Machine | -8.0 | -6.8 | maximum 16 |
| Transverse | +1.9 | +0.6 | maximum 16 |
| VOLATILE LOSS (percent) | 0.45 | 0.30 | maximum 0.5 |
| TENSILE PROPERTIES BREAKING FACTOR (pounds/inch width) | | | |
| Machine | 54.2 | 56.9 | minimum 43 |
| Transverse | 47.9 | 46.9 | |
| ELONGATION AT BREAK (percent) | | | |
| Machine | 437 | 346 | minimum 300 |
| Transverse | 609 | 458 | |
| S-100-MODULUS (pounds/inch width) | | | |
| Machine | 37.6 | 29.9 | minimum 12 |
| Transverse | 17.9 | 15.4 | |
| TEAR RESISTANCE (pounds) | | | |
| Machine | 7.54 | 8.49 | minimum 4.5 |
| Transverse | 6.12 | 7.99 | |

**Table 8. AS RECEIVED PROPERTIES: 30 MIL ETHYLENE PROPYLENE DIENE MONOMER (EPDM)**

| PROPERTY | NSF RESULTS | MANUF. RESULTS | STANDARD 54 SPEC |
|---|---|---|---|
| THICKNESS (inches) | .0404 | --- | minimum .027 |
| SPECIFIC GRAVITY | 1.165 | 1.18 | 1.18 ± .03 |
| DIMENSIONAL STABILITY (percent) | | | |
| Machine | -0.8 | --- | maximum 2 |
| Transverse | -0.1 | --- | maximum 2 |
| VOLATILE LOSS (percent) | .480 | --- | N.R.[1] |
| HARDNESS Durometer A | 59 | 62 | 60± 10 |
| TENSILE PROPERTIES BREAKING FACTOR (pounds/inch width) | | | |
| Machine | 63.4 | 51.0* | minimum 42 |
| Transverse | 68.9 | --- | minimum 42 |
| ELONGATION AT BREAK (percent) | | | |
| Machine | 401.8 | 420* | minimum 300 |
| Transverse | 395.0 | --- | minimum 300 |
| TEAR RESISTANCE (pounds) | | | |
| Machine | 8.9 | 6.8 | minimum 4 |
| Transverse | 9.0 | --- | |

[1] N.R. = Not required

* A one-inch wide specimen was tested

**Table 9. AS RECEIVED PROPERTIES: 60 MIL EPICHLOROHYDRIN (EPI-CO)**

| PROPERTY | NSF RESULTS | MANUF. RESULTS | STANDARD 54 SPEC |
|---|---|---|---|
| THICKNESS (inches) | .0587 | .062 | minimum .054 |
| SPECIFIC GRAVITY | 1.51 | 1.515 | 1.49 ± .06 |
| DIMENSIONAL STABILITY (percent) | | | |
| Machine | -.10 | --- | maximum 2 |
| Transverse | -.10 | --- | maximum 2 |
| VOLATILE LOSS (percent) | 0.014 | --- | N.R.[1] |
| HARDNESS Durometer A | 73 | 73 | 70± 8 |
| TENSILE PROPERTIES BREAKING FACTOR (pounds/inch width) | | | |
| Machine | 96.4 | 120.96 | minimum 90 |
| Transverse | 104.7 | --- | minimum 90 |
| ELONGATION AT BREAK (percent) | | | |
| Machine | 302.0 | 340.0 | minimum 210 |
| Transverse | 312.3 | --- | minimum 210 |
| TEAR RESISTANCE (pounds) | | | |
| Machine | 13.0 | 16.0 | minimum 8 |
| Transverse | 14.1 | --- | minimum 8 |

[1] N.R. = Not required

**Table 10. AS RECEIVED PROPERTIES: 30 MIL HIGH DENSITY POLYETHYLENE (HDPE)**

| PROPERTY | NSF RESULTS | MANUF. RESULTS | STANDARD 54 SPEC |
|---|---|---|---|
| THICKNESS (inches) | .0295 | --- | minimum .030 |
| SPECIFIC GRAVITY | .9507 | --- | minimum .940 |
| DIMENSIONAL STABILITY (percent) | | | |
| Machine | +1.12 | --- | maximum ± 3 |
| Transverse | -1.63 | --- | |
| VOLATILE LOSS (percent) | -0.18 | --- | N.R.[1] |
| TENSILE PROPERTIES BREAKING FACTOR (pounds/inch width) | | | |
| Machine | 153.1 | --- | minimum 90 |
| Transverse | 162.7 | --- | --- |
| ELONGATION AT BREAK (percent) | | | |
| Machine | 647.3 | 750[2] | minimum 500 |
| Transverse | 663.2 | --- | --- |
| YIELD STRESS (pounds/inch width) | | | |
| Machine | 84.0 | --- | minimum 50 |
| Transverse | 92.5 | --- | --- |
| ELONGATION AT YIELD (percent) | | | |
| Machine | 9.5 | 13[2] | minimum 10 |
| Transverse | 8.4 | --- | --- |
| MODULUS OF ELASTICITY (pounds per square inch) | | | |
| Machine | 64,000 | 110,000[2] | minimum 80,000 |
| Transverse | 65,000 | --- | --- |
| TEAR RESISTANCE (pounds) | | | |
| Machine | 26.2 | --- | --- |
| Transverse | 27.1 | --- | --- |

[1] N.R. = Not required

[2] The manufacturer was unable to give as received properties. These values were given by the manufacturer as typical for this material. It is unknown whether this data is for the machine or transverse direction.

**Table 11. AS RECEIVED PROPERTIES: 30 MIL CHLOROSULFONATED POLYETHYLENE (CSPE-LW)**

| PROPERTY | NSF RESULTS | MANUF. RESULTS[2] | STANDARD 54 SPEC[1] |
|---|---|---|---|
| THICKNESS (inches) | .0306 | --- | --- |
| SPECIFIC GRAVITY | --- | --- | --- |
| DIMENSIONAL STABILITY (percent) | | | |
| Machine | --- | --- | --- |
| Transverse | --- | --- | --- |
| VOLATILE LOSS (percent) | --- | --- | --- |
| HARDNESS Durometer A | --- | --- | --- |
| TENSILE PROPERTIES BREAKING FACTOR (pounds/inch width) | | | |
| Machine | 49.0 | --- | --- |
| Transverse | 40.0 | --- | --- |
| ELONGATION AT BREAK (percent) | | | |
| Machine | 211 | --- | --- |
| Transverse | 304 | --- | --- |
| TEAR RESISTANCE (pounds) | | | |
| Machine | 12.7 | --- | --- |
| Transverse | 10.2 | --- | --- |

1 There are no NSF Standard 54 Specifications for unsupported material (without scrim).

2 Manufacturer did not provide as received properties.

While a slight difference in method may have caused the consistently lower values, NSF's tear resistance results in general are very consistent, and within reasonable error bounds.

The second property which differed was S-100 modulus. A measure of the tensile stress at 100 percent elongation, this property depends on the accuracy of both load and elongation measurements. NSF's value for S-100 was higher than the manufacturer's for both CPE and PVC. Conversations with the manufacturers indicated that one cause may have been a difference in the initial strain rate when testing. Again, S-100 modulus results at NSF are consistent and within reasonable error bounds.

This consistency means that when significant differences do occur in testing results for chemical exposures, the relative change will be a real indication of a change in the material, even though the absolute values may be slightly different from the manufacturer's data. The relative change is a principal criteria for evaluation of data.

## SELECTION OF IMMERSION CHEMICALS

### Criteria for Selection of Chemicals

Twenty chemical immersion solutions using nine chemicals and water were used for FML chemical resistance testing. The goal in selecting the chemical types was to have a broad range of chemicals that may be found in hazardous waste streams. A 'typical' waste is impossible to identify or produce. A project goal was to study the liner response to chemical challenge and relate that to other published data, therefore solutions of one chemical in water were chosen as opposed to chemical mixtures. Manufacturer and published data for single chemicals are available.

Types of chemicals such as acid, base, salt, ketone, and aldehyde, were considered. The final selection of chemicals was chosen using advisory committee comments, and attempted to parallel the study of FML seams being

done by the USBR (EPA Interagency Agreement No. DW 14930547-01-2). Chemicals and concentrations were also selected to assure a broad range of material response to immersion. The broad range of material response (e.g., change in property) would assure that responses indicative of chemically resistant and non-resistant behavior were measured in the study.

## Seven Day Screening

The chemicals and concentrations used for seven-day screening tests are listed in Table 12.

**Table 12. INITIAL SCREENING CHEMICALS AND CONCENTRATIONS**

| Chemicals | Concentration (wt %) |
|---|---|
| Water | distilled |
| Furfural | 1, 5, saturated (app 8.3), 100 |
| Phenol | 1, 5, saturated (app 8.3), 100 |
| MEK | 1, 10, saturated (app 26), 99 |
| 1,2-Dichloroethane | 0.1, 0.5, saturated (app 0.8), 100 |
| ASTM #2 oil | saturated (<.1), 100% |

The purpose of the screening tests was to choose the maximum concentrations of organic chemicals to use in further testing. A concentration that produced a measurable change in the samples during a seven-day exposure without destroying them was sought.

The samples were weighed and dimensioned before exposure, immediately after seven days exposure, and again after seven days air drying. These results are presented in Appendix B.

The data show the percent change in weight and volume for increasing concentration of chemicals up to the saturation point. The exception is for ASTM #2 oil, which shows only the saturation and 100% concentration. Volume was computed from thickness, width and length measurements.

## Chemicals Selected

The chemicals used for immersion testing, including water, are shown in Table 13. The concentrations used were chosen based on seven-day screening tests results, predicted ease of handling, and comparability to USBR immersion chemicals.

**Table 13. CHEMICAL IMMERSION SOLUTIONS SELECTED FOR FML IMMERSION TESTS#**

| Name | Formula | Type | Concentrations (percent wt:wt) |
|---|---|---|---|
| Water | $H_2O$ | Control | 100 |
| Hydrochloric Acid | HCl | Acid | 10 |
| Sodium Hydroxide | NaOH | Base | 10 |
| Sodium Chloride | NaCl | Salt | 10, sat'd (app 35) |
| Potassium Dichromate | $K_2Cr_2O_7$ | Oxidizer | 10 |
| Phenol | $C_6H_5OH$ | Phenol | 1,4, sat'd (app 8) |
| Furfural | $C_4H_3OCHO$ | Aldehyde | 1,4, sat'd (app 8) |
| Methyl Ethyl Ketone | $CH_3COC_2H_5$ | Ketone | 3,13, sat'd (app 26) |
| 1,2-Dichloroethane | $Cl(CH_2)_2Cl$ | Chlorinated-Hydrocarbon | 0.1, 0.5, sat'd (app 0.8) |
| ASTM #2 Oil | -- | Oil | 100%, Sat'd (water with oil stirred in) |

# All chemicals were technical grade quality or better per ASTM D543 (9).

* An 8% solution of methyl ethyl ketone was used in place of the sat'd solution for CPE testing (see Section 8).

FML samples for seven-day screening tests consisted of three one-inch by five-inch coupons. Coupons were measured and weighed according to procedure FML-1 (see Appendix C) and hung in the immersion solutions. The immersion was conducted at room temperature (23° ± 2°C). After immersion, the samples were blotted on paper towels to remove adhering liquid and put into a labeled polyethylene bag. The samples were reweighed and measured the same day and then air-dried by hanging in open jars for seven days. The dried samples were then weighed and measured once more.

In water solutions of furfural at or less than saturation, all materials gained weight (1 to 25%). Some of this weight gain disappeared after seven days of air drying. Samples exposed to pure furfural gained up to 80% in weight. No materials were destroyed by furfural.

In solutions of 1,2-dichloroethane up to the saturation limit, the samples gained from 1 to 25% in weight. These weight gains were reversible, as the materials returned to within 5% of their original weight after the seven-day air drying. In pure 1,2-dichloroethane, three materials swelled severely: CSPE increased 124% in weight, PVC increased 464%, and CPE could not be measured because it came apart into many soft pieces. All five of the materials showed shrinkage and weight loss after seven days of air drying.

In solutions of MEK at or below saturation, all materials gained weight, up to 200%. Again, the weight gain was reversible - all samples but one returned to within 1% of their original weight after air drying. In 99% MEK, HDPE showed a slight weight gain, EPDM lost weight and became smaller and stiffer, and CSPE gained weight during immersion but after drying showed a weight loss. Both CPE and PVC showed severe swelling and loss of strength. No measurements were possible on these two materials.

In phenol in water up to the saturation limit, all materials gained weight, none more than 27%. Some of this gain disappeared during drying. One material, PVC, shrank slightly and lost weight when exposed to phenol-saturated water. For phenol at approximately 88% concentration, two materials

lost weight and two gained. One showed no change. Maximum weight change was 43%, and no materials were destroyed.

In ASTM #2 oil-saturated water, the maximum weight change was under 3%. In pure #2 oil, only EPDM showed a significant change in weight. It gained 40% in weight during the seven-day immersion.

A comparison of results for samples immediately after immersion and after a seven-day drying period are also interesting. Some materials weigh less than their original weight after drying, indicating membrane material loss. The material lost is probably additives, but could possibly be polymer degradation. For most samples showing weight loss after seven days of drying, there has been a relatively large volume increase (swelling) during immersion. The swelling could make additive dissolution easier. Swelling may also indicate crosslink bond-breaking.

The three concentrations of organic solvents selected were the saturation limit in water as a maximum, 50 percent of that saturation limit, and a lower concentration of 10 to 15 percent of the maximum which was easy to maintain and measure. The absolute concentration of the immersion solution was not as critical to evaluation of the data as was the demonstrable difference of response of the material to immersion in the different concentrations.

A brine solution of sodium chloride was used at 10 and 35 percent by weight. Hydrochloric acid, sodium hydroxide, and potassium dichromate solutions were all 10 percent by weight. All chemicals used were technical grade quality or better per ASTM D543(9). Brief descriptions of the chemicals used follow.

- **Water**--Both the water for water immersion tests and the water used for the organic chemical solutions were lightly buffered in order to provide pH control and ionic strength. Sodium bicarbonate and calcium chloride were used to a level of 100 mg/L hardness as $CaCO_3$ and to provide a pH of 8.3 $\pm$ 0.5.

- **Furfural**--Furfural is an aldehyde derived from oat hulls, rice hulls, or corn cobs by steam-acid digestion. It has a sweetish odor and is an amber or straw-colored liquid at room temperature. Some uses are: solvent refining of lubricating oils and other organic materials; solvent for nitro-cellulose; wetting agent; weed killer; production of lysine; road construction; flavoring (20).

- **Hydrochloric acid**--Hydrochloric acid is a strong, highly corrosive acid. It is commonly used in oil well acidification, chemical synthesis, ore reduction, food processing, and pickling and metal cleaning (20).

- **Sodium Hydroxide**--Sodium hydroxide is an important commercial caustic. Some uses are: manufacturing of other chemicals; oil refining; aluminum processing; pulp and paper; soap; textile processing; reclaiming rubber (20).

- **Potassium Dichromate**--Potassium dichromate is a poisonous, bright orange salt, and is used as an oxidizing agent in chemical synthesis. It is also used in brass pickling, electroplating, explosives, adhesives, wood stains, photography and lithography, and pigments (20).

- **Sodium Chloride**--Sodium chloride is the most common salt. Used widely in chemical manufacturing, metallurgy, refrigeration, glass, food preservation, soap production, and for ice control on streets and runways (20).

- **ASTM No.2 Oil**--This is a petroleum based thick oil with an aniline point of 93 $\pm$ 3°C. This oil is used as a reference oil to evaluate the chemical resistance of rubbers per ASTM Method D471 (21).

- **Methyl Ethyl Ketone**--MEK is a colorless, volatile, flammable ketone. Some of the many uses are: organic chemical synthesis; lacquers; dewaxing of lubricating oils; paint removers; adhesives; and printing (20).

- **Phenol**--Phenol is one of the most important organic chemicals. Phenol is a solid at room temperature, and is colorless when very pure, but turns pinkish with impurity on exposure to light. Phenol is used to make phenolic resins, epoxy resins, herbicides, adipic acid, salicylic acid, picric acid, germicidal paints, and many pharmaceuticals (20).

- **1,2-Dichloroethane**--1,2-Dichloroethane is also known as ethylene dichloride. It is a colorless, oily liquid with a chloroform-like odor and is used as a solvent for fats, oils, waxes, rubber, and gums. Other uses are: oil extraction; dry cleaning; paint and varnish removers; metal degreasing; wetting agents; organic synthesis (20).

## TEST EQUIPMENT

### Immersion Jars

Immersion of FML sample coupons in chemical solutions was done in glass jars. Glass was chosen because of its resistance to the wide range of chemicals being tested, transparency (to allow inspection of sample condition), and low cost.

For long-term immersions, one quart canning jars were used. A screw on cap lined with polyethylene was used to control evaporative loss from the jars.

For shorter immersions (up to 56 days), two gallon apothecary jars were used. Apothecary jars were sealed with rope caulking between the glass lid and the jar. Jars containing solutions of volatile chemicals were also taped with a stretchable heat and moisture-resistant transparent tape to reduce evaporative loss. A picture of one quart and two gallon immersion jars is shown in Figure 3.

**Figure 3. One quart and two gallon immersion jars**

For the shorter immersions, a total of 1600 two gallon immersions were carried out corresponding to 20 combinations of chemical concentrations, two temperatures, six exposure periods, six materials, plus triplicates for two materials at one temperature (the testing was staggered so that 1600 jars were not needed). For each of the 1600 immersions, five tensile specimens and five tear specimens each in the machine and transverse directions were generated. Tensile properties and tear resistance are reported as means of five specimens.

The long-term immersion consisted of 240 quart jars (six materials, two temperatures, and 20 combinations of chemical concentrations). In each jar, there were three 1" x 3" specimens cut in the machine direction. From these specimens weight and dimension changes were measured over a two year period. Tensile properties were measured from the 1" x 3" coupons at the end of two years. Weight, dimension data, and the final tensile properties from the long-term immersion are reported as means of three specimens.

The FML materials were suspended in solution with teflon "spaghetti" tubing (0.016 inch diameter). Holes were punched in the top of the liner, the tubing threaded through the holes and taped on the outside of the jars. The tubing did not interfere with closing the lids on the jars.

Long-term immersion coupons were measured in triplicate for weight and dimension changes at four-month intervals and replaced in solution. To maintain coupon identity, each of the three triplicates was marked by clipping 1) two corners, 2) one corner, and 3) no corner of the coupon.

**Weight and Dimension Tools**

A Mettler A30 balance was used for weighing the 1" x 3" sample coupons. Weight was recorded to within 0.0001 gram.

A Federal 691B deadweight dial micrometer was used to measure thickness. The micrometer was modified to provide a 2" diameter anvil and a seven ounce weight was used to give a pressure of 3.8 psi. This method modification increases accuracy for materials softened by immersion. Thickness was measured to 0.0001 inch (0.1 mil).

Standard dial calipers were used to measure the width and length of the test coupons to the nearest 0.001 inch (1 mil).

## Die Punch

A pneumatic punch press (NAEF Model P/44) was selected for cutting FML test specimens. This punch uses precision dies specified in ASTM test methods (18). Dies included a 1"x 4", 1"x 6", and 1"x 3" straight edge, an ASTM D638 type IV dumbell, a D412 dumbell, and a D624 tear. Dies were sharpened by the die manufacturer as needed.

## Test Chambers

Immersion jars were stored in one of two ventilated test chambers for the specified immersion periods. The chambers are insulated walk-in units with steel wire shelving for the immersion jars. Liquid temperature was maintained at 23 $\pm$ 2° and 50 $\pm$ 2° C in the two chambers.

Liquid temperature was monitored daily by recording the temperature of water in jars placed on the top and bottom shelves in each chamber.

## Universal Test Machine

Mechanical properties were measured using a Unite-O-Matic 20,000 pound frame universal tester made by United Testing Systems. Load cells of 100 and 1000 pounds capacity provided the correct range of force measurement for FML testing. Elongation was measured by grip separation, using a crosshead motion detector.

Load and elongation data were collected with the Data-Matic data acquisition and reporting computer. Load data precision was 0.0125 percent of full scale (for example, .125 lb for a 1000 lb cell) and load cell accuracy was within 0.1 percent of full scale. Elongation precision was 0.01 inch.

Air-actuated grips were used to hold test specimens for tear and tensile testing. Air-actuated grips were chosen because they apply a constant and uniform pressure during the test, minimizing the potential for specimens to

slip. Also, the applied pressure can be controlled and reproduced from sample to sample.

Smooth, hard rubber was used on one grip face, with smooth metal on the other. Both a one-inch square grip face and a one by three inch grip face were used.

**Data Handling**

The sample coding system is shown in Figure 4. Each sample was assigned a seven-part sample number that identified both the material and the chemical exposure conditions. For example, 'PL280P2' represents PVC ('P') tested after exposure at 23°C ('L') for 28 days in 100% ASTM No. 2 Oil ('0'), at 100 percent concentration ('P'). This sample is the second of three replicates ('2'). Test data taken in the machine direction is identified as '[property]M', for example 'Tear Resistance M', and that in the transverse direction as 'T'. The weight and dimension data corresponding to a sample number represents the average of three specimens while tensile properties and tear resistance data are averages of 5 specimens.

Project data was stored in a database using the DATATRIEVE data sorting and reporting software on NSF's VAX 11-750 computer. The sample code number allowed data to be sorted by any parameter (for example, temperature) and reported or graphed. Test scheduling and sample tracking and labeling were also assisted by using the computer database.

**Figure 4. Sample Coding System**

1 - 2 - 3 - 4 - 5 - 6

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 = Material | C | = | CPE | P | = | PVC |
| | E | = | EPDM | L | = | EPI-CO |
| | Q | = | CSPE-LW | H | = | HDPE |
| 2 = Temperature | L | = | 23° C | H | = | 50° C |
| 3 = Time | 1 | = | 1 Day | 28 | = | 28 Days |
| | 7 | = | 7 Days | 56 | = | 56 Days |
| | 14 | = | 14 Days | 99 | = | 2 Years |
| 4 = Chemical | A | = | Hydrochloric Acid | | | |
| | B | = | Sodium Hydroxide | | | |
| | D | = | 1,2 Dichloroethan | | | |
| | F | = | Furfural | | | |
| | M | = | Methyl Ethyl Ketone | | | |
| | O | = | ASTM #2 Oil | | | |
| | P | = | Phenol | | | |
| | S | = | Sodium chloride | | | |
| | W | = | Buffered Water | | | |
| | X | = | Potassium Dichromate | | | |
| 5 = Concentration | L | = | Low | | | |
| | M | = | Medium | | | |
| | H | = | High | | | |
| | P | = | Pure | | | |

Note: For chemicals with only one concentration "M" was used.

6 = Replication*

* For samples in the two-year immersion study, replication refers to the testing period. For instance, "0" would mean an initial measurement, "1" refers to a measurement after the first month of immersion, "2" would refer to 4 months of immersion. For numbers greater than "2", the replication number would reflect four month intervals, A "3" would represent 8 months, etc. For EPDM and PVC in the short-term study, replication number refers to the triplicate samples.

## Data Evaluation

The goal in data evaluation was to measure the response of a given FML material to a chemical challenge as a function of time, temperature, and concentration, and to evaluate the significance of this response in terms of liner chemical resistance. The tools used in making this evaluation were:

- comparison of data to previous work (manufacturers' resistance tables, EPA projects, literature)

- comparison of data to 'benchmarks' to measure extent of change (tests of unexposed liner samples and liner samples exposed to water, Standard 54 tables of minimum acceptable as-received properties)

- comparison of data to predictions from theory (solubility parameters)

- statistical analysis of data to determine statistical significance of changes, trends and stabilization.

As the liner material was cut from the roll to be divided up into test samples, it was put into a box labeled with the material code. All pieces cut from the roll were marked with the grain direction (machine or transverse) as they were cut.

The sample tracking system is shown in Figure 6. A sample number was assigned to a group of specimens (one sample) as the initial weight and dimension measurements were taken. Two adhesive labels (preprinted with the sample number and necessary tracking information) became part of the 'sample kit' along with the data sheet. When the sample was immersed in a chemical solution ('on test'), the first label was put onto the exposure jar, showing the date in and the scheduled date out. The immersion date for the sample was then logged into the computed database. When the sample was removed from the exposure solution ('off exposure'), it was put into a sealable polyethylene bag until testing was completed. The second preprinted label was put onto this bag, showing the date removed from solution.

Remains of tested sample were kept in these labeled bags and stored until all the samples for that chemical type had been completed. Weight and dimension results were combined with mechanical test reports and entered into the computer database. The database provided the sample masterlog. When the entire sample group (one chemical exposure for all FMLs) had been tested, the data was edited to correct any errors in computer entries.

**SAMPLE PREPARATION**

Samples of each FML were cut for chemical immersion. The two-year immersion samples (three one-inch by three-inch coupons) were cut with the long side parallel to the machine direction. The shorter-term samples, for mechanical property testing, consisted of three coupons: two were approximately eight by eight and one-half inches in size, and the third was the same as the two-year samples. This small coupon was used as the indicator for weight and dimensional changes; and the larger coupons were used to cut specimens for mechanical property changes after immersions of up to 56 days.

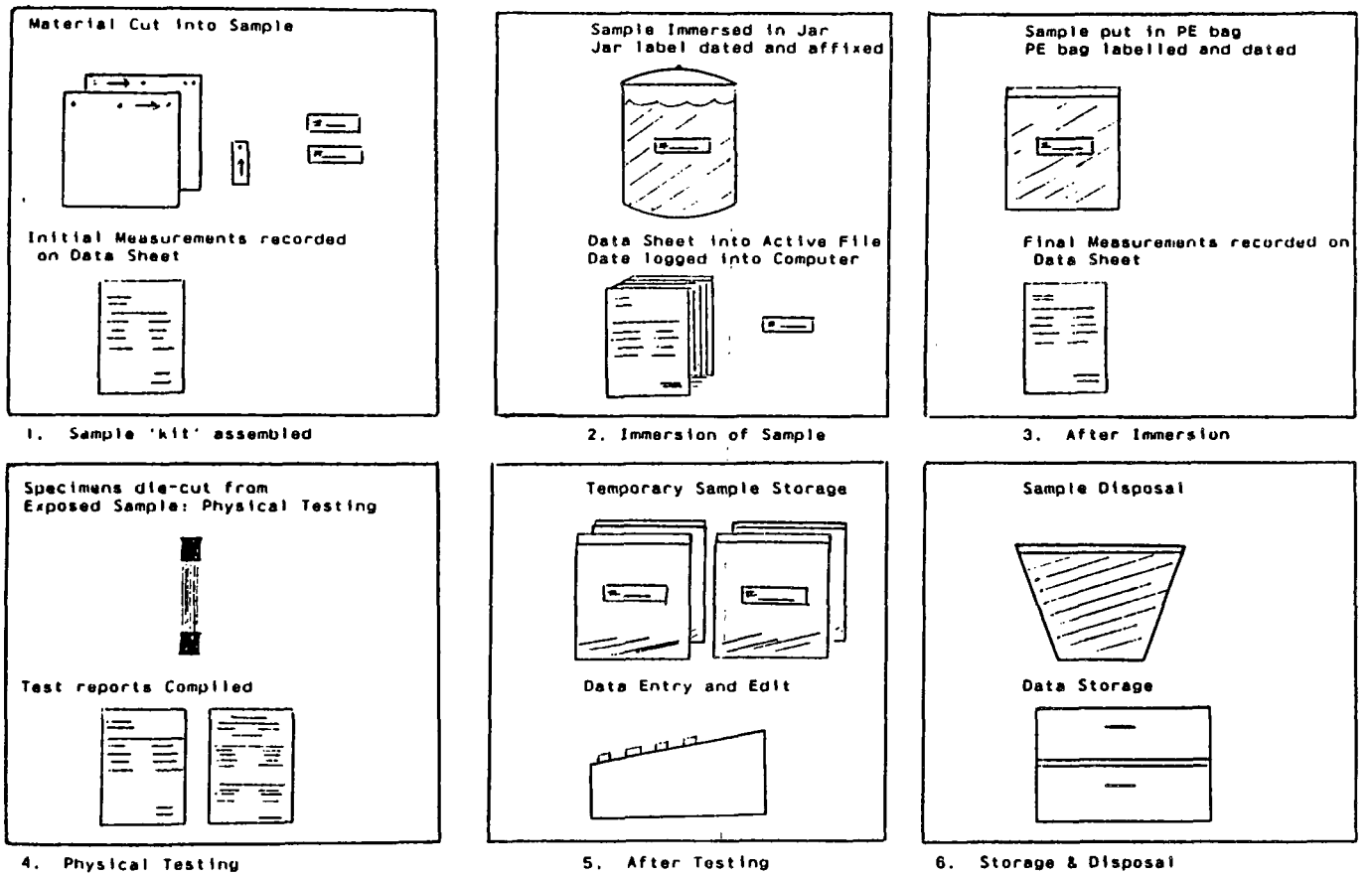



**Figure 6. Sample tracking system**

All of the small die-cut specimens were weighed and measured for thickness, width, and length prior to immersion according to NSF procedure FML-1 (Appendix C). Small holes were punched in the top of the small specimen, and corner holes were punched into the large coupons.

**IMMERSION PROCEDURE**

Quart mason jars were used for the two-year immersion samples, and two-gallon glass apothecary jars were used for the larger samples (shorter term samples).

All immersions were conducted with a liner surface-to-volume ratio of approximately 40 milliliters per square inch of liner surface area. The surface to volume ratio was specified for consistency and to assure that the amount of solvent present in solution would not be limiting (e.g., concentration would remain relatively constant). Immersions were incubated at two temperatures, 23° and 50°C. Chemical solutions were mixed in the immersion jars. Solution preparation was done on the same day as immersion for volatile solutions, and on the same day or the day before for non-volatile solutions.

Teflon cord (0.016 inch) was threaded through the holes and the samples were lowered into the immersion jars.

Rope caulk was put around the edges of the apothecary jar lip before the glass lid was put on to help seal the jar. Jars of volatile solutions were also taped with heat- and moisture-resistant adhesive tape to reduce evaporative loss.

Immersion jars were placed in controlled temperature chambers. Jars were set on open wire shelving to allow air circulation for temperature control. The temperature of jars of water in the chambers placed on top and bottom shelves were measured twice daily (± 2°C tolerance each).

After the specified length of immersion time, sample jars were removed from the incubation chambers and samples removed. Low temperature samples were removed from the solutions, blotted, and cleaned with soap and water and/or rinsed, if necessary (e.g., oily exposures, acid and basic solutions), and placed in plastic bags. High temperature samples were reimmersed in a 23°C solution of the same composition for at least one hour before bagging per ASTM D543 (18). The small coupons were weighed and dimensioned. Two-year immersion coupons were then returned to a fresh solution of chemical for continued exposure.

Tear resistance and tensile property specimens were cut from the larger of the short-term samples. Five of each type were cut in both the machine direction and the transverse direction. Figure 7 shows a typical cutting pattern for an elastomeric FML sample. Thermoplastic FML samples were cut similarly, except instead of the 'dogbone' tensile bars, straight one-inch by four-inch tensile bars were cut. The tensile properties; S-100 modulus, breaking factor, elongation at break, and tear resistance tests were performed on the samples. ASTM methods appropriate to the type of liner material were used, specifying specimen shapes and test conditions. Table 14 lists the physical properties tests performed on exposed liner materials.

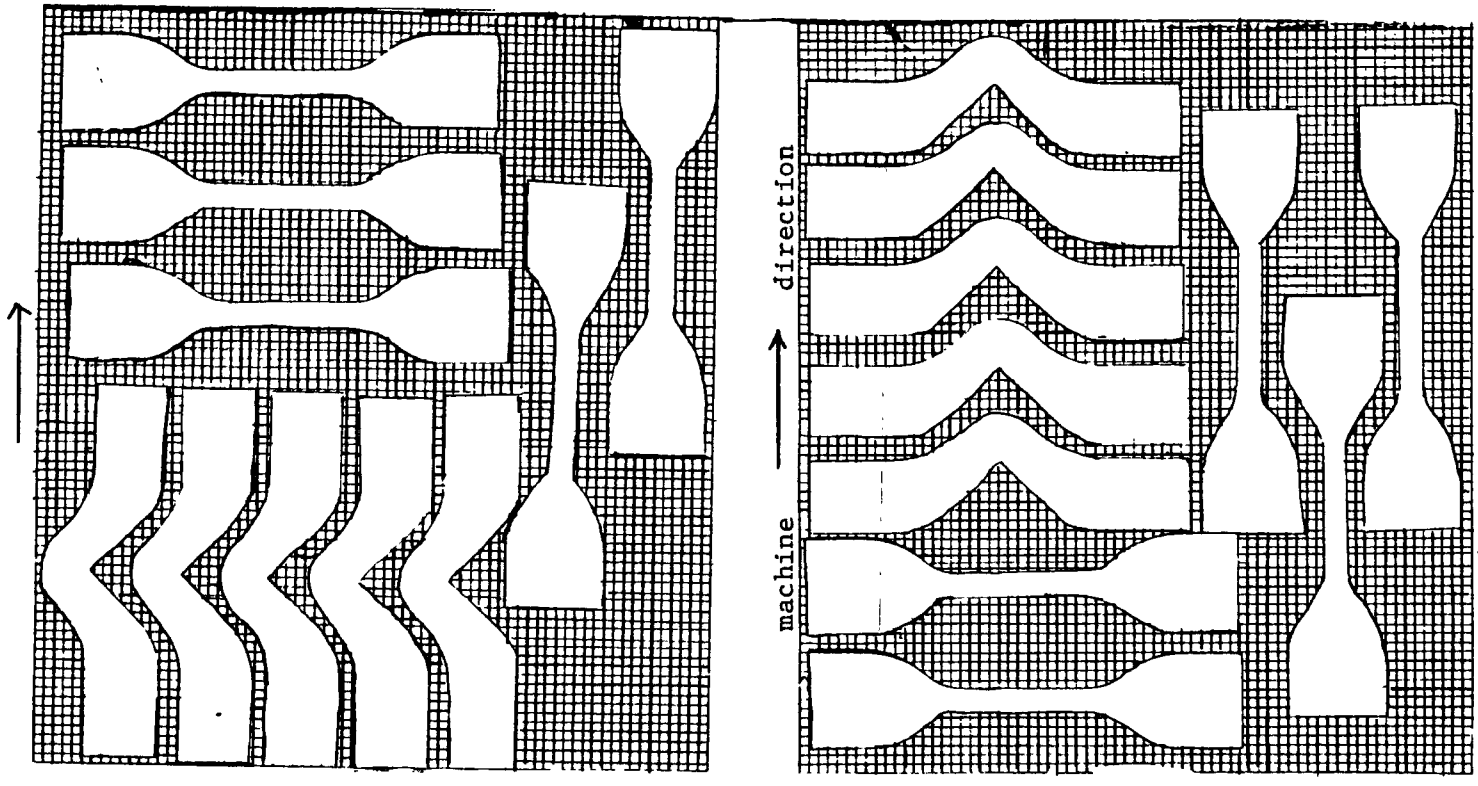



**Figure 7. Pattern for typical immersion sample die cutting**

**Table 14. PHYSICAL PROPERTIES TESTS FOR IMMERSION SAMPLES**

| LINER TYPES | TESTS REQUIRED | NO. SPECIMENS | METHODS |
|---|---|---|---|
| Elastomers | Breaking Factor (lb/inch width) | 10* | ASTM D412 die C |
| | Elongation at Break (inch) | | |
| | Tear Resistance (lb) | 10* | ASTM D624 die C |
| | Weight and Dimension | 3 | NSF method FML-1 |
| Partially Crystalline | Breaking Factor (lb/inch width) | 10* | ASTM D638 type IV |
| | Yield Strength (lb/inch width) | | |
| | Elongation at Break (inch) | | |
| | Elongation at Yield (inch) | | |
| | Modulus of Elasticity (psi) | | |
| | Tear Resistance (lb) | 10* | ASTM D1004 die C |
| | Weight and Dimension | 3 | NSF method FML-1 |
| Thermoplastic | Breaking Factor (lb/inch width) | 10* | ASTM D882 die 1" x 4" |
| | Elongation at Break (inch) | | |
| | S-100 Modulus (lb/inch width) | | |
| | Tear Resistance (lb) | 10* | ASTM D624 die C |
| | Weight and Dimension | 3 | NSF method FML-1 |

* Five each in the machine and transverse direction of cut

## SECTION 6

## QUALITY CONTROL

### MEASUREMENT OBJECTIVES

Quality assurance objectives for precision, accuracy, and completeness for the physical properties testing parameters required for this project are given in Table 15. The load cells used in these measurements are accurate to within one tenth of one percent of the load cell capacity.

Round-robin testing conducted with the United States Bureau of Reclamation (USBR) and with the manufacturers supplying the liner materials were used to gauge accuracy of NSF's physical properties measurement, and interlab reproducibility of the methods.

Completeness refers to NSF objectives in number of tests carried to completion of all those begun. Reasons for inability to complete tests were documented and every attempt made to retest. The completeness target for the project was 95%. For physical properties testing after chemical exposure, if a sample was degraded to the degree that testing was impossible, the test will still be considered completed.

A system of replication was used for physical properties testing to determine experimental precision and material varability. Three separate samples of PVC and EPDM were exposed and tested for the conditions shown in Table 16.

Representativeness of portions of liner material used for immersion testing was established by visual inspection before and after cutting

TABLE 15. QUALITY CONTROL OBJECTIVES FOR PHYSICAL PROPERTIES TESTS

| TEST DESCRIPTION | REFERENCE | ACCURACY | PRECISION | COMPLETENESS |
|---|---|---|---|---|
| Tensile Properties | ASTM D638<br>ASTM D882<br>ASTM D4 | (a) | ± 10% | 95% |
| Tear Resistance | ASTM D624<br>ASTM D1004 | (a) | ± 10% | 95% |
| Thickness | ASTM D374 | 1 mil | 0.7 mil | 95% |
| Weight | NSF Std. 54 | 1 mg. | 0.9 mg. | 95% |
| Dimension | NSF Std. 54 | 6 mil | 6 mil | 95% |

(a) Load cells are accurate to 0.1% of capacity (e.g., 1 pound for a 1,000 pound load cell)

immersion speciments. Before cutting, the area to be cut was inspected to assure that there were no apparent material distortions or anomalies not representative of the entire material. After cutting, the specimen was inspected to assure that the cutting did not produce distortions or anomolies which are not representative of the entire material. Test results were used to compare the properties of liner materials before and after exposure to the simulated chemical wastes, and are expressed as percent change. Direct comparison of property changes between liners of different polymers is not valid.

**TABLE 16. REPLICATION SYSTEM FOR PHYSICAL PROPERTIES TESTS**

| IMMERSION PARAMETER | TEST CONDITIONS | REPLICATION CONDITIONS |
|---|---|---|
| Temperature | 23,50 Centigrade | 23 Centigrade |
| Chemical Exposures | 20 | 20 |
| Length of Exposure | 1,7,14,28,56 days | 1,7,14,28,56 days |
| Number of Materials | 6 | 2 |

**WEIGHT AND DIMENSION**

Calipers and balances were calibrated one time per day with premeasured blocks and weights traceable to the National Bureau of Standards. The primary source of variability in weight and dimension testing was measurement technique.

Technician training was conducted at the beginning of the project to assure consistency in measurement technique. Three technicians were asked to weigh and measure the same five coupons of five FML materials. Means and standard deviations for each technician are shown in Table 17. A two-way analysis of variance (ANOVA) was performed on each data set to determine if there were statistical differences between the mean result for each technician and whether there were statistical differences within the five coupons. A data set consisted of data from all three technicians for one FML material and one of the measurements -- weight or a dimension. The calculated F-values were compared to the tabulated F-values corresponding to 95 percent confidence and the appropriate degrees of freedom.

The coupons proved to be statistically the same for all materials and measurements. There were several areas where the three technician mean results were not statistically the same. These were the width, thickness and weight for EPI-CO and EPDM; the width and thickness for HDPE, and the width for CPE.

TABLE 17. MEANS AND STANDARD DEVIATIONS FOR EACH TECHNICIAN

| Technician | Weight Mean (grams) | Weight Standard deviation | Thickness Mean (mil) | Thickness Standard deviation | Width Mean (inch) | Width Standard deviation | Length Mean (inch) | Length Standard deviation |
|---|---|---|---|---|---|---|---|---|
| HDPE | | | | | | | | |
| 2020 | 1.5619 | 0.00021 | 34.7 | 0.11 | 0.999 | 0.0005 | 3.002 | 0.0008 |
| 2080 | 1.5615 | 0.00017 | 34.1 | 0.08 | 1.000 | 0.0005 | 3.002 | 0.0005 |
| 2418 | 1.5616 | 0.00004 | 33.8 | 0.04 | 0.998 | 0.0012 | 3.002 | 0.0009 |
| Overall | 1.5617 | 0.00021 | 34.2 | 0.37 | 0.999 | 0.0011 | 3.002 | 0.0008 |
| PVC | | | | | | | | |
| 2020 | 1.9034 | 0.00011 | 31.3 | 0.05 | 0.997 | 0.0008 | 2.996 | 0.0004 |
| 2080 | 1.9035 | 0.00028 | 31.3 | 0.08 | 0.997 | 0.0005 | 2.998 | 0.0023 |
| 2418 | 1.9035 | 0.00004 | 31.3 | 0.05 | 0.996 | 0.0030 | 2.997 | 0.0027 |
| Overall | 1.9035 | 0.00017 | 31.3 | 0.07 | 0.997 | 0.0018 | 2.997 | 0.0021 |
| CPE | | | | | | | | |
| 2020 | 2.0453 | 0.00040 | 31.3 | 0.09 | 1.000 | 0.0011 | 3.002 | 0.0032 |
| 2080 | 2.0450 | 0.00019 | 31.3 | 0.04 | 1.001 | 0.0007 | 3.003 | 0.0007 |
| 2418 | 2.0454 | 0.00013 | 31.3 | 0.00 | 0.998 | 0.0011 | 3.003 | 0.0000 |
| Overall | 2.0452 | 0.00030 | 31.3 | 0.06 | 1.000 | 0.0017 | 3.003 | 0.0018 |
| EPI-CO | | | | | | | | |
| 2020 | 4.5781 | 0.00007 | 63.6 | 0.00 | 0.996 | 0.0008 | 2.995 | 0.0017 |
| 2080 | 4.5774 | 0.00019 | 63.6 | 0.05 | 0.993 | 0.0008 | 2.996 | 0.0011 |
| 2418 | 4.5775 | 0.00008 | 63.7 | 0.00 | 0.992 | 0.0009 | 2.995 | 0.0019 |
| Overall | 4.5777 | 0.00034 | 63.6 | 0.05 | 0.994 | 0.0020 | 2.995 | 0.0016 |
| EPDM | | | | | | | | |
| 2020 | 2.2415 | 0.00008 | 38.7 | 0.04 | 0.996 | 0.0011 | 3.000 | 0.0018 |
| 2080 | 2.2416 | 0.00021 | 38.8 | 0.09 | 0.995 | 0.0008 | 3.001 | 0.0015 |
| 2418 | 2.2424 | 0.00007 | 39.0 | 0.04 | 0.992 | 0.0008 | 3.002 | 0.0018 |
| Overall | 2.2418 | 0.00044 | 38.8 | 0.13 | 0.994 | 0.0019 | 3.001 | 0.0019 |

To determine how important the statistical differences were, the root mean squared error (RMSE) was calculated and compared to the precision target values for this study (Table 15). The thickness of HDPE and the weight of EPDM both were greater than the precision requirements in Table 15 (see Table 18). A precision of 1.0 mil for HDPE thickness was achieved while the target precision was 0.7 mil. The weight measurement of EPDM had a precision of 1.1 mg with the target precision of 0.9 mg. This is as one would expect considering observable properties of these materials.

**TABLE 18. PRECISION OF TECHNICIANS**

| Material | Measurement | | | |
|---|---|---|---|---|
| | Weight (grams) | Thickness (mil) | Width (inch) | Length (inch) |
| HDPE | 0.0004 | 1.0 | 0.002 | 0.001 |
| PVC | 0.0001 | 0.1 | 0.001 | 0.002 |
| CPE | 0.0004 | <0.1 | 0.004 | 0.001 |
| EPI-CO | 0.0009 | 0.1 | 0.005 | 0.002 |
| EPDM | 0.0011 | 0.3 | 0.004 | 0.003 |
| Target | 0.0009 | 0.7 | 0.006 | 0.006 |

Because of the stiffness and curvature of HDPE, the thickness measurement is very technique-dependent. To measure thickness of HDPE using the dial micrometer, it is necessary to hold the sample flat on the anvil. The pressure applied to flatten the sample affects the measurement. Also, with HDPE, the sample has to be placed on the anvil with the cut side up to obtain consistent results. (This practice was routinely followed in this project.) With unimmersed material, the precision of 1.0 mil is as precise as can be achieved in a controlled evnironment using a dial micrometer.

Using calipers may give a more precise measure of HDPE thickness. When measuring thickness, two forces affect the technicians ability to measure accurately: indentation and curvature. Generally FMLs are soft enough that indentation is the primary problem in measuring thickness. The larger surfaced pressure foot of the dial micrometer is preferred over the smaller

surfaced calipers. A larger surface reduces the effect of indentation while a smaller surface reduces the effect of curvature. In the case of HDPE, a stiff material which is prone to taking the curved shape of the roll, smaller surface instruments like calipers may be required to reduce the effect of the curvature. However, this could result in reduced precision because of indentation. Precision of 1.0 mil for this HDPE is reasonable.

The weight of EPDM is dependent on the amount of handling the specimens receive. EPDM is covered with a powder and handling gradually removed this powder. In a situation where three people handle the same specimens, the first person would be measuring a heavier, more powdered specimen, while the last technician would be measuring a lighter, less powdered specimen.

To test this hypothesis, a small rectangle of EPDM was weighed, and then washed, dried and weighed again. The specimen lost 6.4 mg which is plenty to account for the 1.1 mg range between the technicians values. To further support this conclusion, the technician with the lowest weight value was the last to measure the coupons. Also, there was no trend or indication that the technician with the highest mean and furthest from the overall mean, technician #2418, was typically inaccurate in weight and dimension measurements of other materials.

**TENSILE PROPERTIES MEASUREMENT**

Calibration of tensile and tear test equipment included periodic dead load tests to assure accuracy of the load cells and annual calibration of the test system by the equipment manufacturer. Calibration records are on file at NSF.

Three tests were conducted to measure accuracy and precision tensile properties measurements for unimmersed material: 1) measurement of split samples between NSF and the manufacturer, 2) split sample testing between NSF and the U.S. Bureau of Reclamation, and 3) inhouse precision study on all materials. Summary results are presented in Tables 19, 20, and 21.

Table 19 compares tensile properties test results as measured by NSF and the manufacturer who supplied the material. Manufacturers were asked to test the material before submitting it to NSF but to hold the results until NSF completed testing. NSF's results were then submitted to the manufacturer prior to NSF seeing the manufacturers results. The agreement is good.

The agreement is equally good between NSF and the USBR, as shown in Table 20. For all interlaboratory data, there is no evidence of systematic error at NSF. For a given test, NSF results are both higher and lower than other laboratories.

Table 21 presents typical precision data for tensile properties tests for unimmersed material. The data presented are percent coefficients of variation (standard deviation X 100 ÷ mean) for tests conducted on liners prior to immersion. Coefficients of variations are based on five replications. The precision meets the goals set in Table 15.

**COMPLETENESS**

Table 22 presents data for completeness by test and material. The completeness goal of 95 percent was met with the exception of some HDPE tensile tests. The best measure of completeness for this project is the percent of weight measurements completed. Some tensile tests could not be completed after an immersion because the material was degraded too much for physical properties tests. Weight measurements were 100 percent complete for all materials and represent the number of planned immersions carried to completion.

Yield strength, elongation at yield, and modulus of elasticity for HDPE are not reported as 95 percent complete because not all data for these measurements were included in this report. Early project data for these three measurements for HDPE immersions in water and inorganic chemicals were obtained through interpretation of analog data. A test system upgrade allowed for digital output and computer aided interpretation. Although both procedures were accurate, the digital data interpretations were more reproducible and were the only ones included in the final data evaluations.

TABLE 19. COMPARISON OF NSF AND MANUFACTURER TENSILE PROPERTIES TEST RESULTS

| Test | Breaking[a] Factor (lbs/inch width) | S-100[a] Modulus (lbs/inch width) | Elongation[a] at Break (Percent) | Tear[a] Resistance (Pounds) |
|---|---|---|---|---|
| Material | | | | |
| CPE | | | | |
| NSF | 54.2 | 37.6 | 437 | 7.54 |
| Manufacturer | 56.9 | 29.9 | 346 | 8.49 |
| CSPE | | | | |
| NSF | 41.7 | NT[b] | 418 | 7.7 |
| Manufacturer | 48.4 | NT | 415 | 10.4 |
| EPDM | | | | |
| NSF | 63.4 | NT | 402 | 8.9 |
| Manufacturer | 51.0[c] | NT | 420[c] | 6.8 |
| EPI-CO | | | | |
| NSF | 96.4 | NT | 302 | 13.0 |
| Manufacturer | 121.0 | NT | 340 | 16.0 |
| HDPE | | | | |
| NSF | 153.1 | NT | 647 | 26.2 |
| Manufacturer | NT | NT | NT | NT |
| PVC | | | | |
| NSF | 88.3 | 50.8 | 450 | 10.6 |
| Manufacturer | 90.6 | 46.4 | 480 | 12.1 |

a. Only machine direction results reported

b. NT - Not tested

c. A one-inch-wide specimen was tested

**TABLE 20. COMPARISON OF NSF AND USBR TENSILE PROPERTIES TEST RESULTS[a]**

| Material | Breaking Factor (lbs/inch width) | S-100 Modulus (lbs/inch width) | Elongation at Break (Percent) | Tear Resistance (Pounds) | Modulus of Elasticity (lbs/sq. inch) |
|---|---|---|---|---|---|
| CPE | | | | | |
| NSF | 54.2 | 37.6 | 437 | 7.5 | NT[b] |
| USBR | 65.6 | 30.3 | 492 | 6.6 | NT |
| EPDM | | | | | |
| NSF | 63.4 | 4.1 | 402 | 8.9 | NT |
| USBR | 66.0 | NT | 443 | 8.2 | NT |
| HDPE | | | | | |
| NSF | 153.1 | NT | 647 | 26.2 | 64,090 |
| USBR | 148.8 | NT | 658 | 24.6 | 58,000 |
| PVC | | | | | |
| NSF | 88.3 | 50.8 | 450 | 10.7 | NT |
| USBR | 92.0 | 33.0 | 455 | 10.2 | NT |

a. Machine direction results only

b. NT - Not tested

**TABLE 21. PERCENT COEFFICIENT OF VARIATION OF TENSILE PROPERTIES TESTS FOR UNIMMERSED MATERIAL[a]**

| Material | Breaking Factor | Elongation at Break | S-100 Modulus | Tear Resistance | Yield Strength | Elongation at Yield | Modulus of Elasticity |
|---|---|---|---|---|---|---|---|
| CPE | | | | | | | |
| Machine | 1.1 | 2.4 | 2.5 | 1.2 | NT[b] | NT | NT |
| Transverse | 0.7 | 2.8 | 2.0 | 1.3 | NT | NT | NT |
| CSPE-LW | | | | | | | |
| Machine | 3.8 | 6.6 | 6.5 | 1.6 | NT | NT | NT |
| Transverse | 3.7 | 3.0 | 4.3 | 1.0 | NT | NT | NT |
| EPDM | | | | | | | |
| Machine | 6.7 | 2.4 | 7.4 | 2.7 | NT | NT | NT |
| Transverse | 2.4 | 4.0 | 3.8 | 1.3 | NT | NT | NT |
| EPI-CO | | | | | | | |
| Machine | 3.4 | 13.1 | 4.4 | 1.8 | NT | NT | NT |
| Transverse | 1.6 | 4.7 | 1.5 | 5.3 | NT | NT | NT |
| HDPE | | | | | | | |
| Machine | 5.6 | 4.3 | NT | NT | 6.4 | 10.4 | 3.0 |
| Transverse | 6.3 | 7.1 | NT | NT | 5.6 | 4.9 | 4.0 |
| PVC | | | | | | | |
| Machine | 2.5 | 3.8 | 1.0 | 1.5 | NT | NT | NT |
| Transverse | 1.9 | 3.3 | 1.7 | 2.2 | NT | NT | NT |

a. Five specimens were tested at NSF for each material and direction

b. NT - Not tested

**TABLE 22. PERCENT COMPLETENESS OF DATA**

| Material | CPE | CSPE | EPDM | EPI-CO | HDPE | PVC |
|---|---|---|---|---|---|---|
| Test | | | | | | |
| Weight | 100% | 100% | 100% | 100% | 100% | 100% |
| Dimension | 100% | 100% | 100% | 100% | 100% | 100% |
| Breaking Factor | 98% | 99% | 100% | 98% | 97% | 98% |
| Elongation at Break | 98% | 100% | 98% | 98% | 97% | 98% |
| S-100 Modulus | 98% | 99% | N/A | N/A | N/A | 98% |
| Tear Resistance | 99% | 99% | 100% | 99% | 100% | 100% |
| Yield Strength | N/A | N/A | N/A | N/A | 94% | N/A |
| Elongation at Yield | N/A | N/A | N/A | N/A | 94% | N/A |
| Modulus of Elasticity | N/A | N/A | N/A | N/A | 93% | N/A |

## CONTROL OF IMMERSION CHEMICAL CONCENTRATION

The primary data used for evaluation of resistance of a liner material to a chemical was the response of that liner to immersion. When testing a waste or leachate, the chemical(s) causing the response may be unknown. The FML response is of primary importance. Consequently, knowing the absolute concentration of a chemical at all times was not critical to the data interpretation.

The loss of chemical concentration from solution could occur by three pathways; evaporation, absorption into the liner, and chemical transformation. It was assumed that loss due to chemical transformation would be negligible because the chemicals used were not labile, and the only other substances present which could react with the immersion chemical were water and the liner.

Evaporation was controlled by sealing the two-gallon immersion jars (two-month immersions) with temperature- and water-resistant rope caulking and moisture-resistant tape. Saturated solutions of MEK and oil were maintained by keeping an excess layer of the solvent on top of the water. Chemical

solutions for two-year immersions were kept in quart jars with screw-on lids. The solutions in the two-year immersion jars were replaced every four months. Concentrations of chemicals were measured right after mixing to assure that make-up concentrations were correct. Chemical concentrations were also analyzed at various intervals to determine how well the solution concentrations were maintained.

Table 23 shows the range of percent of target concentrations for organic chemicals measured in jars immediately after immersion. The goal was to have all immersion concentrations be 100 $\pm$ 10 percent (wt:wt) of target. Furfural and phenol were generally within the target range. One furfural solution targeted for 8 percent in a 23°C immersion was measured to be 86.9 percent of target. One mid-range MEK solution was measured at 84.6 percent of the target of 4 percent. Target concentrations for DCE were harder to attain. DCE is not very soluble in water, is volatile, and was difficult to get into solution. However, the ratio of low to high DCE concentrations was attained.

Figures 8 and 9 show the concentrations after immersion periods of up to 56 days at 23 and 50°C for phenol and furfural respectively. The concentrations of these two chemicals were very stable over time.

Figure 10 shows the percent of target concentration for MEK at 23 and 50°C. MEK concentration was not as stable, particularly at 50°C.

The increase in chemical loss with increasing temperature implies that volatile loss was the primary reason for loss of solvent. Data for MEK in Figure 10 after 56 days were for two-year immersion samples in one-quart jars.

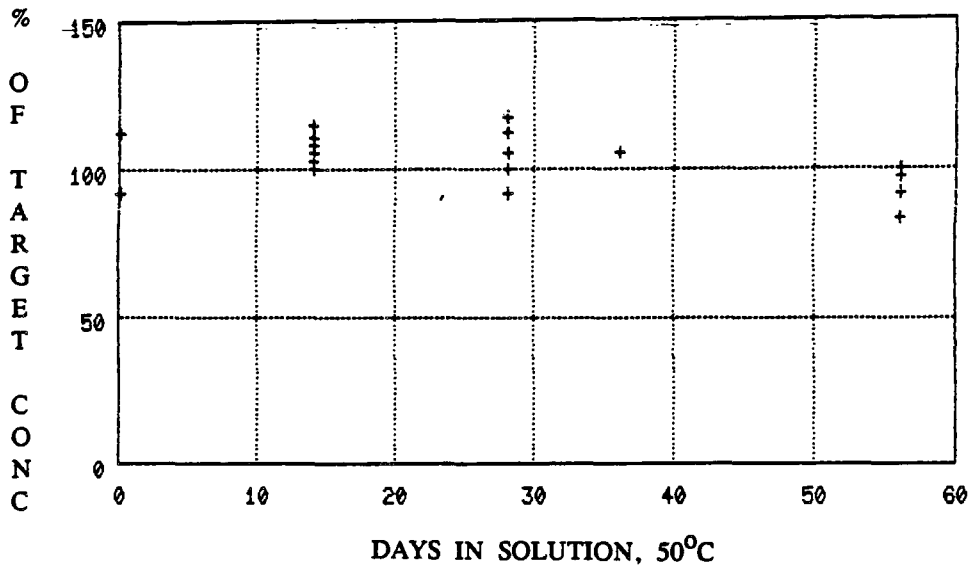
The results for DCE are shown in Figure 11. The results are similar to those for MEK; more apparent volatile loss at 50°C.

TABLE 23. LOW AND HIGH PERCENT TARGET CHEMICAL CONCENTRATIONS AFTER INITIAL MIXING[a]

| Target Concentration (Percent wt/wt) | Percent of Initial 23°C | Target Concentration 50°C |
|---|---|---|
| Furfural | | |
| 1 | 98.0 - 106.0 | 95.0 |
| 4 | 97.5 - 104.5 | 101.0 |
| 8 | 86.9 - 101.3 | 106.8 |
| Phenol | | |
| 1 | 90.0 - 110.0 | 100.0 - 110.0 |
| 4 | 97.5 - 107.5 | 92.5 - 112.5 |
| 8 | 91.3 - 101.3 | 96.3 - 101.3 |
| MEK | | |
| 3 | 100.0 - 100.0 | ---- |
| 13 | 84.6 - 92.3 | ---- |
| 26 | ----[b] | ---- |
| DCE | | |
| 0.1 | 74.0 | 53.0 - 74.0 |
| 0.5 | 50.0 | 56.0 - 86.0 |
| 0.8 | 70.0 | 50.0 - 83.8 |

[a] If only one number is shown, only one measurement was made

[b] Saturated MEK solutions maintained by keeping a layer of MEK on top of the aqueous phase



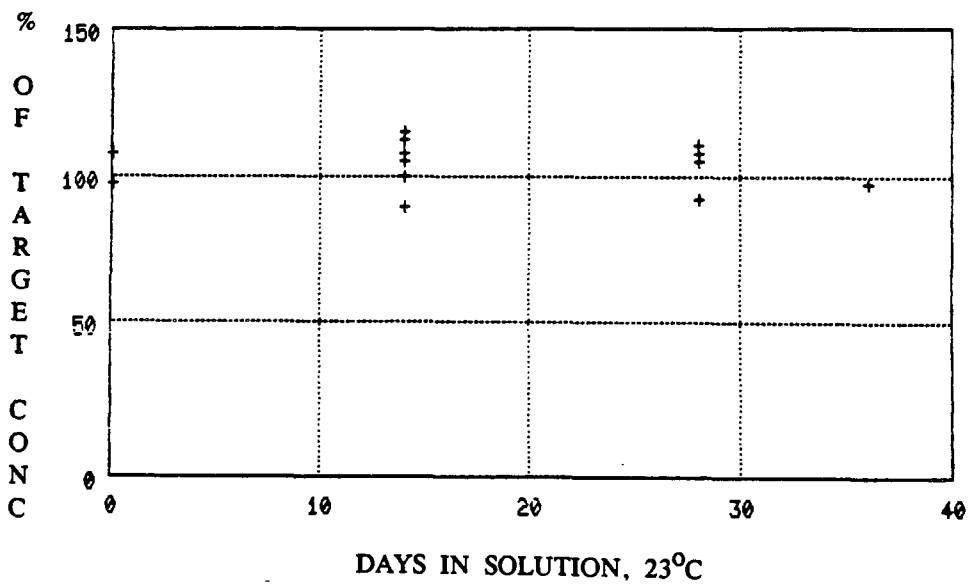
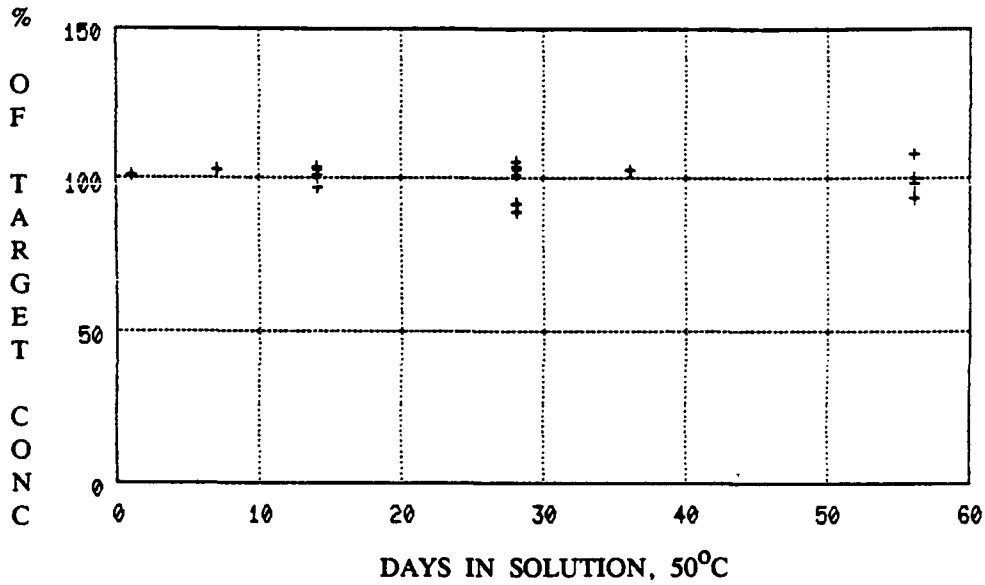




**Figure 8. Percent of target concentration of 4 percent phenol solution versus days in solution**



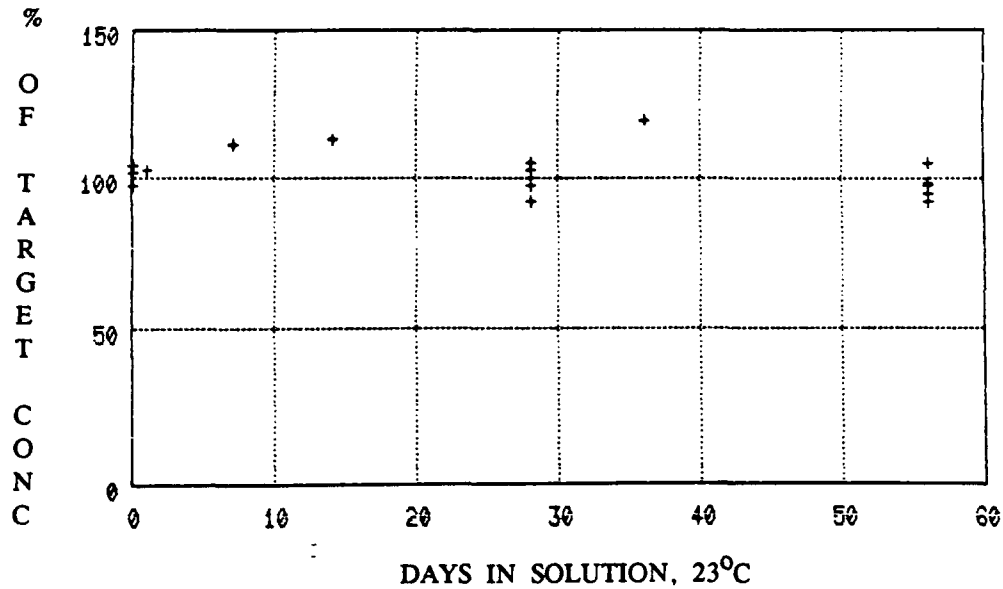
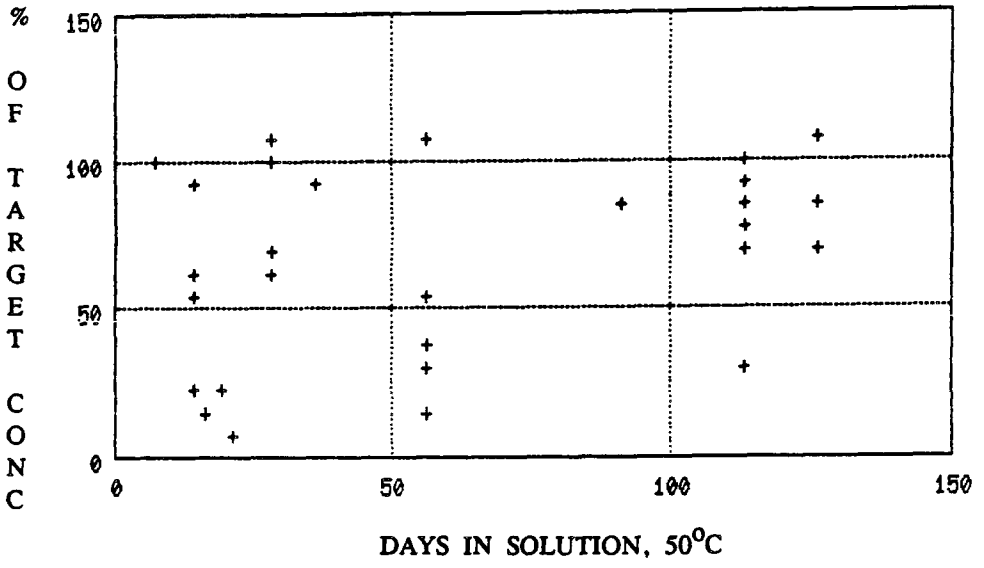




**Figure 9. Percent of target concentration of 4 percent furfural solution versus days in solution**



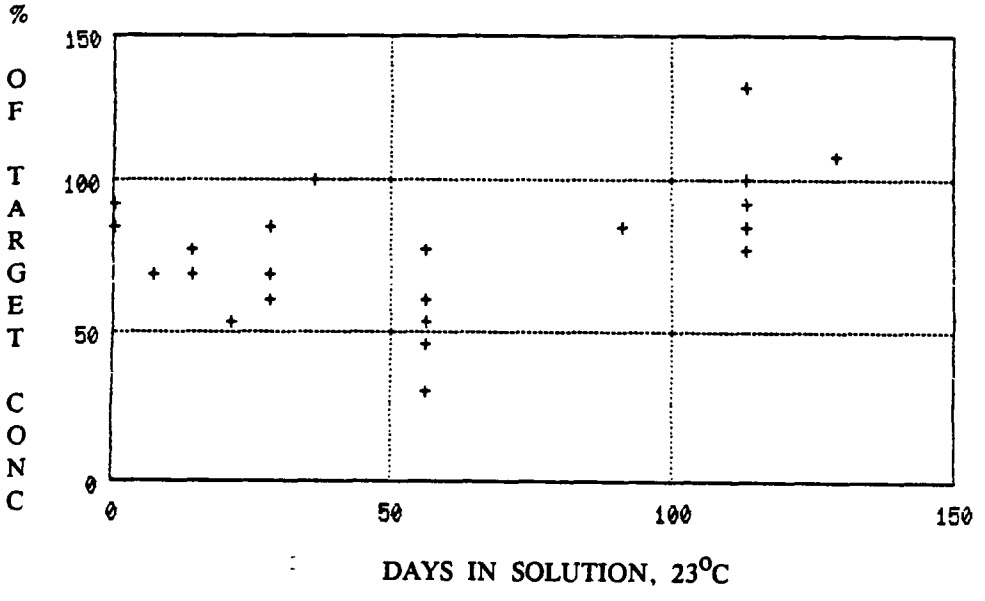
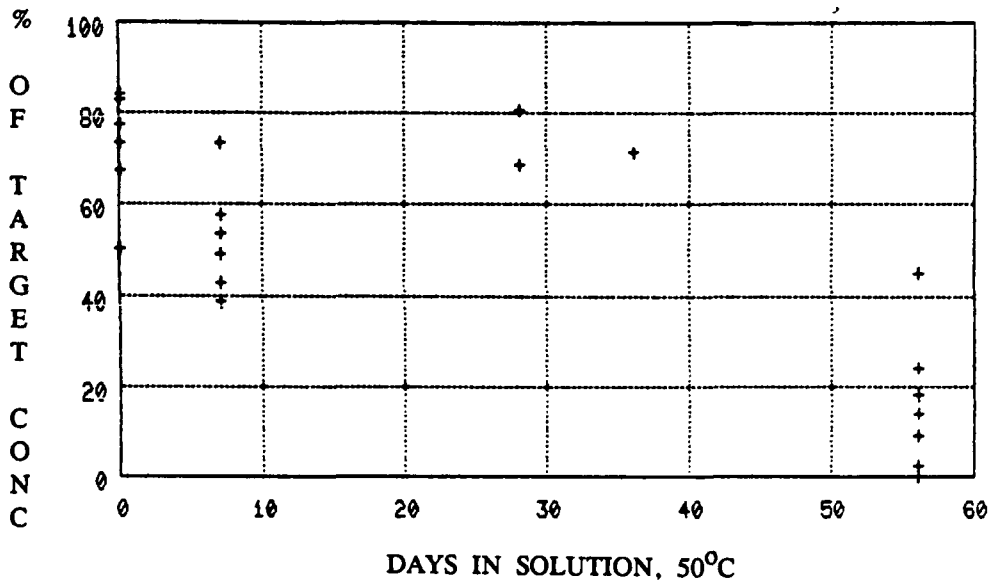




**Figure 10. Percent of target concentration of 13 percent MEK solution versus days in solution**



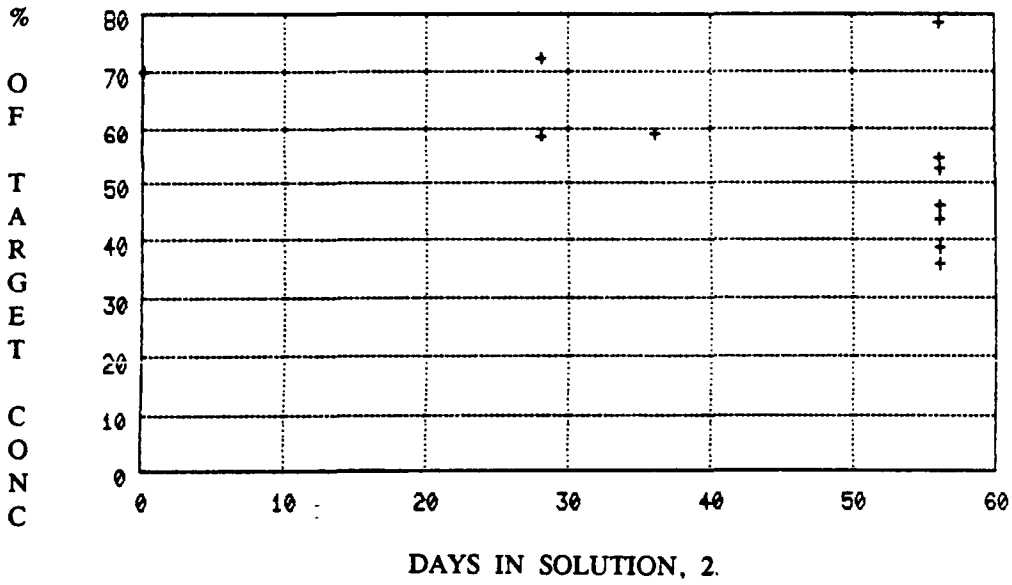




**Figure 11. Percent of target concentration of saturated DCE w in solution**

There were no instances of complete loss of solvent measured. Absence of solvent was not a factor in data interpretation. All liner response data exhibited the anticipated concentration dependence indicating that changes in chemical concentration did not influence the liner response approach to chemical resistance evaluation used in Section 8 of this report. This does not mean, however, that evaporative loss is not important to control when using immersion tests (e.g., EPA Method 9090) to evaluate liner resistance to a real waste. There is a relationship between chemical concentration and liner response, and the liners in this study were generally less resistant to the more volatile low molecular weight organics than other chemicals.

All chemical concentration data are presented in Appendix D.

**DATA CONTROL**

Data from bench sheets were manually entered into NSF's Digital Equipment VAX 11-70 computer system. After entry, edit sheets were printed and proofed against bench sheets. Data was also reviewed for completeness and reasonableness. (e.g., units, decimal places, significant figures, etc.) All data review was completed prior to data analysis.

**REPLICATE TEST RESULTS**

PVC and EPDM materials were tested in triplicate for immersions at 23° C. The purpose of the triplicate analysis was to measure the precision of the entire immersion test procedure.

A one-way ANOVA was performed on the triplicate data to determine if the triplicates gave statistically equal results for repeated tests. If the ANOVA showed a statistical difference at the 95 percent confidence interval, the RMSE was calculated to determine if any statistical differences were important. The RMSE was also used to give an indication of the precision achieved with immersed materials.

Several sets of triplicate data were determined to be statistically different. An examination of the RMSE indicated that the target precision for physical properties tests of polymeric materials of ± 10 percent is unrealistic. This is particularly true after immersion in chemicals. Tests precision was discussed previously in this section under subheading "Tensile Properties Measurement".

Measurement precision varied with resistance, material and the property being tested. Most non-resistant material/chemical combinations gave results that were highly variable. In fact, the precision of a measurement after immersion may be another useful tool for determing chemical resistance. However, this concept needs further study. Non-resistant data was not used when establishing the precision of each physical properties test for PVC and EPDM. In general, the measurements of EPDM were less precise than the PVC measurements, however, elongation at break was more precise for EPDM than PVC.

The most precise measurement was the breaking factor for PVC of ± 11 percent and the least precise measurement was the normalized breaking factor for EPDM of 38 percent. Most of the measurement resulting from resistant material/chemical combinations (94 percent) were precise within ± 20 percent. EPDM elongation at break and PVC tear varied ± 25 percent; EPDM normalized tear and PVC S-100 modulus varied about ± 30 percent; and PVC elongation at break varied about ± 36 percent.

It is difficult to control the many effects acting on a material immersed in a chemical solution (e.g., solution concentration). Table 21, showing the precision of physical properties tests of unimmersed materials, gives precisions better than the ± 10 percent target. This indicates that the large variablility in the physical properties results of the immersed materials is caused by the many variables acting on a material when it is immersed in a chemical rather than caused by problems in a technique or in the equipment used. For an experiment of this design, the measurements were as precise as possible.

## SECTION 7

## SAFETY

### DESCRIPTION OF HAZARDS

A summary of the potential hazards of each chemical used in the study is presented in Table 24. The categories of hazards are flammability, reactivity and health. The categories are rated on a 4 point scale: minimal, moderate, hazardous, and extreme. Also included in the table are recommended personnel protection measures. This information was compiled from Material Safety Data Sheets (MSDS). As a minimum, all protective measures were used in this project.

**TABLE 24. POTENTIAL HAZARDS OF IMMERSION CHEMICALS**

| Chemical | Flammability | Reactivity | Health | Protective Measures |
|---|---|---|---|---|
| ASTM No. 2 Oil | Moderate | Minimal | Minimal | None Specified |
| Sodium Chloride | Minimal | Minimal | Minimal | None Specified |
| Water | Minimal | Minimal | Minimal | None Specified |
| Potassium Dichromate | Minimal | Minimal | Moderate | Gloves, safety glasses, laboratory coats, exhaust |
| Hydrochloric Acid | Minimal | Minimal | Extreme | Gloves, safety glasses, laboratory coat, general protection from burns |
| Sodium Hydroxide | Minimal | Moderate | Extreme | Gloves, safety glasses, laboratory coat, exhaust |

**TABLE 24.** (Continued)

| Chemical | Flammability | Reactivity | Health | Protective Measures |
|---|---|---|---|---|
| 1,2-Dichloro-ethane | Extreme | Moderate | Hazardous | Gloves, safety glasses, laboratory coat, exhaust, vapor mask or respirator, grounded storage container |
| Furfural | Moderate | Minimal | Moderate | Gloves, safety glasses, laboratory coat, exhaust, grounded storage container, respirator available |
| Methyl Ethyl Ketone | Extreme | Minimal | Moderate | Gloves, safety glasses, laboratory coat, exhaust, grounded storage contain-tainers, store away from ignition sources |
| Phenol | Moderate | Minimal | Hazardous | Neoprene rubber gloves, goggles and face shield, laboratory coat, exhaust |

**ACTIONS TAKEN TO PREVENT HAZARDS**

A review of safety procedures for chemical immersion testing was performed by the Michigan Occupational Safety and Health Administration (MIOSHA). Areas covered included chemical handling, protective clothing, vapor concentrations in air, respiratory protection, and general safety precautions. The review, offered as a free consultation service by MIOSHA, was performed at the request of NSF.

The following procedures recommended by MIOSHA were used to protect technicians and avoid accidents.

## Chemical Handling

Drums of full strength organic chemicals were stored near a hood and grounded throughout their use.

Jars of dilute chemicals (exposure solutions) were transported in low carts and care was taken not to overload. The larger jars were stored on lower shelves. Jars with organic chemicals were taped with duct tape around the lid to prevent splashing when transporting.

The organic chemical waste drum was kept in the 23°C exposure chamber under the exhaust port. When emptying a jar into the drum, the auxiliary blower was turned on, the damper was fully opened and the vent in the drum was opened.

## Protective Clothing

For mixing the solutions, filling and transporting the jars, and immersing and deimmersing the samples, the following protective clothing was used: lab coat, chemical resistant apron, thick chemical resistant gloves, sleeve protectors worn over the lab coat, goggles, closed shoes, protective skin cream for the face and neck area. Both organic vapor and acid gas respirators were available for use in operations where vapors were present.

## Location of Safety Equipment

All personnel were shown the location and use of the showers, fire extinguishers, eye wash stations and spill control centers.

## Transport Route

The transport route was between the solution prep room and the exposure chambers. Great care was taken to keep the path free of liquids and debris that would cause slippery spots.

## Work Area

The work area was kept clean and neat to avoid accidents caused by scattered tools, improper disposal of paper towels, or jars not put away.

## Sample Handling

Disposable polyethylene gloves were worn when handling samples that had been immersed in chemical solutions. A portable hood was used to store samples which had been immersed in organic solutions while they were waiting for testing. After the tests were completed, the samples were stored in plastic bags in a box in the 23°C chamber for two weeks, at which time they were discarded.

## Chamber Entry and Exit

Specific instructions were given on the entry and exit of the chamber to help keep the ventilation adequate, the exposure temperatures in the acceptable range, and the time spent in the hot chamber at a minimum. Technicians were instructed to minimize the time in the chamber, keep the door open when inside a chamber, and place a flag in the hallway to indicate to fellow workers that they were in the chamber.

In the case of a spill, spill kits were available to absorb the solvents and technicians were advised of hazards and procedures to be used.

## Waste Disposal

Acidic and basic wastes were neutralized before being disposed. Wastes were collected in 55 gallon drums and hauled away by a licensed waste disposal contractor.

The following companies and Michigan Department of Natural Resources license numbers are pertinent.

National Sanitation Foundation
License No. MI D 059695452

Transport
Drug and Laboratory Disposal, Inc.
License No. MI D 092947928

Disposal
A-1 Disposal Corporation
License MI D 059695452

# SECTION 8

# RESULTS AND DISCUSSION

## OVERVIEW OF DATA PRESENTATIONS AND DISCUSSIONS

Data and discussions are organized by material. No effort was made to compare material responses because each type of material has unique properties and unique responses to immersion. Each material section discusses criteria for determining chemical resistance unique to that material, rate of liner response and stabilization, magnitude of material response, type of effects observed, and indicators of non-resistance.

The data are summarized and discussed in this section. All data can be found in Appendix E. Results are presented for percent retention of initial property, mean material property values after immersion, and standard deviations for all measurements.

### Process for Determining Chemical Resistance Criteria

The general criteria for determining whether a liner was resistant were whether the liner response (e.g., change in physical property) stabilized, and whether at the point of stabilization the liner had maintained enough of its initial properties to still provide its intended function. The need for a stabilized response is intuitive. A material which is continuing to change with time cannot be expected to remain in service for long periods of time.

The magnitude of material response which is significant as an indicator of non-resistance is less straight forward to determine. Both percent and absolute change were evaluated.

The process for evaluating the data involved several ways of looking at material response, such as:

- Comparing results with other data on liner/chemical resistance obtained from published reports and manufacturers literature, (10, 14, 17, 22-29)

- Correlating results of different measurements e.g., breaking factor, weight, etc., and establishing criteria for all measurements,

- Evaluating percent change in material property in the context of test variability, and

- Determining minimum physical properties which should be maintained after immersion.

There are no previously established or accepted benchmarks of performance based on immersion tests. The NSF Standard 54 physical property values suggest a possible benchmark which correlates well with existing chemical resistance data (30). The EPA draft guidance document suggests that the NSF Standard 54 specifications be used as absolute minimums for physical properties in immersion tests (3). For liners tested in this study for which there were material properties tables in NSF Standard 54, results of liner strength tests (e.g., breaking factor, etc.) generally fell below Standard 54 values after immersion in chemicals for which the liner was reported to be non-resistant in manufacturer's literature or other sources.

Using Standard 54 material properties values for virgin material to evaluate the physical properties of immersed material is justified when one considers the increased variability in physical properties measurement after chemical immersion. For example, for the PVC material tested in the study, the coefficient of variation for breaking factor was 2.5 percent for virgin material, and as high as 11.5 percent for the FML which had stabilized in 4 percent furfural. To pass Standard 54, the mean breaking factor for five specimens must be at or above the minimum value in the physical properties

table. Comparing the average value of test results to a Standard 54 specification as a pass/fail criterion implies that 96 percent of the liner coupons tested are within ± 2 s.d. of the sample mean. If the sample mean and Standard 54 value was 50 lb/in., 2 s.d. would equal 2.5 lb/in. for the unexposed FML and 11.5 lb/in. for the FML after immersion in 4 percent furfural. Assuming a normal distribution of test data, this means that, two percent of the unexposed liner could have a breaking factor less than 47.5 lb/in. and still be acceptable, but two percent of the liner exposed to four percent furfural could have a breaking factor less than 38.5 lb/in. Therefore when increasing material variability after immersion is taken into account, the Standard 54 value is not too strict for evaluating immersed samples.

A maximum allowable change in physical properties is also necessary for evaluating chemical resistance for three reasons. If an FML's initial properties are much higher than the Standard 54 values, substantial material degradation could occur before the Standard 54 limit would be passed. Also, Standard 54 values are minimums, and give no guidance in cases where a property such as breaking factor may increase as a result of chemical exposure. Finally, acceptable changes in weight and volume can not be determined from Standard 54.

To determine percent change limits for chemical resistance evaluation, three steps were followed. First the variability of the immersion test method was established from replicate results (see Section 6) and from inspection of all immersion results for a material. Next, the magnitude of the variability was compared with the magnitude of change associated with published data for resistant and non resistant liner/chemical combinations (27). Percent change limits were then set at a magnitude which represents real change, not just limits of reproducibility. The third step was to establish percent change limits for measurements for which there was no published comparative data. For example, if published data were available for the breaking factor of PVC but not percent elongation at break, the data for percent elongation at break would be compared with limits set for breaking factor and Standard 54 minimum values to establish limits for percent elongation at break.

## Curve Fitting Response Stabilization as a Function of Time

Data are collected sequentially through time on a physical characteristic (measured response) of a material exposed to a chemical. The objective is to determine whether the material stays within appropriate control limits with respect to a physical characteristic by studying the pattern of change of the physical characteristic. In particular, one common objective is to determine whether the characteristic stabilizes or continues to change in a monotonic fashion (increasing or decreasing). If the characteristic stabilizes, then the limiting value and the rate at which the limiting value is approached are both of interest.

There are several possible conclusions that could be reached about the stabilization of a material property.

- The property doesn't stabilize and exceeds percent change limits within too short a time.
- The property doesn't stabilize but is not projected to exceed percent change limits for such a long period of time that the material is judged to be acceptable.
- The property stabilizes, but at too high a level too soon.
- The property stabilizes at too high a level but remains within control limits for an adequate period of time.
- The property stabilizes at a limit within percent change limits.

This proposed method is presented as a conceptual framework for addressing the problem of evaluating stabilization. Stability of response is described as an asymptotic approach to some fixed value. The fundamental tool proposed is the use of statistical inference for the parameters of a mathematical equation that describes the response of a material through time. The equation assumes that the measure will stabilize.

The equation can be used to project the expected value of the response in the future as well as the asymptotic level which is being approached. Projections based on the equation can thus be used as the basis of a decision process for evaluating the behavior of a material. The decision process should account for the uncertainly about the equation that results from the fact that it is estimated from data rather than being derived from a physical model.

The approach proposed here is based on the fitting of a model to early experimental data. The model used assumes that the measure will stabilize. Projections for subsequent behavior are then made based on the model. These projections are used for a variety of purposes, including determining whether or not to continue the experiment and deciding when to take the next sample if the experiment is to be continued. The level and rate at which stabilization is reached are predicted from the model.

There are several details that need to be resolved before this proposal can be considered to be a working methodology. Some of the issues that must be resolved before attempting to use this methodology on a routine basis are detailed next.

The objectives of a specific stabilization experiment should be listed in detail in order to determine an appropriate analytic methodology to address those objectives. Evaluating the response of a material to immersion is a complex process which may involve a series of decisions, each of which can have an effect on which data are collected for use in subsequent decisions. The possible steps in such a decision process should be documented before detailed analytical methods are developed to accompany each of the steps. Even after the objectives and corresponding methods are documented, it should be realized that exceptions to the rules may still occur and so the methods may have to be customized for specific situations.

The choice of a model i.e., the choice of the form of the equation, should be appropriate for the response and material being evaluated. Such choices should ideally be based on experience. Lacking experience, the

methodology should include an explicit step for evaluating goodness of fit of the equation being used. Goodness of fit can be evaluated if there are replications at each time point during the experiment. Protocols should be developed for the number of replications at each time point.

Protocols must be developed which prescribe the minimum duration and number of samples for an experiment of a particular type. Such protocols must be specific to the material and characteristic being evaluated. This is especially important for characteristics that are likely to reach plateaus at several different epochs of an experimental evaluation. A naive analysis of data from the first epoch of such an experiment might indicate that stability had been achieved at the first plateau, which could result in serious decision errors. Prescriptions of the duration and replication for an experiment should be based largely upon experience so that appropriate analytical methods can be used.

Despite the need for development of individual protocols for each material and response, as discussed above, it is still possible to describe the broad characteristics of an analytical methodology for evaluating data from a stabilization experiment. Some of the characteristics of such an analytic methodology are discussed below.

One model for a response measure, Y, as a function of time, T, is given below where P1, P2, and P3, are to be estimated from the data. This equation is just one of the simplest of the many equations that could be used for evaluating stabilization.

$$Y = (P1 + P3\ T) / (1.0 + P2\ T)$$

At time 0, Y has the value P1. As T increases, this equation implies that Y approaches a limit of P3/P2.

In order to be judged successful, the material must behave as predicted by a model which assumes that the study characteristic will stabilize. The model is fitted based on accumulated data and the limiting level is computed from the

estimated equation. Values are subsequently measured after continued exposure in order to see if the material is approaching the asymptotic limit predicted by the equation.

If the new results yield values within a range predicted by the model, then the material is judged to have stabilized. If the material appears not to have stabilized, then the experiment can be further extended assuming a higher stabilization level.

At any step in the procedure above, the experiment can be stopped and the material judged a failure if the results are not promising enough.

There are several computing programs that can be used to fit equations with asymptotic limiting values to data. For example, the BMDP programs are available on many mainframe computers and are available for the IBM XT personal computer (31). The nonlinear regression program in BMDP 3R, allows models to be fitted in which the mean response measure is contrained to approach a limit as time increases indefinitely. The 3R program with built-in function number 4 is convenient to use, although it is not the only such model nor is it necessarily the best.

The equation discussed above is one of the forms available in the BMDP series, a ratio of two polynomials of time. More than three parameters could be used, but would require more data. In order to assure that the model has a limiting asymptote, an odd number of parameters should be used. For the short series of observations typical of immersion tests, the best choice is probably three parameters.

The estimated response function can be used to calculate the limiting value, P3/P2 in this example. The approximate standard error of this estimate can also be calculated, using Fieller's Theorem for the ratio of two parameter estimates (32).

The next step is to calculate a time in the future when the behavior of the material will be tested again in order to see if it is behaving as predicted from the model. The time at which the response will reach 95 percent, for example, of the limiting value can be computed. If the predicted response at the last observed time is already over 95% of the limiting value, then calculate the time at which some higher value will be reached in order to test the predictive accuracy of the model.

Take k samples at this later test time. If the mean of k samples is within the appropriate prediction interval for the mean of k new observations, then the material is judged to have stabilized at the estimated limit. All of the data could then be used to re-estimate the limiting value, if desired.

The method described above is meant to give a framework for a decision process rather than to be a strict prescription for how to judge a material. The samples below show how the method could be applied to several data series from this study.

The model available in BMDP 3R was used with 3 parameters to analyze data from several data series recording weight change through time. The model for the weight change, Y, as a function of time, T, is reiterated below where P1, P2, and P3 are parameters to be estimated from the data.

$$Y = (P1 + P3\ T)/(1.0 + P2\ T)$$

As T increases, this model implies that Y approaches a limit of P3/P2.

The model can be inverted to give T as a function of Y:

$$T = (Y - P1)/(P3 - P2\ Y)$$

Figure 12 gives the results of analysis of the data for CPE in 4 percent Furfural at 50 degrees Centigrade. The predicted (P) and observed (O) values are plotted for the data through day 719. This set was chosen because the data

plot indicates that the weight change has stabilized. The data at day 719 will be treated separately in order to demonstrate how the data through 622 could be used as part of a decision process for this material. The data at day 719 will be used as though it were collected after the analysis on day 622.

The data through day 622 were used to fit the three parameter function from BMDP. The resulting parameter estimates are P1=3.85, P2=0.027551, and P3=4.563867. The estimated limiting weight change percent is thus 4.563867/0.027551=165.7%, based on data through day 622. If this asymptotic limiting weight change predicted from data through day 622 were out of control limits for this type of material, then the experiment could be stopped at day 622. If the estimated limit is acceptable, then the experiment could be continued to see if the material appears to follow the projected behavior. If subsequent data indicates no problem with goodness of fit of the model and if the projected limit is acceptable, then the material will be judged to have satisfied the stability criteria for this property.

Steps for deciding how to continue the experiment will be discussed next. The observation at day 622 (the last day of the experiment so far) has a predicted weight change of 156.7% which is 94.6% of the estimated limit. Since this is already close to the projected limit, we have no prescription for choosing the next sample day. Consider a plan to take the next sample at day 719 (the day that was actually sampled). The projected weight gain on that day is 157.7%.

If the observation at day 719 is less than the upper 95% (95% is chosen arbitrarily and has nothing to do with the fact that the current weight gain is close to 95% of the limit) prediction interval for the projection, then the material will be assumed to be conforming to the projections of the equation.

In fact, the observation at day 719 turned out to be 156.1%, which is less than 157.7%, the predicted value at day 719, so the material is certainly below the upper prediction limit for day 719. Thus, there is no evidence that the weight change is approaching a limit higher than the estimated limit. If the

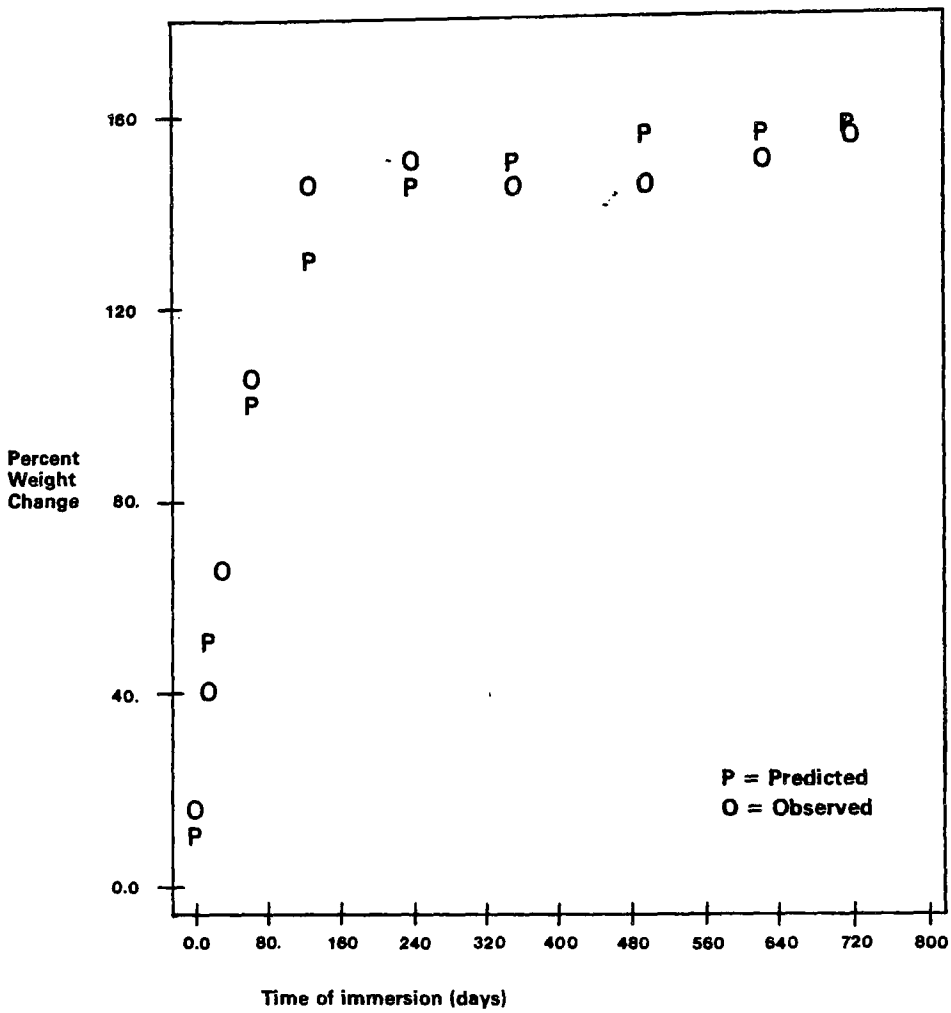



**Figure 12. CPE in four percent furfural at 50°C, predicted versus observed values**

weight gain had been larger than the upper prediction limit for the projection then the conclusion would be that the weight gain either has a higher limit or is increasing without limit.

When needed, the upper limit of the 95% prediction interval for a single new observation can be computed from:

Fitted value+1.96*root(mean squared error+variance(fitted value)), where the fitted value, mean squared error, and the variance of the fitted value can be derived from computer output.

Further analysis uses all of the data through day 719. The estimated limit based on all of the data is 165.2%=44.5888/0.027783. Feiller's theorem can be used to compute the s.e. of this estimate. The 95 percent confidence interval for this limit is between 157 percent and 180 percent (this is based on Feiller's theorem and can be computed with a programmable calculator).

Another example gives the results of analysis of data for EPDM in 8 percent furfural at 50 degrees Centigrade (Figure 13). This example was selected because the data do not appear to have stabilized. The analysis indicates that the limiting weight change will be 216%=0.2238/0.001036. The 95 percent confidence interval for this limit is very wide being between 158 percent and 620 percent. Suppose that we are interested in knowing when 95 percent of the projected weight gain will have occurred i.e., when 205.2%=0.95*216% will have occurred. The equation for T in terms of Y can be used to compute that the weight gain is projected to be 205.2% on day 18,445=(205.2-(-1.617802))/(0.2238-(0.001036*205.2)). The weight gain observed so far is just 42%=90.9/216 of the projected limit.

Note that the model for EPDM is being used to project, or extrapolate, the information through day 721 and a weight gain of 91% to day 18,445 and a weight gain of 216%. The numerical results of this large of an extrapolation are not very reliable, as reflected by the large confidence interval for the limit. Such extrapolation should only be used as a guideline to decide when

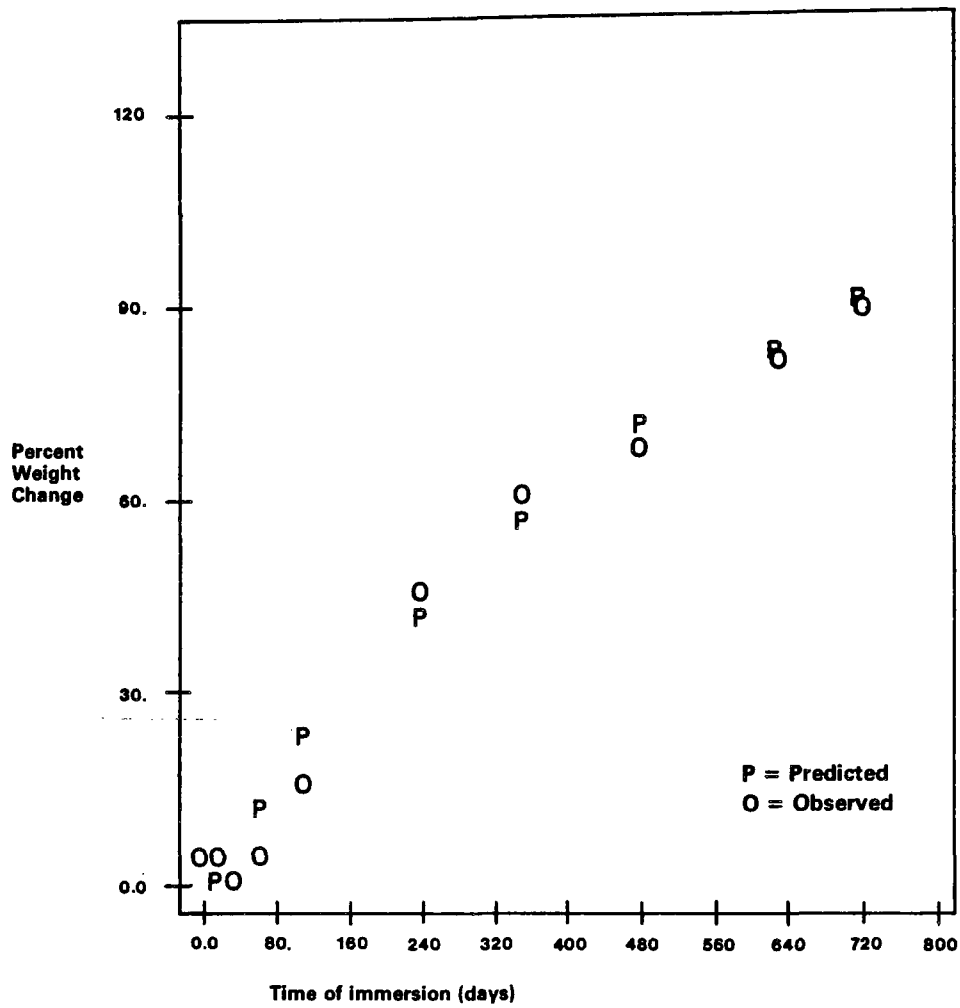



Figure 13. EPDM in eight percent furfural at 50°C

to take the next sample or in deciding whether or not to continue the experiment.

## Temperature and Concentration Effects

Five basic types of response to chemical immersion were observed; minor change, swelling, swelling and softening with loss of strength, shrinking and stiffening with loss of elongation, and a combination of swelling and shrinking depending on immersion conditions.

The response of liners to increased immersion temperature shows that higher temperatures (at least up to 50°C) can be used to accelerate the material response for some materials but not others. Caution must be used to separate a temperature from a chemical response.

When the response was minor or the response time very fast, the difference in results between the two temperatures was often small. In these cases, a higher exposure temperature did not significantly accelerate the response, but neither did it change the response. This would indicate that the higher temperature itself did not affect the material nor did it speed up the test. Some data showed that the magnitude of the response did not increase with temperature, but the rate at which the response stabilized did increase. For such materials, temperature would be an effective method for accelerating immersion testing.

For other material/chemical combinations, the magnitude of response was affected by temperature. Using elevated temperatures for predicting chemical resistance is generally not a good practice unless a liner's response to heat stress is known.

Four organic chemicals were tested at three concentrations for all materials. All liner responses seen with these chemicals were affected by concentration. An example is shown in Figure 14, the effect of furfural concentration on PVC weight change, breaking strength, and S-100 modulus.

Although liner response as a function of concentration was not used to develop chemical resistance criteria in this report, this example shows the potential usefulness of concentration dependent data for selecting the best material for a specific waste or chemical application.

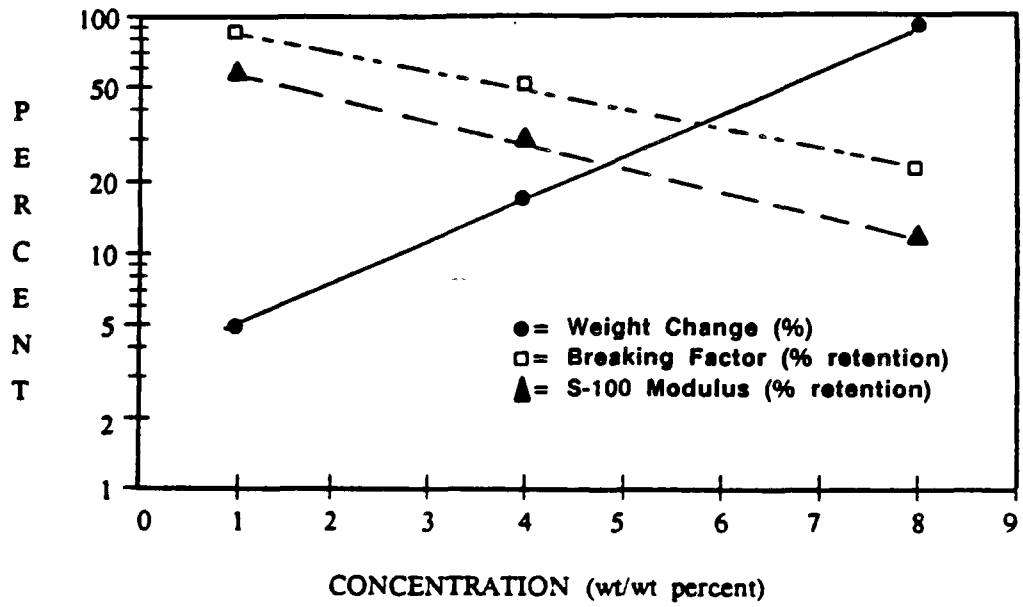



**Figure 14. Relationship of change in physical property to furfural concentration at 23°C for PVC**

The response to furfural (swelling and softening) increases with concentrations. The response (absorption of furfural) appears to be first order with respect to concentration, and could be represented as:

$$y = ae^{bx}$$

where y = liner response (percent retention of modulus, for example)

x = furfural concentration (wt/wt percent)

b = liner sensitivity factor

Plotting the y value on a log scale, the intercept of the line would be log(a), and the slope b. This type of graph could be useful in predicting acceptable chemical concentrations in a waste stream, based on allowable stabilized property changes. Note that it would be of use only if the FML material stabilizes in the waste solution, and if the response is first order, and if the chemical concentration is not expected to increase over the life of the application.

The liner sensitivity factor (b) could also be used to compare materials. The greater the value of b, the more susceptible the liner would be to changes in concentration or concentration gradients within a lagoon or impoundment.

**Response as a Function of Liner Grain (Direction)**

Generally, mechanical property results presented are for the machine direction. The machine direction is used in all graphs to allow presentation of the two-year tensile property results (for which there are only machine direction samples.) In the case of CPE, both directions are included.

**EPDM** - - with ethylene propylene diene rubber (EPDM), there was negligible difference between the transverse and machine direction results for mechanical

properties after chemical immersion. The differences found in directional response for other materials were as follows:

**EPI-CO** - - strength and tear properties are slightly higher in the transverse direction, while elongation was slightly more in the machine direction. The difference between directions in response to chemical challenge was generally less than 15 percent, with the percent retention of properties slightly better in the transverse direction.

**CSPE-LW** - - breaking strength and S-100 modulus were less in the transverse direction than in the machine direction. The difference in response to chemical challenge, however, was generally less than 10 percent.

**CPE** - - in determining chemical resistance for CPE, both directions were considered because the mechanical properties were significantly different in the two directions. Breaking strength and S-100 modulus are less in the transverse direction than in the machine direction. The difference in response to chemical challenge in the two directions was generally less than 15 percent.

**HDPE** - - the transverse direction was slightly stronger than the machine direction. The only significant difference in response to chemical challenge in the two directions was for elongation at break, for which retention was less in the transverse direction. Percent change in mechanical properties was evaluated in both directions in determining chemical resistance.

**PVC** - - in general, strength is higher in the machine direction than in the transverse direction, but the response to chemical challenge, is similar.

## Units of Measurement

For four of the six materials (PVC, CPE, EPI-CO, CSPE-LW), breaking factor and S-100 modulus were calculated in pounds per inch width (lb/in) and tear resistance was calculated in pounds. HDPE and EPDM had thicknesses that varied substantially throughout the material (more than three standard deviations from the average). In these cases, the strength properties (breaking factor and tear resistance) were normalized for initial thickness (as received). Breaking factor was converted to tensile strength in pounds per square inch (psi) and tear resistance was calculated in pounds per inch thickness (lb/in).

Weight was used as the indicator for swelling responses. Volume changes were generally larger than weight changes, but the two are closely related, and because the weight measurement is more precise, weight change was chosen for presentation. Weight changes are expressed as percent change (compared to initial weight).

## Figures

The figures in this section show data points for the physical properties which represent the average of 5 test specimens. Each point on a weight or dimension figure represents 3 test specimens.

For EPDM and PVC, triplicates were performed for some conditions, resulting in multiple data points appearing for the same time in these figures.

Each curve was fit to a straight line, an exponential curve, a logarithmic curve, a power curve and a quadratic curve. The curve with the largest correlation coefficient ($R^2$) was chosen as appropriate and drawn in most cases. There were two scenarios when this procedure was abandoned: 1) all of the $R^2$'s were so small that no curve could reasonably be chosen from the five choices and 2) the $R^2$'s were large, however the curve indicated that

the material reacted in a way that was not intuitively predictable from the data points. In almost all cases of the first situation the data appeared to form a horizontal straight line which cannot be modeled from the curves tested. A horizontal straight line was drawn for these cases. In the second case, the $R^2$ would indicate that a quadratic curve best fit the data. The curve would appear to fit the data well, however, between the last short immersion physical properties measurement (56 days) and the only physical properties measurement of the two-year study (at 2 years) the curve would dip down and then come back up to meet the last data point at two years. Without data between 56 days and two years, it is difficult to believe that the material would actually react in this way. In these situations the curve was smoothed out not showing the dip in the modeled curve.

**Polyvinyl Chloride (PVC)**

**Criteria for Determining FML Chemical Resistance**

Parameters for evaluating PVC chemical resistance include: stability of the liner's properties in contact with the waste, the magnitude of physical changes observed, and the type of change. Based on the data from this study, the following criteria are proposed for determining PVC chemical resistance with immersion tests:

- Stability of weight change and mechanical properties with time.
- A stabilized weight change of not more than five percent gain or ten percent loss.
- The breaking factor must be at least 80 percent of the initial value and equal to or greater than the minimum as-received value in the material properties table of NSF Standard 54 for the appropriate thickness.
- The percent elongation at break must be at least 70 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- The S-100 modulus must be between 60 and 140 percent of the initial value (based on the relationship of modulus to breaking factor and elongation).

These criteria are used in evaluating the FML's response to the chemicals in Table 25. Resistance or non-resistance is listed in the second to last columns, and the reasons for a non-resistance rating are given in the last column.

## Response Time and Stability

Response time, or the time required for the liner to stabilize in a given solution, varied from less than one week to no stabilization after two years. Response time was generally faster for weight gain (absorption of chemical or water) than for weight loss (extraction of plasticizer).

## Magnitude of Liner Response

To determine reasonable percent change limits for chemical resistance evaluation, three steps were followed. First, the variability of the property was evaluated. For example, Figure 15 shows the overall relationship of breaking strength and weight change (the figure shows weight changes between -30 and +30 percent weight change) for this FML. The variability of breaking strength measurements for this FML was roughly $\pm$ 15 percent, as measured by the center locus of points which correspond to a sample which showed resistant behavior. Next, the limits of variability defined in step one, and the overall range of observed property change were compared to reported chemical resistance information (10,14,17,22-29). Limits of acceptable change were then set. Third, limits for parameters such as percent weight change were set by determining the amount of change that correlated with the limits set for those properties listed in the Standard 54 material properties tables.

## Types of Effects

The results in Table 25 for this plasticized thermoplastic PVC are grouped according to the type of effects seen. A temperature or concentration effect is noted in the third and fourth columns. Five basic types of response to chemical immersion were observed with this liner: minor change, swelling,

Table 25. POLYVINYL CHLORIDE (PVC): RESPONSE SUMMARY FOR CHEMICAL RESISTANCE

| CHEMICAL NAME | TYPE | TEMPERATURE EFFECT | CONCENTRATION EFFECT | TYPE OF RESPONSE | CONDITIONS | | STABILITY ACHIEVED~ | RESISTANT~ | REASONS FOR NON-RESISTANCE * |
|---|---|---|---|---|---|---|---|---|---|
| Water | - | no | - | Minor Change | 23 C | - | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| Sodium Chloride | SALT | no | no | Minor Change | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | Y | |
| Potassium Dichromate | OXIDIZER | no | - | Minor Change | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| Hydrochloric Acid | ACID | yes | - | Swelling at 50 C | 23 C | 10% | N | N | S |
| | | | | | 50 C | | N | N | S, WG |
| Furfural | ALDEHYDE | no | yes | Swelling and Softening | 23 C | 1% | Y | Y | |
| | | | | | | 4% | Y | N | WG, BL, SL |
| | | | | | | 8% | Y | N | WG, BL, SL |
| | | | | | 50 C | 1% | Y | N | WG (marginal) |
| | | | | | | 4% | Y | N | WG, BL, SL |
| | | | | | | 8% | Y | N | WG, BL, SL |
| 1,2-Dichloroethane | CHLORINATED HYDROCARBON | no | yes | Swelling and Softening | 23 C | .1% | Y(v) | Y | |
| | | | | | | .5% | Y(v) | N | WG, BL, SL |
| | | | | | | .8% | Y(v) | N | WG, BL, SL |
| | | | | | 50 C | .1% | Y(v) | Y | |
| | | | | | | .5% | Y(v) | N | WG, BL, SL |
| | | | | | | .8% | Y(v) | N | WG, BL, SL |
| Sodium Hydroxide | BASE | yes | - | Shrinking and Stiffening | 23 C | 10% | Y | N | WL, SG, EL |
| | | | | | 50 C | | N | N | WL, SG, EL |
| ASTM #2 Oil | OIL | yes | - | Shrinking and Stiffening | 23 C | 100% | Y | N | WL, SG |
| | | | | | 50 C | | Y | N | WL, SG, EL |
| Methyl Ethyl Ketone | KETONE | no | yes | Swelling and Softening with | 23 C | 3% | Y(v) | N | BL, SL |
| | | | | | | 13% | Y | N | WG, BL, SL |
| | | | | | | 26% | Y(v) | N | WG, BL, SL, EL |
| | | | | some later Shrinking and Stiffening | 50 C | 3% | Y(v) | N | WG, BL, SL |
| | | | | | | 13% | Y | N | WG, BL, SL |
| | | | | | | 26% | Y(v) | N | WG, BL, SL |
| Phenol | PHENOL | no | yes | Swelling and Softening at low concentration and shrinking and stiffening at high concentration | 23 C | 1% | Y | Y | WG(marginal) |
| | | | | | | 4% | Y | N | S |
| | | | | | | 8% | N | N | S, WL, SG, EL |
| | | | | | 50 C | 1% | Y | N | WG |
| | | | | | | 4% | N | N | S |
| | | | | | | 8% | N | N | S, WL, SG, EL |

* S = No Stability, WG = weight gain, WL = weight loss, BL = Breaking Factor Loss, EL = Elongation at Break Loss, SG = S-100 Gain, SL = S-100 Loss

~ Y = Yes, N = No, (v) = variable results due to volatility of chemical

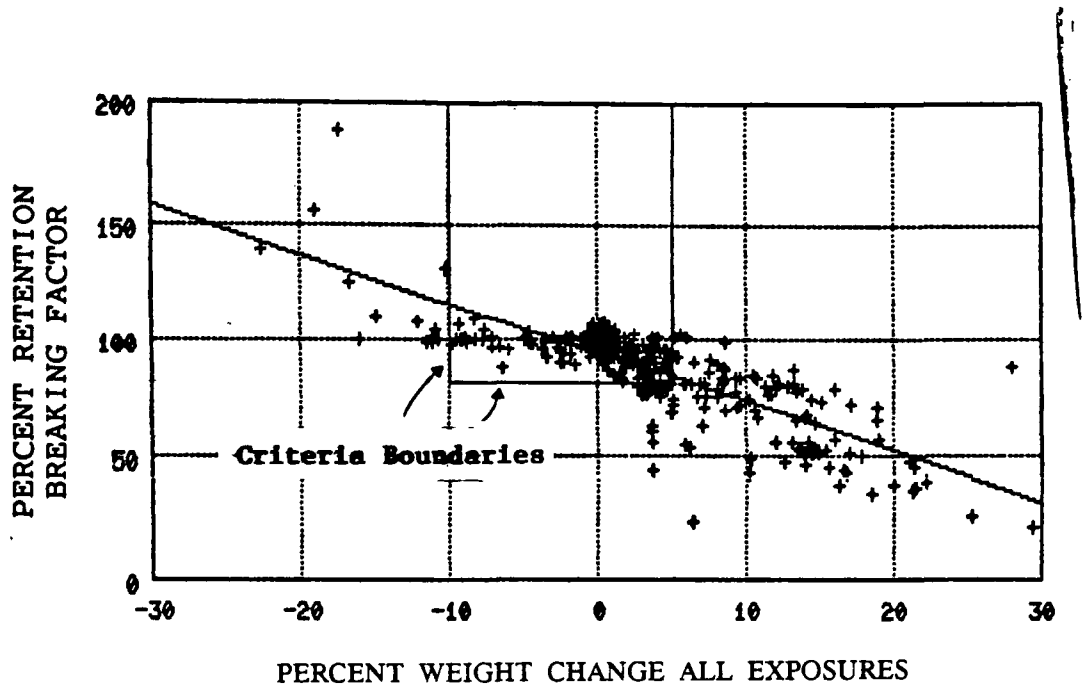



**Figure 15. Relationship of breaking factor and weight change for PVC**

swelling and softening with loss of strength, shrinking and stiffening with loss of elongation, and a combination of swelling and shrinking depending on immersion conditions.

**Temperature Effects—**

The response of this liner to increased immersion temperature shows that higher temperatures (at least up to 50°C) can be used to accelerate the material response.

When the response was minor or the response time very fast (inorganic salts, solvents methyl ethyl ketone and 1,2-dichloroethane), the difference in results between the two temperatures was small. In these cases, a higher exposure temperature did not significantly accelerate the response, but neither did it change the direction of the response. This would indicate that the higher temperature itself did not affect the material.

Temperature affected this FML's response to two conditions: immersion in both hydrochloric acid and in those chemicals which caused a weight loss. The liner response to hydrochloric acid at 50°C shows a much larger weight gain compared to the sample exposed at 23°C. But, at both temperatures, the weight gain was slow and steady, and had not stabilized after two years.

Both the rate and the magnitude of weight loss are affected by immersion temperature for the stiffening response. The initial rate of sample weight loss in NaOH was faster at 50°C, and the final weight loss was greater. The rate of loss, though, became similar at both temperatures after about 300 days of immersion.

Figure 16 illustrates the effect of temperature on weight change. This figure shows weight change as a function of time for both hydrochloric acid and sodium hydroxide immersion samples, at both 23 and 50°C. While the acid solution caused a weight gain and the caustic solution caused a weight loss, increasing the temperature did not change the nature of the response in either case. Both responses were accelerated, however. This indicates that an elevated temperature (at least up to 50°C) can be useful in accelerating chemical resistance testing for PVC, using these and perhaps other chemicals.

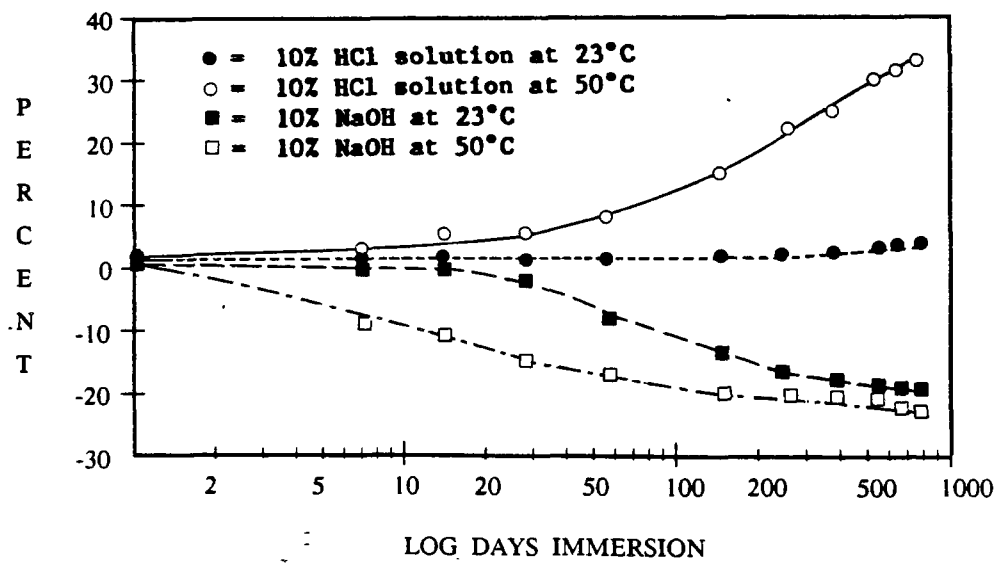



**Figure 16. Effect of temperature on weight change for immersion in hydrochloric acid and sodium hydroxide at 23°C and 50°C**

**Concentration Effects—**

Four organic chemicals were tested in three concentrations. All responses seen with these chemicals were affected by concentration. All four saturated organic solutions caused significant change in the liner properties, in some cases almost total loss of strength. But the response at lower concentration is much less severe, and appears to stabilize over time. Table 25 shows that the lowest concentrations tested of furfural (23°C only), 1,2-dichloroethane, and phenol (23°C only) are considered resistant using the above criteria.

Figure 14 shows the effect of furfural concentration on weight change, breaking strength, and S-100 modulus. The response to furfural (swelling and softening) stabilized with time at all concentrations. Stabilized properties (log scale) are shown as a function of concentration for the 23°C exposure samples. The response (absorption of furfural) appears to be first order with respect to concentration.

## Indicators of Non-Resistance

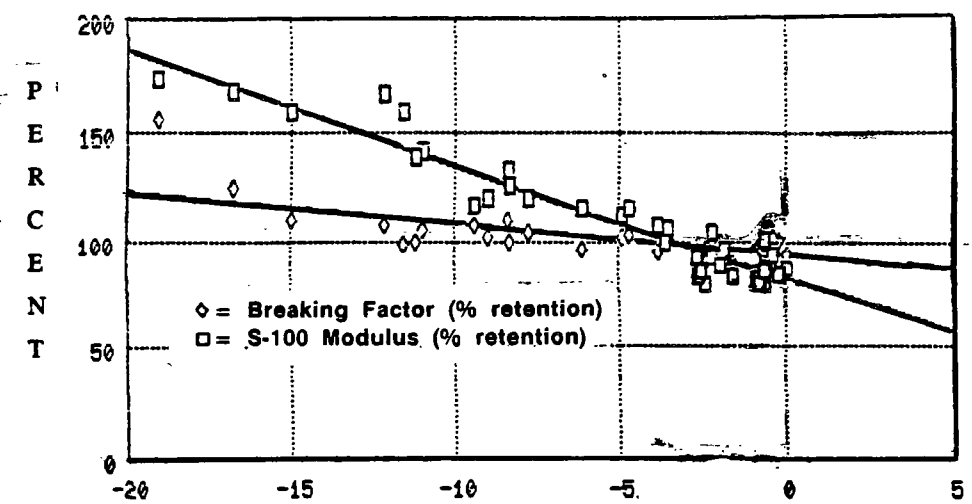
For PVC, the most important indicators of non-resistance are weight change, breaking strength, S-100 modulus, and elongation at break. Tear resistance generally followed the same trend as breaking strength.

Changes in weight corresponded to changes in tensile strength and stiffness (S-100 modulus) for this liner. (The exception seen for PVC was for immersion in hot hydrochloric acid, which caused weight gain but no loss of strength.) In general, strength and modulus decreased with weight gain, and increased with weight loss.

When absorption of liquid (weight gain) is the response to chemical challenge, weight change, breaking strength, and modulus are key indicators of chemical resistance. Figure 15 shows the overall relationship of breaking strength and weight change (for weight changes between -30 and +30 percent) for PVC. Weight changes of about 5 percent correspond to a 15 percent loss of

breaking strength, and a strength less than the minimum acceptable as-received value for this FML according to NSF Standard 54.

Weight loss indicates loss of plasticizer from the liner material. An FML formulation of this material can contain up to 35 percent plasticizer. For extraction of plasticizer, changes in weight and in modulus are particularly important. The beginning of plasticizer extraction (which can continue until the material becomes brittle) can be detected earlier by these measurements than by breaking strength or elongation. As shown in Figure 17, the rate of change in modulus with respect to weight change is greater than for breaking factor.




PERCENT WEIGHT CHANGE IN ASTM #2 OIL AND 10% SODIUM HYDROXIDE

**Figure 17. Relationship of breaking factor, S-100 modulus and weight change for PVC**

Elongation at break appears to be the least sensitive, but the most decisive, measurement. The criteria established for elongation at break for PVC is $\geq$ 70 percent of initial and $\geq$ NSF Standard 54. The variability in measurement for resistant materials is large, roughly $\pm$ 20 percent. Until the sample is very stiff, and nearly brittle, elongation does not always correlate with other indicators. Figure 18 shows retention of ultimate elongation as a

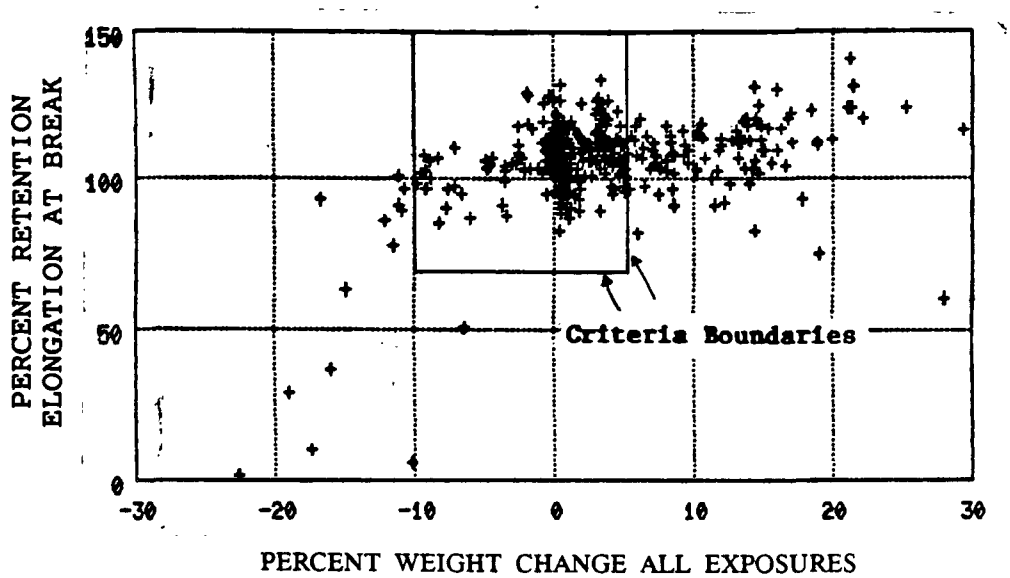



**Figure 18. Relationship of elongation at break and weight change for PVC**

function of weight change. Elongation is not a good indicator of material change for small weight losses or for weight gains for PVC. Only when the weight loss is around ten percent or more does the elongation show substantial decreases.

**Minor change—**

In water, salt, and potassium dichromate solutions only minor changes in weight and mechanical properties were observed. An example is shown in Figure 19. This figure shows the response of PVC to a saturated salt solution at 23° Centigrade. Very little change is seen in weight or mechanical properties, even after two years.

**Swelling—**

Hydrochloric acid immersion was the only exposure condition for PVC in which an increase in weight does not correspond to a decrease in strength. The liner had a long, slow weight and volume gain at 50°C that was an order of magnitude greater than the gain at 23°C (34 percent compared to 4 percent) after two years). There was no corresponding change in mechanical properties, however. Figure 20 shows the response of the liner to hydrochloric acid at 50°C.

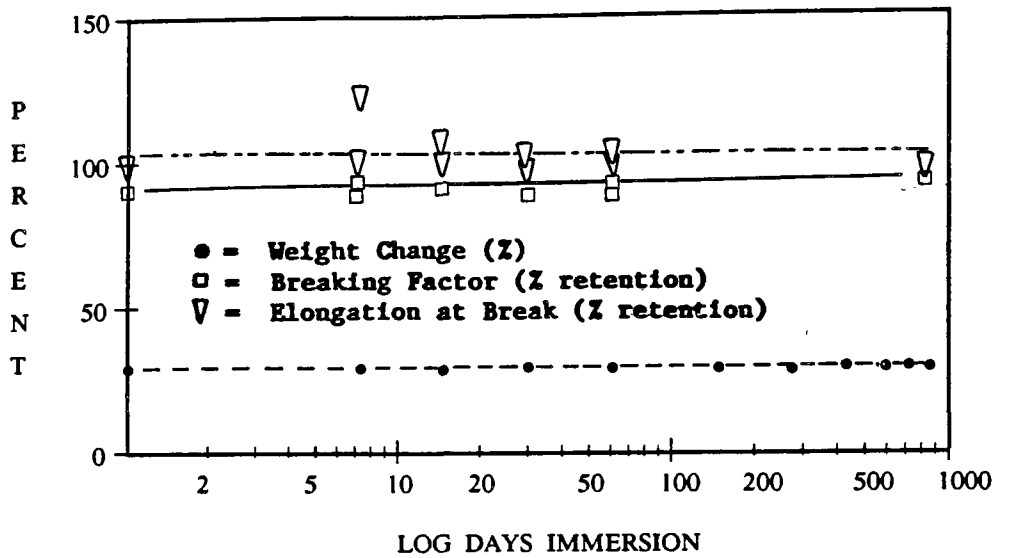



**Figure 19. Physical property change with immersion in saturated salt solution at 23°C for PVC**

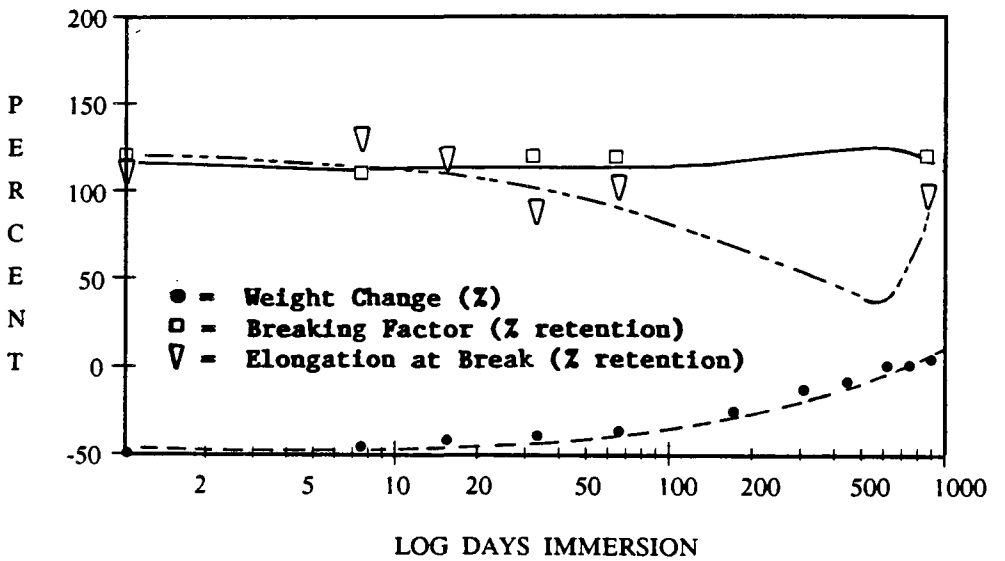



**Figure 20. Physical property change with immersion in 10 percent hydrochloric acid solution at 50°C for PVC**

**Swelling and softening—**

In furfural and 1,2-dichloroethane, this plasticized thermoplastic PVC liner swelled, softened, and decreased in strength, indicating absorption of liquid. Figure 21 shows an example of the liner response to 8 percent furfural.

In furfural, the liner's weight gain was slower and continued over a much longer time period than with 1,2-dichloroethane, but in both exposures the breaking strength response was fast and stablized. With the steady increase in weight it is surmized from the data that elongation at break continuously decreased after 56 days of immersion in furfural. This decrease would not be predicted by looking only at the short-term data.

**Shrinking and stiffening—**

Shrinking and stiffening, with gain in modulus, breaking strength, and loss of elongation, indicate loss of plasticizer. This response occurred with exposure of the PVC to ASTM #2 oil and 10 percent sodium hydroxide. In both chemicals, the liner became very stiff as immersion time increased, and sometimes was brittle, breaking as soon as a test load was applied.

Figure 22 presents the liner response to a 10 percent solution of sodium hydroxide at 23°C. The response was similar but more severe at 50°C. At 50°C, the liner sample became brittle after a two-year exposure and broke as soon as a load was applied. The S-100 modulus, although not shown on these figures, also increased with exposure to oil and sodium hydroxide.

**Combination Response—**

The fifth type of response seen in PVC was a combination of swelling and shrinking responses. This corresponds to rapid absorption of the immersion chemical and then a slower diffusion of additives (e.g., plasticizers) from the liner. Immersion in methyl ethyl ketone and phenol resulted in both swelling/softening and shrinking/stiffening depending on time, temperature, and concentration.

Exposure to these chemicals caused both absorption of the chemical or water into the liner and extraction of the plasticizer out of the liner. In

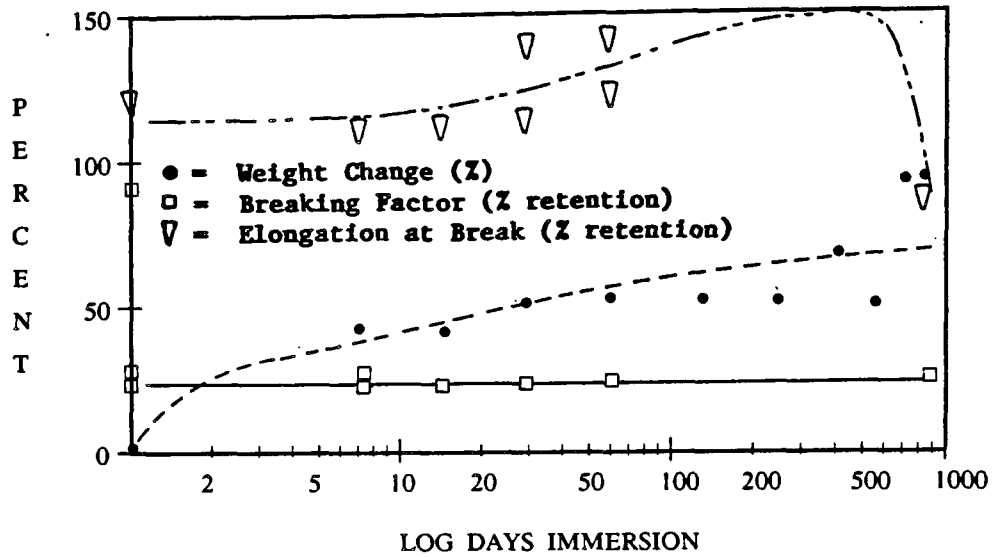



**Figure 21. Physical property change with immersion in 8 percent furfural solution at 23°C for PVC**

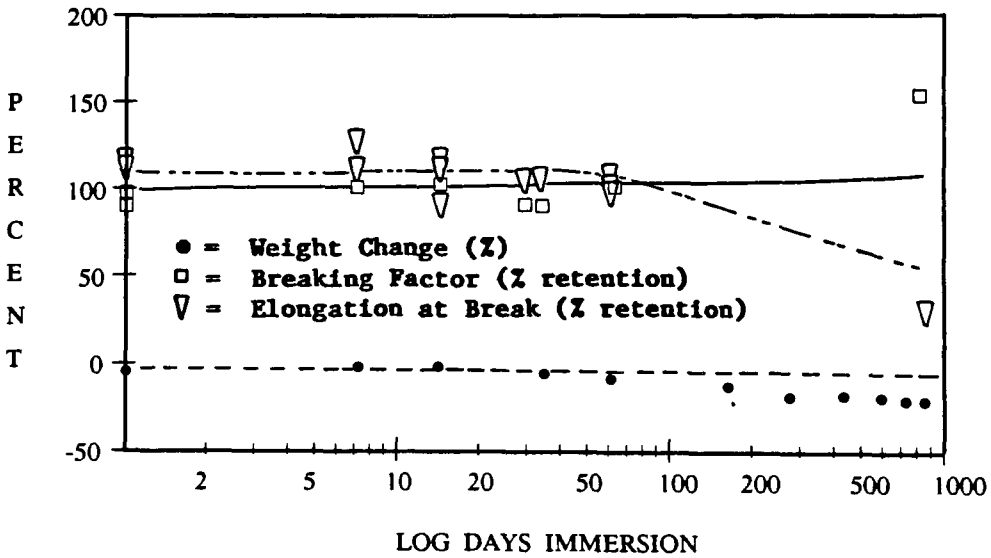



**Figure 22. Physical property change with immersion in 10 percent salt solution at 23°C for PVC**

general, the absorption process is faster, resulting in an initial weight gain that is dependent on concentration. As exposure time and/or chemical concentration increases, the slower extraction process becomes significant.

Figure 23 shows percent weight gain as a function of immersion time for samples exposed at 23°C. Weight gain is shown for samples exposed to 1, 4, and 8 percent phenol solutions. After a one day exposure, all samples have gained weight, and the weight gain increased with increasing phenol strength. This initial relationship of weight to concentration becomes reversed as the immersion time is lengthened. The lowest phenol concentration (1 percent) has the largest weight gain, and the highest concentration (8 percent) has the most weight loss, after two months immersion.

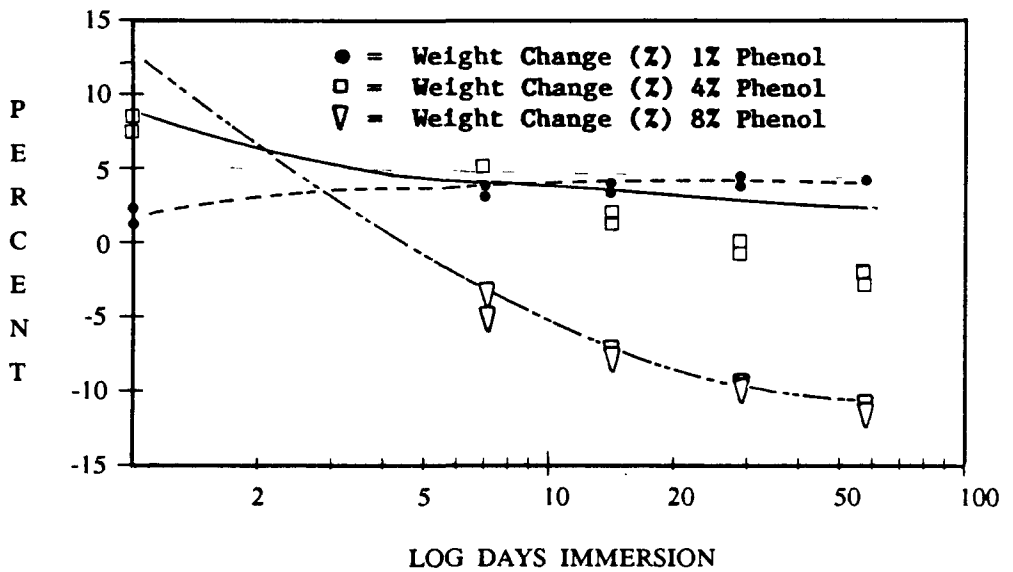



**Figure 23. Weight change with immersion in phenol solution at 23°C for PVC**

The PVC liner's mechanical properties also showed this combination response. Figures 24, 25, and 26 show percent weight change, percent retention of breaking factor, and percent retention of ultimate elongation with immersion time at 50°C. In Figure 24, response to a 1 percent phenol solution, a stabilized decrease in breaking strength corresponds to the moderate weight

gain. Elongation is not significantly affected. In a 4 percent solution (Figure 25), the initial weight gain recedes with time. The corresponding initial loss of breaking strength (from softening due to absorption) is recovered and breaking strength increases with time. Elongation still shows no significant change. The liner response to an 8 percent solution (Figure 26) shows the continuation of these trends. The initial weight gain (and initial loss of strength) becomes a weight loss (and increase in strength). In 8 percent phenol, however, an additional effect is apparent: the elongation at break has decreased after a two-year exposure, another sign of stiffening and possible eventual embrittlement.

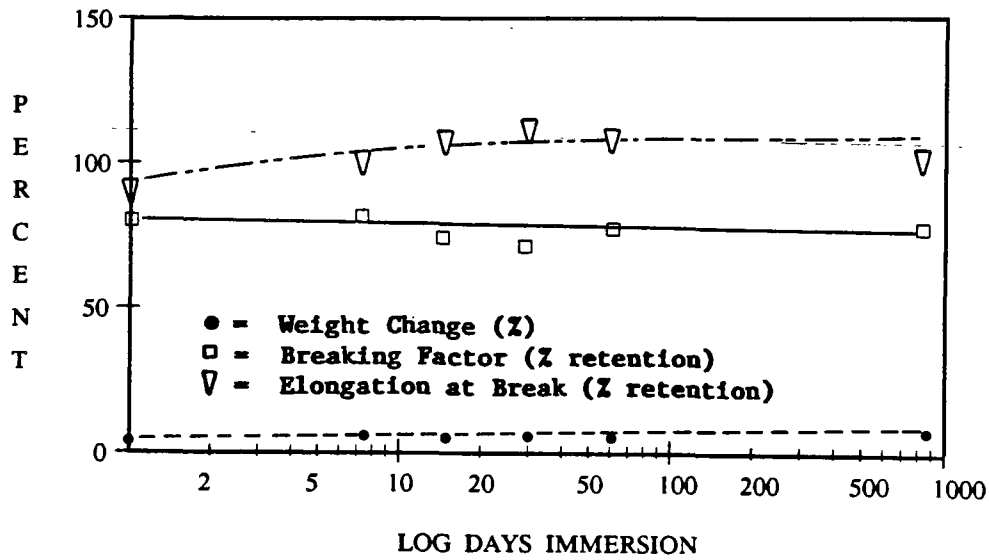



**Figure 24. Physical property change with immersion in 1 percent phenol solution at 50°C for PVC**

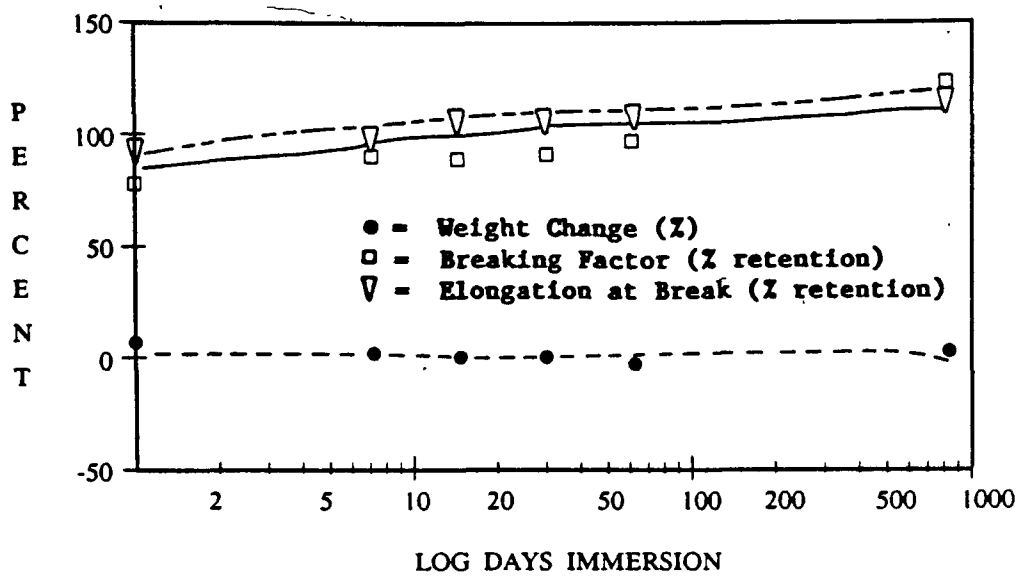



**Figure 25. Physical property change with immersion in 4 percent phenol solution at 50°C for PVC**

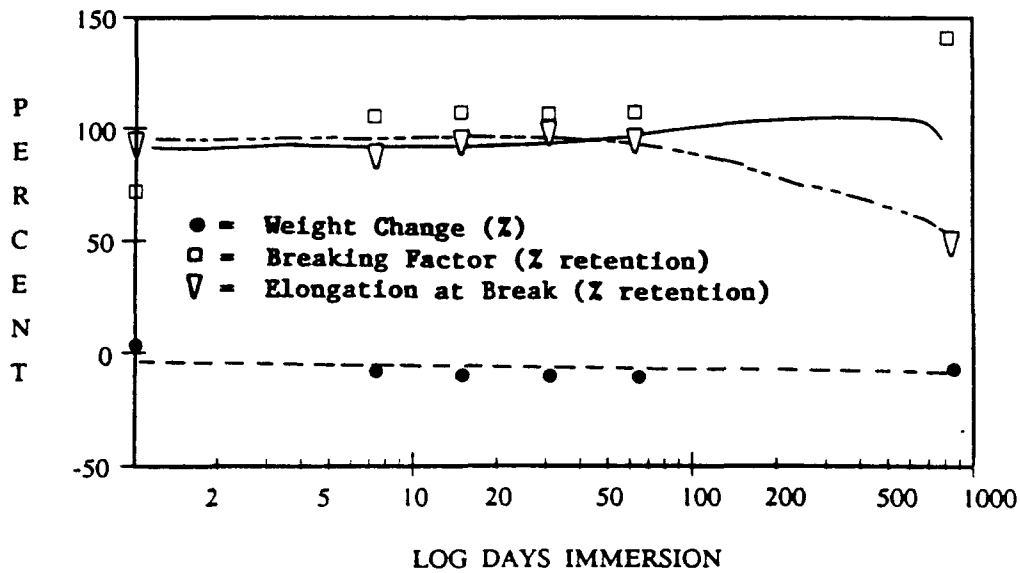



**Figure 26. Physical property change with immersion in 8 percent phenol solution at 50°C for PVC**

## CHLORINATED POLYETHYLENE (CPE)

### Criteria for Determining FML Chemical Resistance

For this CPE liner, based on the overall data in this project, the following criteria are proposed for determining CPE chemical resistance with immersion tests:

- Stability of weight change and mechanical properties with time.
- A stabilized weight gain of not more than 25 percent for immersion testing conducted at 23°C.
- The breaking factor must be at least 75 percent of the initial value and equal to or greater than the minimum as-received value in the material properties table of NSF Standard 54 for the appropriate thickness.
- The percent elongation at break must be at least 70 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- The S-100 modulus must be at least 70 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- The tear resistance must be at least 70 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.

These criteria are used in evaluating the FML's response to the chemicals in Table 26. Table 26 is a summary of the results of chemical resistance testing for CPE liner, and the table is explained and amplified in the sections that follow. The chemicals listed in Table 26 are grouped according to the type of response seen. Resistance or non-resistance is listed in the second to last columns, and the reasons for a non-resistance rating are given in the last column. Also listed in the table are whether temperature and concentration effects were seen, whether the liner achieved stability in contact with the chemical exposure, and whether the CPE is considered resistant to the chemical exposure.

Table 26. CHLORINATED POLYETHYLENE (CPE): RESPONSE SUMMARY FOR CHEMICAL RESISTANCE

| CHEMICAL NAME | TYPE | TEMPERATURE EFFECT | CONCENTRATION EFFECT | TYPE OF RESPONSE | CONDITIONS | | STABILITY ACHIEVED- | RESISTANT- | REASONS FOR NON-RESISTANCE * |
|---|---|---|---|---|---|---|---|---|---|
| Water | - | yes | - | Loss of Elongation at 50 C | 23 C | - | Y | Y | |
| | | | | | 50 C | | Y | N | (WG) EL |
| Sodium Chloride | SALT | no | no | Minor Loss of Elongation at 50 C | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | Y | |
| Potassium Dichromate | OXIDIZER | yes | - | Minor Loss of Elongation at 50 C | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y. | |
| Hydrochloric Acid | ACID | yes | - | Loss of Elongation at 50 C | 28 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | EL(m) |
| Furfural | ALDEHYDE | yes | yes | Swelling and Softening | 23 C | 1% | N | N | S, WG, TL(m), SL |
| | | | | | | 4% | N | N | S, WG, BL, TL, SL |
| | | | | | | 8% | Y | N | WG, BL, TL, SL |
| | | | | Loss of Elongation at 50 C | 50 C | 1% | N | N | S, WG, BL, TL(m), SL |
| | | | | | | 4% | Y | N | WG, BL, TL, SL, EL |
| | | | | | | 8% | Y | N | WG, BL, TL, SL, EL |
| 1,2-Dichloroethane | CHLORINATED HYDROCARBON | yes | yes | Swelling and Softening | 23 C | .1% | Y | N | BL(m), TL, SL |
| | | | | | | .5% | N | N | WG, BL, TL, SL |
| | | | | | | .8% | N | N | WG, BL, TL, SL |
| | | | | | 50 C | .1% | Y | N | WG, TL(m), SL, EL |
| | | | | | | .5% | Y | N | WG, BL, TL, SL, EL |
| | | | | | | .8% | Y | N | WG, BL, TL, SL |
| Sodium Hydroxide | BASE | yes | - | Minor Loss of Elongation at 50 C | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| ASTM #2 Oil | OIL | yes | - | Minor Loss of Elongation at 50 C | 23 C | 100% | Y | Y(m) | BL(m), SL(m) |
| | | | | | 50 C | | Y | Y(m) | BL(m), SL(m), EL(m) |
| Methyl Ethyl Ketone | KETONE | yes | yes | Swelling and Softening | 23 C | 3% | Y | N | WG, BL, TL(m), SL |
| | | | | | | 13% | Y | N | WG, BL, TL, SL |
| | | | | | | 26% | Y | N | WG, BL, TL, SL |
| | | | | | 50 C | 3% | Y | N | WG, BL, TL(m), SL |
| | | | | | | 13% | Y | N | WG, BL, TL, SL |
| | | | | | | 26% | Y | N | WG, BL, TL, SL, EL |
| Phenol | PHENOL | yes | yes | Swelling and Softening | 23 C | 1% | N | N | WG, BL(m), SL |
| | | | | | | 4% | N | N | WG, BL, TL, SL |
| | | | | | | 8% | Y | N | WG, BL, TL, SL |
| | | | | | 50 C | 1% | N | N | WG, TL(m), SL, EL |
| | | | | | | 4% | N | N | WG, BL, TL, SL |
| | | | | | | 8% | Y | N | WG, BL, TL, SL |

* S = No Stability, WG = weight gain, BL = Breaking Factor Loss, EL = Elongation at Break Loss, TL = Tear Resistance Loss, SL = S-100 Loss (m) = Marginal or borderline results

\- Y = Yes, N = No, (v) = variable results due to volatility of chemical

The suggested criteria for mechanical properties are based on the limits of material variability seen for this CPE liner. Although significant increases in elongation were seen as a result of some chemical exposures, it was not possible to set an upper limit for change in this property. The increased elongation did not correlate well with strength or weight gain, and appeared to be a result of variability within the liner. Limits on weight change are specified for a 23°C immersion temperature. This was necessary since the weight gain was strongly temperature-dependent.

The suggested criteria for S-100 modulus and elongation agree with those proposed by the EPA in the document "Resistance of FML's to Chemicals and Wastes"(27). Tear resistance was not included in the EPA list. The EPA criteria lists ten percent as the limit for weight gain, with the exception of water, and notes that weight gains of more than ten percent in water did not correspond to decrease in mechanical properties. Limits on breaking factor were set at 75 percent retention in this project rather than the 80 percent retention listed in the EPA document to reflect the test reproducibility. This would not result in any difference in the number of exposures rated as non-resistant for this project.

CPE resistance ratings are listed in the EPA matrix for five of the chemicals tested in this project. Four of the five ratings given agree with ratings derived using the proposed criteria with project data (phenol, HCl, salt, and water). CPE was rated as non-resistant to NaOH (30 percent) in the matrix, based on weight change data. Table 27 compares the two sets of weight data (NSF and matrix reference). NSF weight change results are much lower, and no significant changes were observed in the liner's mechanical properties. The difference in ratings is probably a function of concentration (10 percent in this study, <30 percent in the EPA matrix).

Agreement between percentage change criteria and absolute minimum property values (using Standard 54 tables) was quite good. The absolute limit for breaking factor, though, was more stringent than the percentage change criteria for breaking factor because this CPE liner has much less strength in the transverse direction.

TABLE 27. COMPARISON OF MANUFACTURER'S DATA TO NSF DATA FOR CPE RESISTANCE TO NaOH.

| DAYS IMMERSION | PERCENT WEIGHT CHANGE | |
|---|---|---|
| | Matrix Reference | NSF Data |
| | (24°C, < 30 percent NaOH) | (23°C, 10 percent NaOH) |
| 1 | | 0.3 |
| 3 | 3.0 | |
| 7 | | 0.8 |
| 11 | 8.0 | |
| 14 | | 1.0 |
| 28 | | 1.6, 1.7 |
| 56 | | |
| | | 2.4 |
| 81 | 15.6 | |
| 144 | | |
| | | 1.8 |
| 238 | | 1.1 |
| 368 | | 1.0 |
| 510 | | 0.7 |
| 622 | | 0.2 |
| 732 | | 0.3 |

Two limitations in the proposed criteria for CPE chemical resistance are temperature and permeability. First, the effect of temperature on chemical resistance is especially significant for CPE. No service temperature limits can be proposed since only two temperatures were used for immersion testing, but service at 50°C does not appear to be suitable for CPE.

Also, these tests do not address the permeability of the liner. Permeability is an important functional parameter for all FMLs used in waste containment applications. Haxo et al. tested the permeability of several FMLs exposed to acidic waste. He found that the permeability of the CPE liner increased with time on exposure to the waste, probably due to high water absorption (29).

**Response Time and Stability**

The FML response to the chemical immersion must stabilize in order for it to be considered chemically resistant. Response time, or the time required for the liner to stabilize in a given solution, varied from less than one month to more than five hundred days for CPE.

Significant weight changes (large enough to correspond with changes in breaking strength) were usually evident within a two-month test period, although weight often continued to increase. Breaking strength and tear resistance stabilized faster than weight change, usually within two months. Slow changes in elongation at break and S-100 modulus were sometimes evident up to the two-year exposure.

**Magnitude of Liner Response**

A two-part evaluation of the magnitude of physical property change was followed in determining CPE chemical resistance. Both an absolute minimum value for a mechanical property (for example, elongation at break) and an allowable percent change of that property (from the initial value) were determined.

The range of changes seen in the CPE liner was large. No losses in weight were seen, but weight gain varied overall from less than one percent to over three hundred percent, depending on the exposure conditions. Exposure to water at 23°C and 50°C caused CPE weight gains of 19 and 90 percent within two years, respectively. Weight gains seen in hydrochloric acid, salt, potassium dichromate, sodium hydroxide, and ASTM #2 oil were less than those in water at

each temperature. The reduced liner swelling in ionic solutions is probably caused by the liner's inability to overcome the hydration energy of the inorganic solute. This phenomenon was typical for all liners. MEK, DCE, furfural, and phenol solutions caused weight gains larger than in water and dependent on concentration and temperature.

Changes in the mechanical properties of the CPE liner in general corresponded to weight changes. Losses in breaking strength from zero to 99 percent (saturated MEK at 50°C) were observed. Change in elongation at break was both positive and negative, and became extremely variable in some exposures. Retention of intial elongation ranged from 42 to 254 percent.

**Absolute Amount—**

Because the CPE liner is strongly anisotropic, the values for mechanical properties in each direction were evaluated. The NSF Standard 54 CPE material property table was used for the minimum absolute values.

Using the Standard 54 values, all four organic solvents are considered non-resistant at all three concentrations. While for the most dilute concentrations, properties in the machine direction were above Standard 54 values, the transverse direction values fell below Standard 54. Marginal results were obtained for some transverse direction samples exposed to ASTM #2 oil, oily water, salt, water, and dichromate solutions. Physical properties of CPE should be measured in the transverse direction as a minimum.

**Percent Change from Initial Value—**

Figure 27 shows the relationship between breaking factor retention and weight change for machine direction samples. Breaking factor variability in this CPE liner was approximately $\pm$ 20 percent, measured by looking at those samples with little or no weight change. (Variability in the transverse direction was similar.) A limit on change of 25 percent was chosen as a conservative estimate of real material degradation.

Retention of ultimate elongation (machine direction) is shown as a function of weight change in Figure 28. Exposure to fluids tended to increase

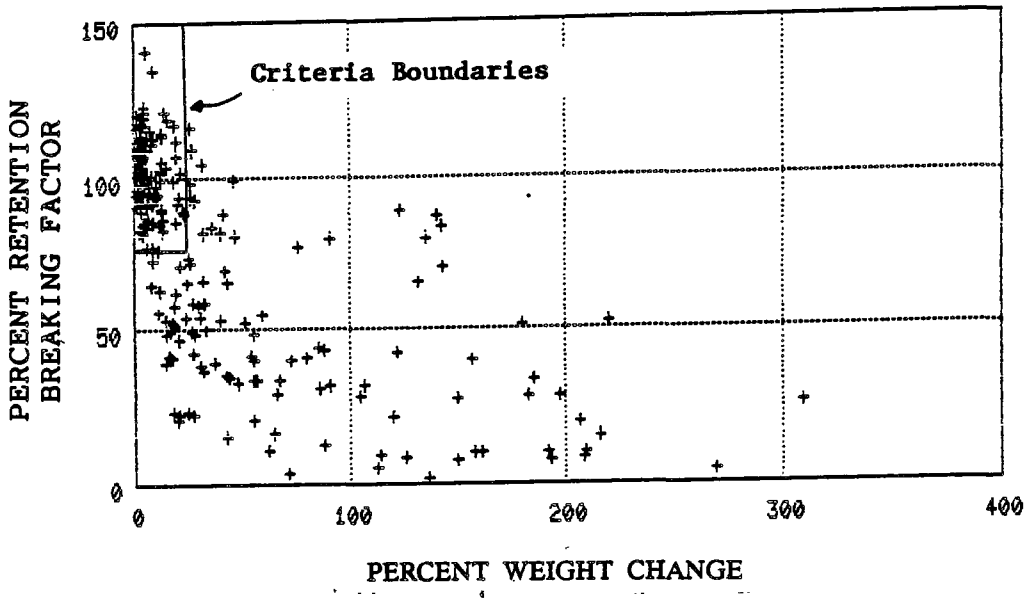



**Figure 27. Relationship of breaking factor and weight change for CPE**

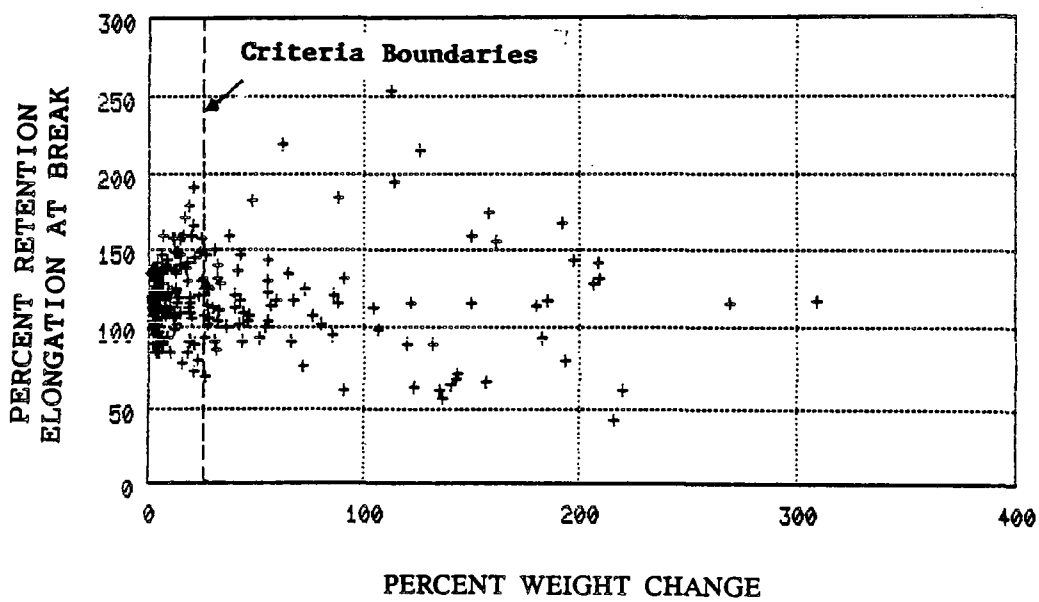



**Figure 28. Relationship of elongation at break and weight change for CPE**

CPE elongation, however, even for small weight change, and elongation became extremely variable for some chemical exposures.

No limits on increase in elongation can be set from the data. Decreases in elongation with time were usually associated with exposure at 50°C, and were apparent only after a two-year immersion period. A 30 percent decrease in elongation retention was chosen as evidence of degradation.

A limit for decrease in the S-100 modulus was set at 70 percent of initial based on the variability shown in Figure 29. (This figure shows the machine direction, but variability was similar in the transverse direction.) For tear resistance, the same 30 percent limit was set. Variability in tear resistance was about 25 percent in the machine direction and 20 percent in the transverse direction.

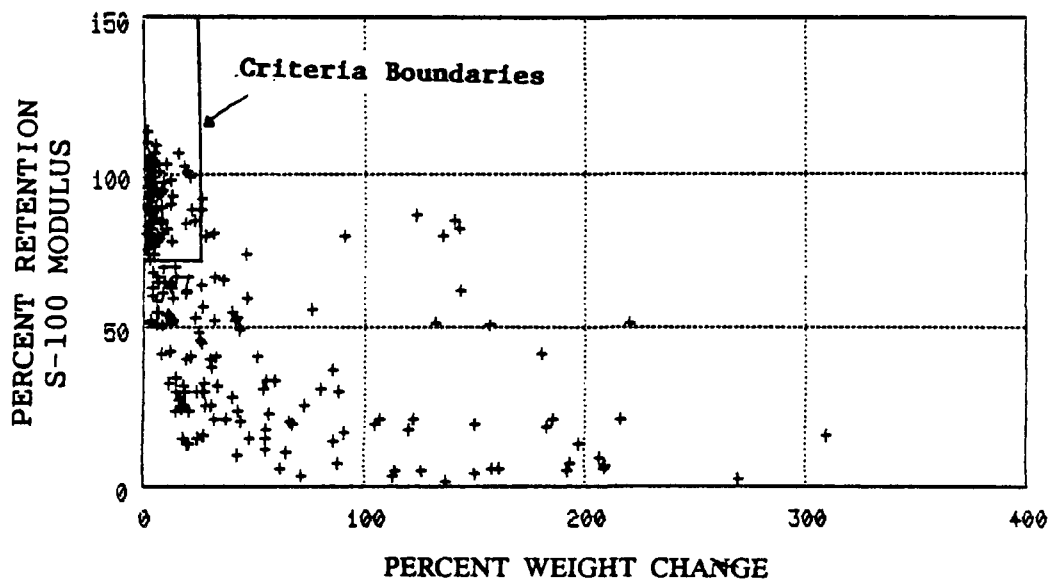



**Figure 29. Relationship of S-100 modulus and weight change for CPE**

A limit for allowable stabilized weight gain for this CPE liner was set at 25 percent for 23°C immersion tests. This limit is comparable to the weight gain seen in water at 23°C, for which no significant changes in physical properties were seen. It must be emphasized that weight change alone

cannot determine chemical resistance for CPE. Absorption of water may cause no change in physical properties, while a comparable weight gain caused by absorption of solvent can cause softening. This was seen in CPE on exposure to 0.1 percent DCE at 23°C. While the increase of weight was 22 percent (compared to 19 percent for water), the retention of S-100 modulus was only 65 percent (compared to 96 percent for water).

## Types of Effects

The results in Table 26 for this thermoplastic CPE liner are grouped according to the type of effects seen. Temperature and concentration effects are noted in the third and fourth columns. Three basic types of response to chemical immersion were observed with this liner: minor change, degradation due to temperature, and swelling and softening (sometimes accompanied by degradation due to temperature).

**Temperature Effects—**

The response of this liner to increased immersion temperature shows that an elevated temperature is not suitable for accelerated testing. Significant effects were caused by temperature alone at 50°C. The CPE liner stretched in the transverse direction and shrank in the machine direction in nearly all high temperature exposures. Also, weight gain was considerably more for most 50°C samples than for the corresponding 23°C samples.

Another temperature-related change seen in the CPE was a decrease in the amount of elongation at break after a two year immersion period. Samples immersed in 50°C water lost 39 percent of their elongation after two years, compared to an 8 percent for corresponding samples at 23°C. This loss of elongation at 50°C was seen in the inorganic solutions, oil, furfural, and the lower concentrations of the other organic solutions. The most severe losses were seen in those solutions most like water (i.e. low organic chemical concentration and/or low ionic strength). This loss of elongation appears to be related to the amount of weight change (water or chemical absorption) as well. CPE samples immersed in salt or caustic solutions gained less weight than those in water.

**Concentration Effects—**

Four organic chemicals were tested in three concentrations. All responses seen with these chemicals were affected by concentration. Percent weight gain increased with increasing solution concentration. Strength, modulus, and tear resistance all decreased with increasing solution concentration.

## Indicators of Non-Resistance

For this CPE liner, the most important indicators of non-resistance were weight change, S-100 modulus, breaking strength, and elongation at break. Tear resistance generally followed the same trend as breaking strength, and volume change (swelling) corresponded to weight change.

In general, an increase in sample weight indicated a change in mechanical properties for CPE. When weight gain was due primarily to absorption of organic solvents, strength and modulus were less than initial values. When weight gain was due primarily to absorption of water at 50°C, elongation at break showed long-term deterioration.

The S-100 modulus was a more sensitive indicator of solvent absorption and softening than the breaking factor for CPE. In the same example immersion discussed in the previous section (0.1 percent DCE at 23°C), the retention of S-100 modulus stabilized at 65 percent, while the breaking strength stabilized at 91 percent retention. Since softening may indicate an increase in permeability or a decrease in puncture resistance, the sensitivity of the S-100 modulus is important in chemical resistance evaluation. Also, an increase in S-100 modulus was seen in some samples after a two-year immersion (a recovery from an initial decrease), which could indicate stiffening and possibly crosslinking of the CPE.

While breaking factor is not as sensitive an indicator, it is still useful for evaluating CPE chemical resistance.

Elongation at break is the least sensitive measurement for short-term immersion testing. With this CPE liner, elongation became extremely variable with exposure to organic chemicals, especially furfural. Within a group of five test specimens cut from the same exposed coupon, elongation could vary from 400 percent to over 1000 percent (of initial grip separation). This in itself is an indication of chemical effect on the liner, but quantitative interpretation of results is difficult.

After a two-year immersion period, however, elongation is a better indicator of material change. Especially at the higher temperature, CPE elongation was often significantly less than its initial value, indicating material degradation. Since this decrease in elongation was sometimes accompanied by a recovery of the modulus, it may be an indicator of stiffening and/or crosslinking.

**Minor Change—**

The following 23°C exposures produced only minor changes in CPE weight and mechanical properties: water, sodium hydroxide, hydrochloric acid, salt, potassium dichromate, ASTM #2 oil, and water with ASTM #2 oil added. An example is shown in Figure 30. This figure shows the response of the CPE liner to a saturated salt solution at 23°C. Weight gain is less than three percent over the two-year period. Breaking strength was not affected, nor was the S-100 modulus (not shown). Although the elongation at break was initially increased by contact with the solution, it is nearly at its initial value after two years.

**Degradation due to temperature—**

As previously discussed, degradation in CPE material properties was caused by exposure to 50°C solutions. While weight gain and elongation at break are the best indicators for this effect, breaking strength sometimes also is decreased. Figures 31 and 32 compare the response of the CPE liner to water at 23 and 50°C. In Figure 30, a moderate gain in weight (absorption of water) is seen. Breaking factor is unchanged, and elongation shows approximately 8 percent decrease after two years.

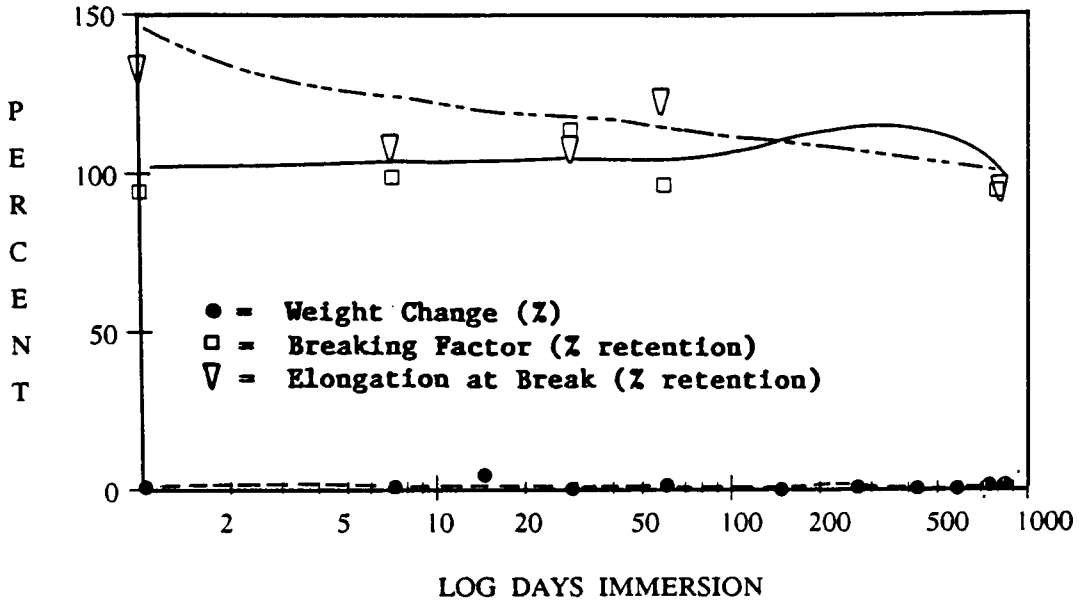



**Figure 30. Physical property change with immersion in saturated (35 percent) salt solution at 23°C for CPE**

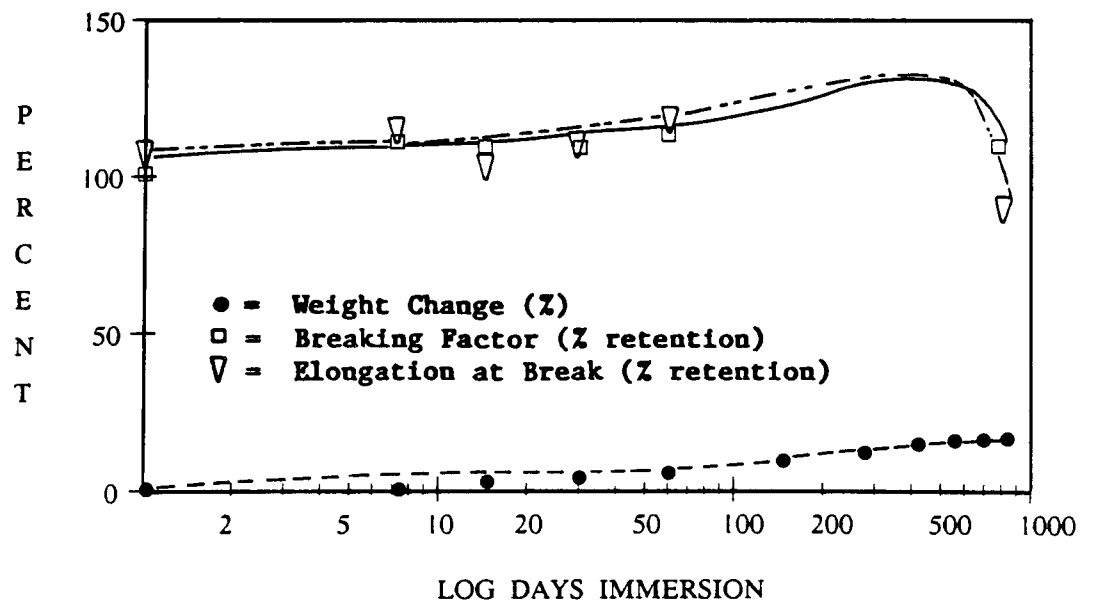



**Figure 31. Physical property change with immersion in water at 23°C for CPE**

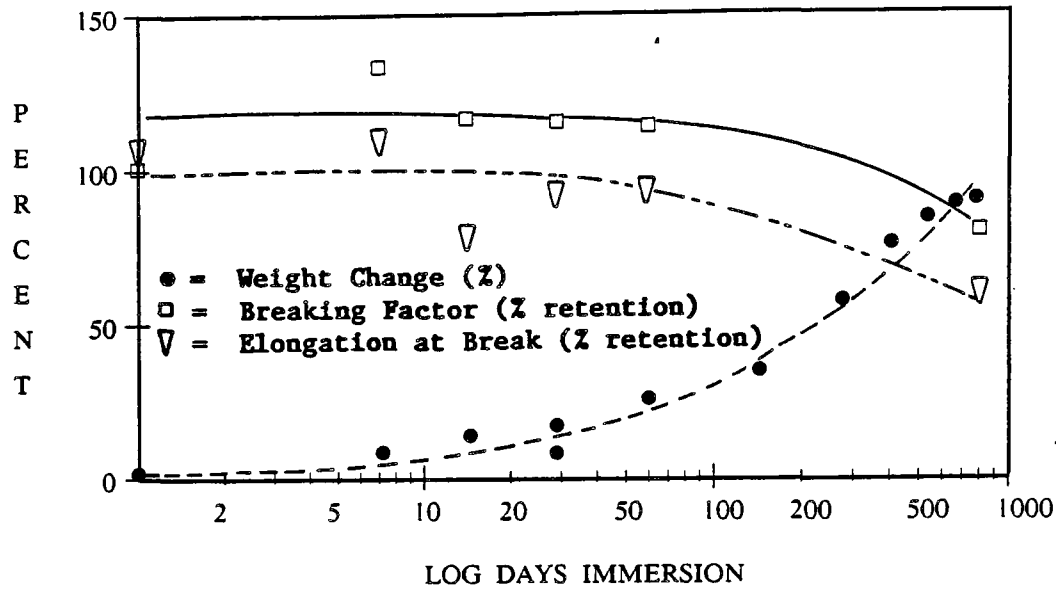



**Figure 32. Physical property change with immersion in water at 50°C for CPE**

At 50°C (Figure 32), however, the changes in CPE properties are more severe. Weight gain is more than four times the gain at 23°C. Both breaking strength and elongation are less than initial values after two years exposure.

**Swelling and softening (sometimes accompanied by temperature degradation)—** The CPE response to organic solutions (phenol, furfural, MEK, and 1,2-dichloroethane) was primarily one of swelling and softening. The degree of the response was dependent on the chemical concentration in all cases. Breaking strength, S-100 modulus, and tear resistance decreased to some degree in all samples exposed to these chemicals. As shown in Table 26, CPE was rated as non-resistant to all concentrations of these four chemicals. Also observed in some exposures was an increase in elongation at break, and a greatly increased variability in the elongation results.

These effects are illustrated in Figures 33-38. These figures show the response of the CPE liner to solutions of furfural in water. Weight change, retention of breaking strength and retention of elongation at break are shown as a function of immersion length. Figures 33-35 show results for 23°C exposures, and 36-38 for 50°C exposures. Note that weight gains increase with concentration and with temperature. Variability in weight measurements is

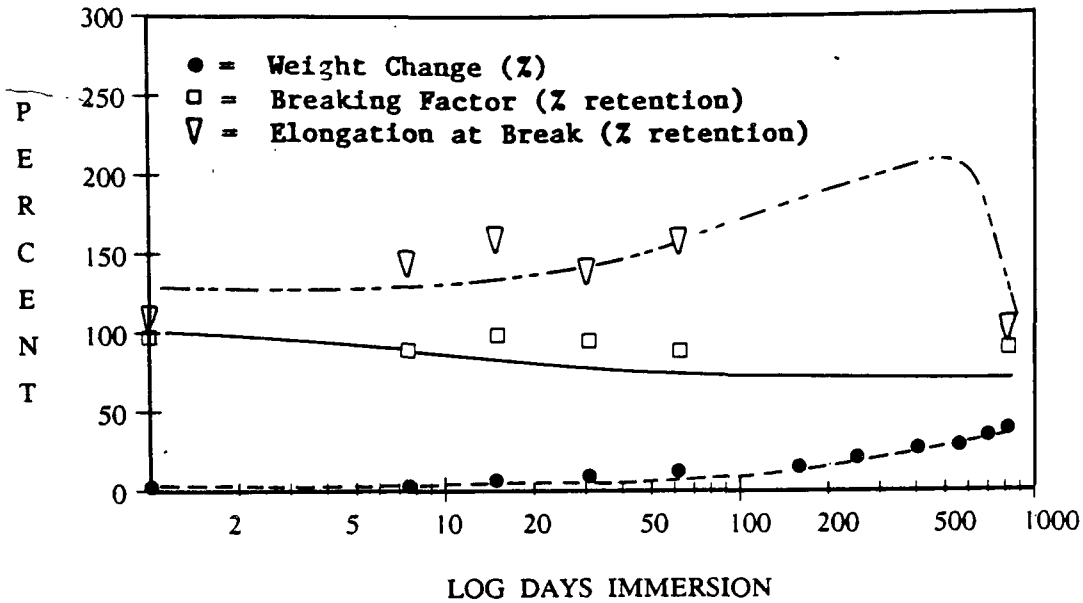



**Figure 33. Physical property change with immersion in 1 percent furfural solution at 23°C for CPE**

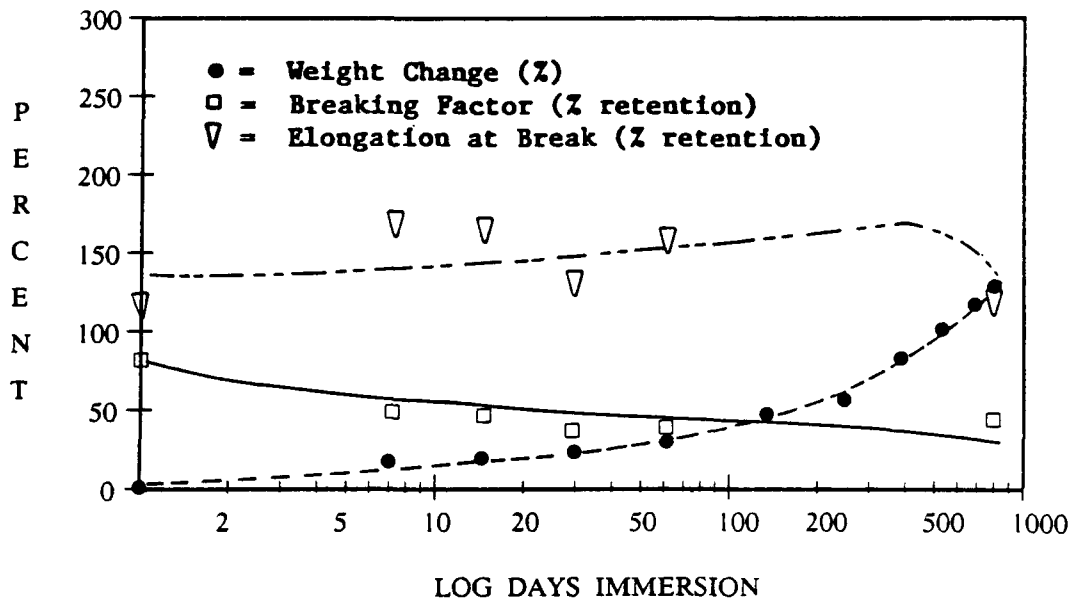



**Figure 34. Physical property change with immersion in 4 percent furfural solution at 23°C for CPE**

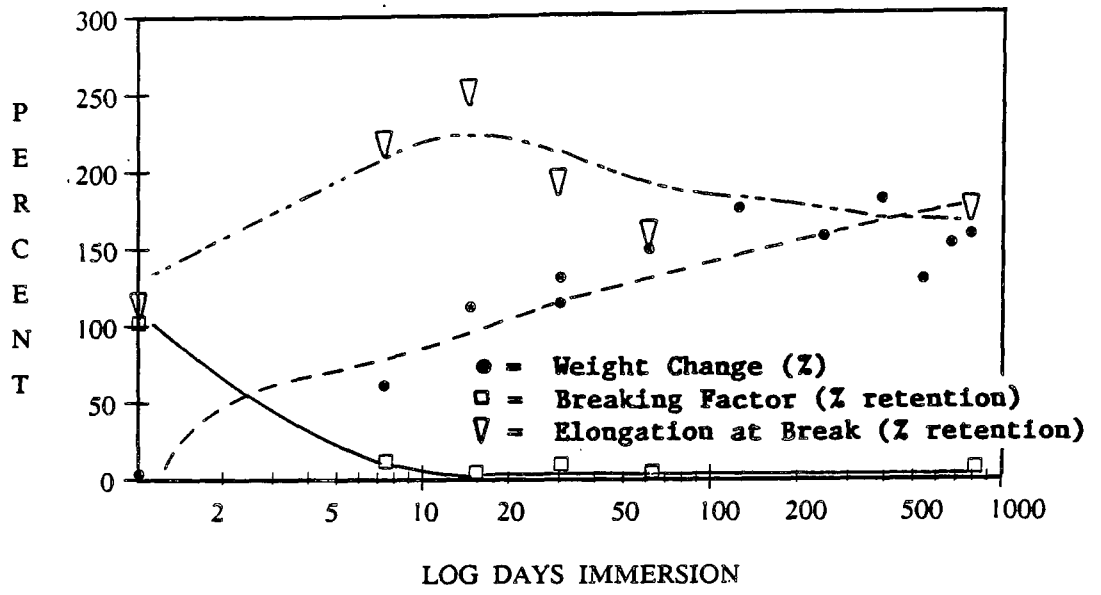



**Figure 35. Physical property change with immersion in 8 percent furfural solution at 23°C for CPE**

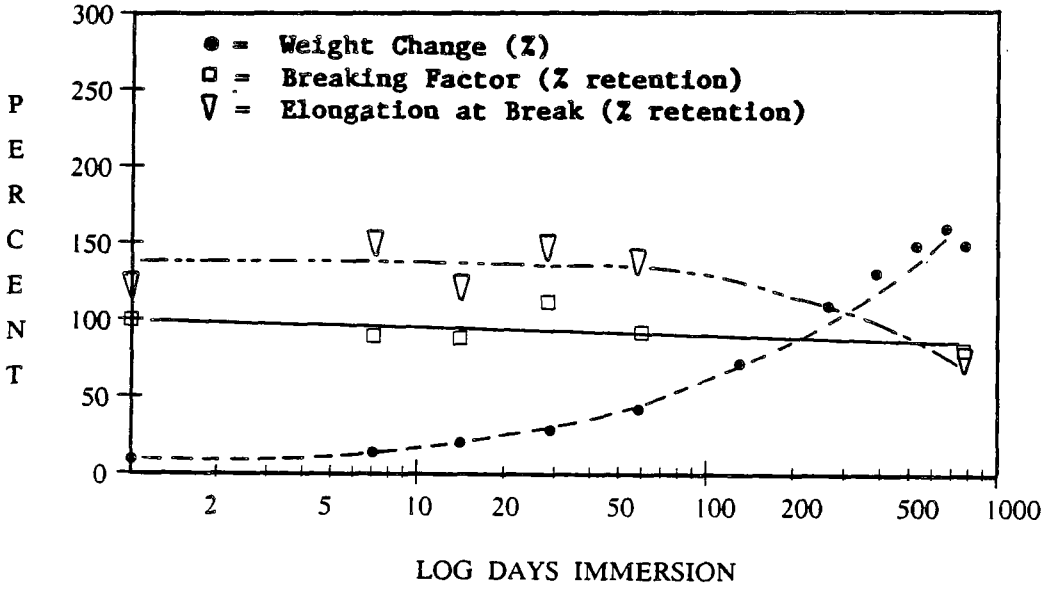



**Figure 36. Physical property change with immersion in 1 percent furfural solution at 50°C for CPE**

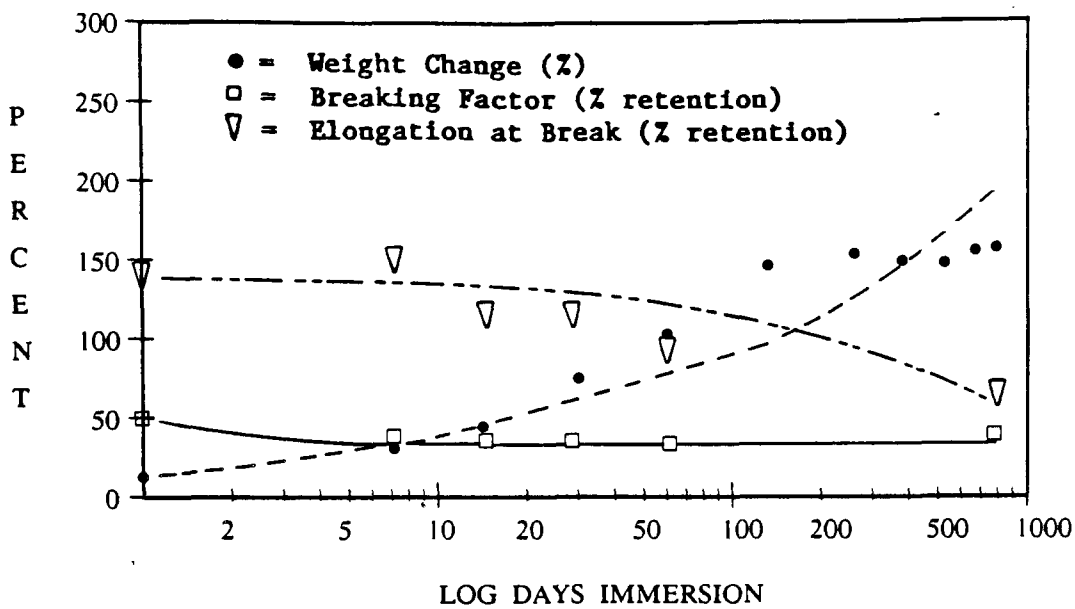



**Figure 37. Physical property change with immersion in 4 percent furfural solution at 50°C for CPE**

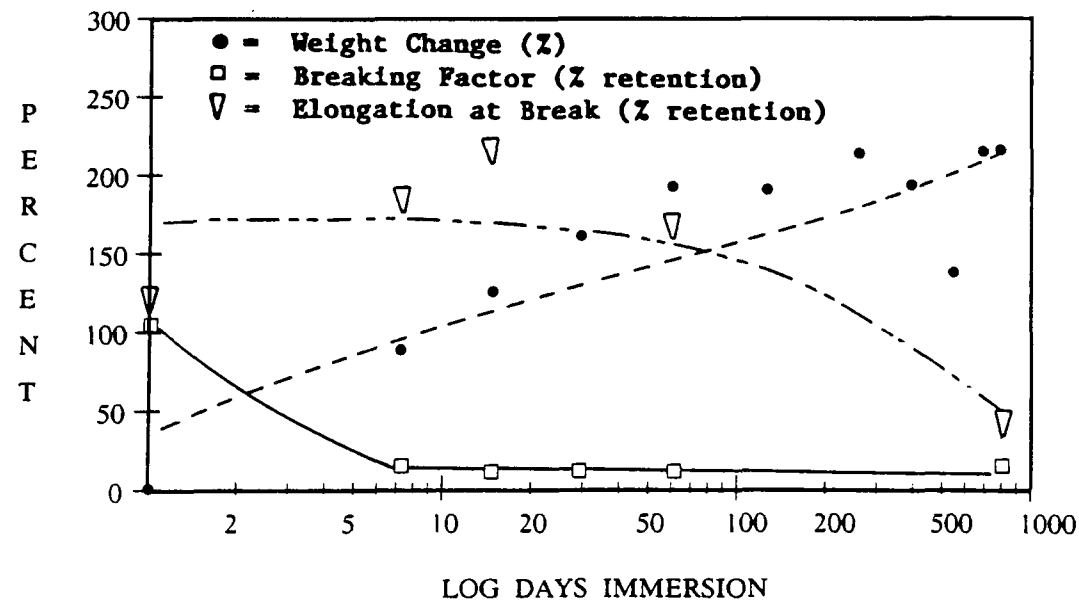



**Figure 38. Physical property change with immersion in 8 percent furfural solution at 50°C for CPE**

highest at the highest concentration (8 percent). Weight stability is achieved in the 8 percent solution at both temperatures after 100 days and in the 4 percent solution at 50°C only (Figures 35, 37, and 38).

The loss in breaking strength is clearly dependent on solution concentration, although the strength appears to stabilize in all exposures. Nearly complete loss of strength is seen in CPE exposed in 8 percent furfural solutions.

Variability in elongation at break is particularly evident in Figure 35. Sample elongation was as much as 250 percent (average of five specimens) of its initial value; there were large differences in elongation between adjacent specimens of the same sample, cut from the same area of the liner material. These differences were as high as ± 37 percent of the average percent value.

The effect of temperature on elongation can be seen by comparing Figures 35 and 38. After two year's immersion time, the sample exposed at 50°C retains less than 50 percent of initial elongation, while the sample exposed at 23°C retains more than 150 percent of the initial value. Crosslinking of the CPE polymer is a possible cause of this decrease in elongation in response to heat, but it is clearly accompanied by liner degradation, as evidenced by the large weight gains and losses in strength.

## ETHYLENE PROPYLENE DIENE MONOMER (EPDM)

### Criteria for Determining FML Chemical Resistance

For EPDM liner, based on the overall data from this project, the following criteria are proposed for determining chemical resistance of EPDM with immersion tests:

- Stability of weight change and mechanical properties with time.
- A stabilized weight gain of not more than 30 percent.
- The breaking factor must be at least 80 percent of the initial value and

also equal to or greater than the minimum as-received value in the material properties table of NSF Standard 54.

- The percent elongation at break must be at least 75 percent of the initial value and also equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.

These criteria are used in evaluating the FML's response to the chemicals in Table 28. Table 28 is a summary of the results of chemical resistance testing for EPDM liner, and the table is explained and amplified in the sections that follow. The chemicals listed in Table 28 are grouped according to the type of response seen. Resistance or non-resistance is listed in the second to last columns, and the reasons for a non-resistance rating are given in the last column. Also listed in the table are whether temperature and concentration effects were seen, whether the liner achieved stability in contact with the chemical exposure, and whether the EPDM is considered resistant to the chemical exposure.

**Response Time and Stability**

Response time, or the time required for the liner to stabilize in a given solution, ranged from less than one month to more than two years for EPDM. The rate of weight change was different for different chemical exposures, but can be divided roughly into two categories. In the first group, weight gain stabilized within 250 days: water, salt, dichromate, sodium hydroxide, DCE, ASTM #2 oil, and MEK. In the second group, stabilization took 500 days or more: hydrochloric acid, furfural, and phenol.

EPDM immersion tests need to be longer than two months in duration. Few significant changes in mechanical properties were seen within a two-month period. With the exception of ASTM #2 oil, exposures that caused large eventual weight gain and loss of mechanical properties acted slowly. At least eight months is needed to determine EPDM chemical resistance from immersion testing.

Table 28. ETHYLENE PROPYLENE DIENE MONOMER (EPDM): RESPONSE SUMMARY FOR CHEMICAL RESISTANCE

| CHEMICAL NAME | TYPE | TEMPERATURE EFFECT | CONCENTRATION EFFECT | TYPE OF RESPONSE | CONDITIONS | | STABILITY ACHIEVED~ | RESISTANT~ | REASONS FOR NON-RESISTANCE * |
|---|---|---|---|---|---|---|---|---|---|
| Water | - | yes | - | Minor Change | 23 C | - | Y | Y | |
| | | | | | 50 C | - | Y | Y | |
| Sodium Chloride | SALT | no | no | Minor Change | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | Y | |
| Potassium Dichromate | OXIDIZER | yes | - | Minor Change | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| Sodium Hydroxide | BASE | no | - | Minor change | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| ASTM #2 Oil | OIL | yes | - | Rapid weight gain | 23 C | 100% | Y | N | WG, BL, EL |
| | | | | | 50 C | | Y | N | WG, BL, EL |
| 1,2-Dichloroethane | CHLORINATED HYDROCARBON | yes | yes | Rapid weight gain (weight loss in pure chemical) | 23 C | .1% | Y | Y | |
| | | | | | | .5% | Y | Y | |
| | | | | | | .8% | Y | Y | |
| | | | | | 50 C | .1% | Y | Y | |
| | | | | | | .5% | Y | Y | |
| | | | | | | .8% | Y | Y | |
| Methyl Ethyl Ketone | KETONE | yes | yes | Rapid weight gain (weight loss in pure chemical) | 23 C | 3% | Y | Y | |
| | | | | | | 13% | Y | Y | |
| | | | | | | 26% | Y | Y | |
| | | | | | 50 C | 3% | Y | Y | |
| | | | | | | 13% | Y | Y | |
| | | | | | | 26% | Y | N | BL |
| Hydrochloric Acid | ACID | yes | - | Slow weight gain | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | N | WG, BL, EL |
| Furfural | ALDEHYDE | yes | yes | Slow weight gain | 23 C | 1% | Y | Y | |
| | | | | | | 4% | N | N | S, |
| | | | | | | 8% | N | N | S, EL |
| | | | | | 50 C | 1% | Y | Y | WG (marginal) |
| | | | | | | 4% | N | N | S |
| | | | | | | 8% | N | N | S, WG, BL, EL |
| Phenol | PHENOL | no | yes | Slow weight gain | 23 C | 1% | Y | Y | |
| | | | | | | 4% | N | N | S |
| | | | | | | 8% | N | N | S |
| | | | | | 50 C | 1% | N | N | S |
| | | | | | | 4% | N | N | S |
| | | | | | | 8% | N | N | S |

* S = No Stability, WG = weight gain, WL = weight loss, BL = Breaking Factor Loss, EL = Elongation at Break Loss,
~ Y = Yes, N = No

## Magnitude of Liner Response

A two-part evaluation of the magnitude of physical property change was followed in determining EPDM chemical resistance. Both an absolute minimum value for a mechanical property (for example, elongation at break) and an allowable percent change of that property (from the initial value) were determined.

Both weight gain (indicative of absorption of chemical or water) and weight loss were observed in testing EPDM. Weight loss was seen only in the initial screening tests, on exposure to neat or concentrated chemicals. The EPDM showed a dried weight loss of 22 percent for pure DCE, 21 percent for pure MEK, 3 percent for pure furfural, and 2 percent for liquified phenol (88 percent). Those samples which had been in DCE and in MEK were visibly smaller and stiffer.

Weight gain varied overall from less than one percent to over one hundred percent, depending on the exposure conditions. Water, salt, potassium dichromate, and sodium hydroxide all showed only minor weight change. MEK, DCE, and phenol solutions caused weight gains of between two and sixteen percent, depending on concentration and temperature. Weight gain in furfural was strongly influenced by temperature and concentration and ranged from 3 to 91 percent. In 10 percent hydrochloric acid, the stabilized weight gains were 5 and 112 percent in low and high temperature, respectively. Weight gain in ASTM #2 oil stabilized at 90 percent at both temperatures.

Changes in the mechanical properties of the EPDM liner were similar. The largest losses in breaking strength were observed after exposure to hydrochloric acid at 50°C (up to 50 percent loss), ASTM #2 oil (up to 53 percent loss), and furfural (up to 29 percent loss). Loss in ultimate elongation was most severe for the same three chemicals (71 percent, 30 percent, and 58 percent loss, respectively).

**Absolute Amount—**

The Standard 54 minimum properties for EPDM are used as the limits for absolute amount of change. The Standard 54 values are not normalized for thickness. EPDM must be normalized to interpret immersion results because of the variable thickness of EPDM and the correlation between thickness and strength. For breaking factor, some samples exposed to ASTM #2 oil, hydrochloric acid (50°C only), and saturated furfural fell below the 42 lb/inch limit.

Some samples exposed to ASTM #2 oil and some exposed to hot hydrochloric acid (50°C only) were below the Standard 54 limit of 300 percent for percent elongation at break. Only one sample exposed to ASTM #2 oil fell below the Standard 54 limit of 4 lb for tear resistance.

Percent Change from Initial Value—

Figure 39 shows the relationship between breaking factor and weight change. To minimize the effect of liner thickness, both the breaking strength and the weight change are normalized for sample thickness by dividing by the initial sample thickness. (Each 500 percent weight change per inch thickness is equivalent to a 15 percent weight change in a 30 mil liner.) Breaking factor reproducibility for EPDM was approximately ± 15 percent. A limit on change of 20 percent was chosen as a conservative estimate of real material degradation.

Retention of ultimate elongation is shown as a function of weight change in Figure 40. Again, the weight change is normalized for thickness. Variability in elongation is about ± 20 percent, and a limit of 25 percent was chosen as evidence of degradation.

A limit for allowable stabilized weight gain for this EPDM liner was set at 30 percent for a 30 mil liner (1000 percent per inch thickness). This limit was set using Figures 39 and 40, and correlating the weight gain at which the mechanical properties fell below the percent change limit. The 30 percent limit is larger than the recommendations given in the Los Angeles

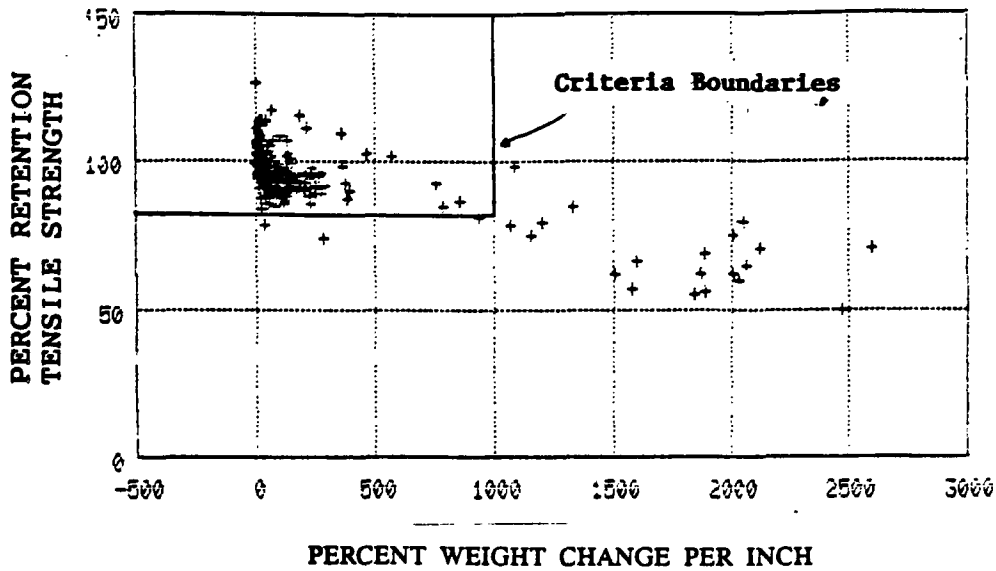



**Figure 39. Relationship of tensile strength (breaking factor normalized for thickness) and weight change for EPDM**

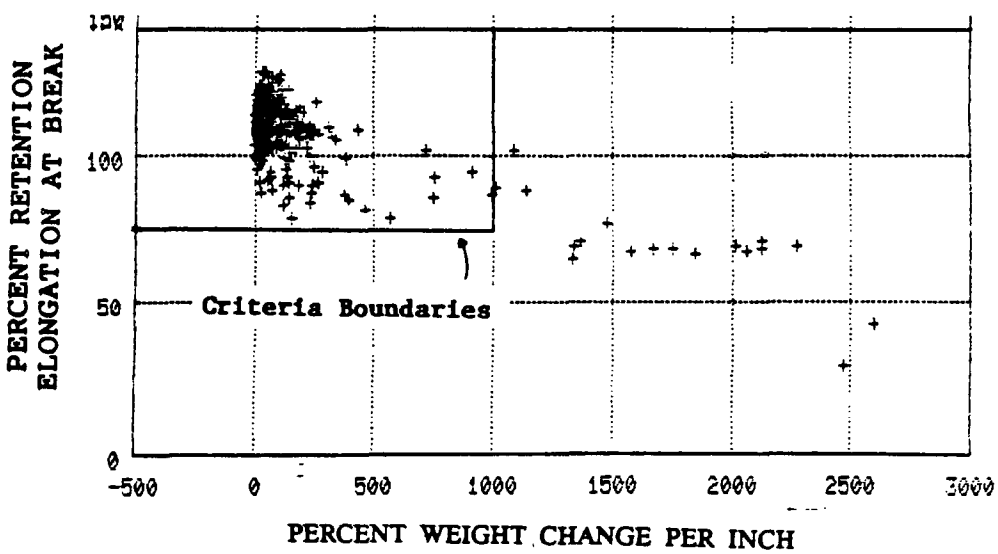



**Figure 40. Relationship of elongation at break and weight change for EPDM**

Rubber Group guide (23), which rates a 20 percent (volume) gain as 'not recommended'. Their more conservative limits may be based on recognizing the slow response time of some elastomers and the short duration of most immersion tests. Stability of weight change was not discussed in their publication.

No limit can be set for weight loss from the data in this project. Weight loss was only seen in initial screening tests, for which no tensile tests were performed.

## Types of Effects

The different effects of chemical immersion observed in EPDM liner are shown in Table 28. A temperature or concentration effect is noted in the third and fourth columns. Four basic types of material changes were observed when EPDM liner was exposed to the immersion chemicals: shrinking and stiffening, minor change, rapid absorption of water or chemical, and slow absorption of water or chemical. These responses are listed in the fifth column.

**Temperature Effects—**

Increasing the immersion temperature affected nearly all the EPDM exposures. Only salt (sodium chloride) and sodium hydroxide solutions showed no difference in response due to temperature. Percent change (gain) in weight was higher at 50°C than at 23°C for all other exposures. In water, the EPDM liner gained two and five percent weight at 23 and 50°C, respectively. Mechanical properties were significantly affected by temperature in only three exposures: 10 percent hydrochloric acid, ASTM #2 oil, and furfural. (These three chemicals also caused the largest weight gains for EPDM). Increasing the temperature of exposure makes the chemical contact more aggressive, in particular with the acid exposure. But the effect of temperature per se, as measured by the water exposures, does not appear to adversely affect the cross-linked EPDM liner. Results of immersion tests accelerated by using an elevated temperature must be interpreted with caution.

**Concentration Effects—**

Increasing the chemical concentration increased the amount of weight gain by the EPDM liner for all four organic exposure series (MEK, furfural, DCE, and phenol). The effect of increased concentration on the liner's mechanical properties was less. Significant decrease in EPDM strength and elongation caused by increasing chemical concentration was only apparent with liner exposed to furfural. Furfural also caused much higher weight gain than the other organic solvents used.

## Indicators of Non-Resistance

For this FML, the most important indicators of non-resistance are weight change, breaking strength, and elongation at break.

For immersion testing of two months or less, weight is the most sensitive indicator of material change. Even weight change, however, is not always a good indictor of possible slow changes in the EPDM liner.

Breaking strength and elongation do indicate material degradation, but these measurements are much less sensitive than weight (or volume) changes. In general, strength and elongation decreased with weight gain, but changes in these mechanical properties were significant only when the weight gain was around 30 percent.

The usefulness of tear resistance as an indicator of chemical non-resistance for EPDM could not be well evaluated in this project. Tear resistance generally followed the same trend as breaking strength, but tear resistance tests were not performed on the two-year immersion samples. Because of the slow response time of EPDM, significant changes in tear resistance were only seen from ASTM #2 oil.

**Shrinking and Stiffening—**

This response was observed only in the initial screening tests, on exposure to neat solvents. EPDM in contact with pure DCE and MEK was visibly smaller and stiffer after seven days immersion.

**Minor Change—**

Four exposure conditions produced only minor change in the weight and mechanical properties of the EPDM liner. Figure 41 shows the response to 10 percent sodium hydroxide solution at 23°C, which is typical of this category. Less than one percent change in weight occurred during the two-year immersion. Breaking strength and elongation at break were not significantly affected.

**Rapid Weight Gain—**

Three chemical exposures produced weight gains in EPDM which stabilized within 250 days: ASTM #2 oil, MEK, and DCE. In oil, the weight gain was large (up to 90 percent) and resulted in up to 50 percent loss of strength, and over 30 percent loss of elongation. Figures 42 and 43 show the effect of ASTM #2 oil on the EPDM liner at 23 and 50°C. The stabilized material properties were essentially the same at both temperatures, but the higher temperature exposure stabilized faster. This is an example where increasing the immersion temperature accelerated the response.

Weight changes in MEK and DCE were less and depended on temperature and concentration. Maximum weight gain for EPDM in water solutions of these chemical was 13 percent. Physical properties showed moderate decreases and were not clearly related to concentration or temperature. NOTE: These two chemicals caused significant loss of weight in their neat form. This is especially significant for DCE, with a solubility of only about 0.8 percent by weight.

**Slow Weight Gain—**

Three chemicals caused slow weight gain in EPDM liner: hydrochloric acid, furfural, and phenol. Weight gains in these chemicals took at least 500 days to stabilize, and some did not stabilize within the two-year immersion period. Each of these three chemicals caused unique effects in the EPDM and will be discussed separately.

In 10 percent hydrochloric acid solution, a severe temperature effect is apparent. While a slow, steady weight gain occurred at both 23 and 50°C, the resulting stabilized changes were 5 and 112 percent, respectively. Figure 44

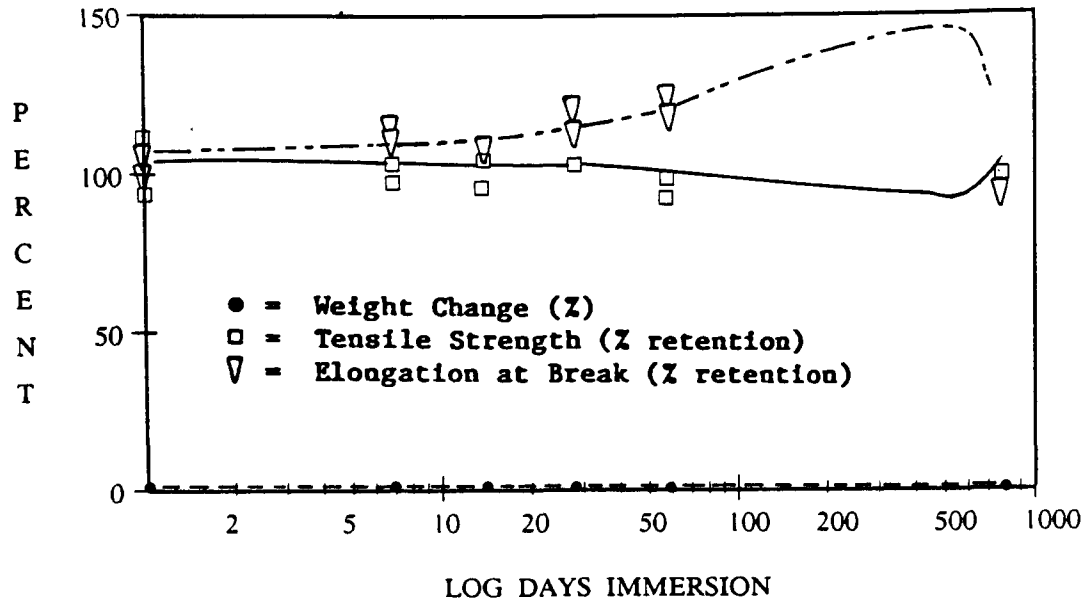



**Figure 41. Physical property change with immersion in 10 percent sodium hydroxide solution at 23°C for EPDM**

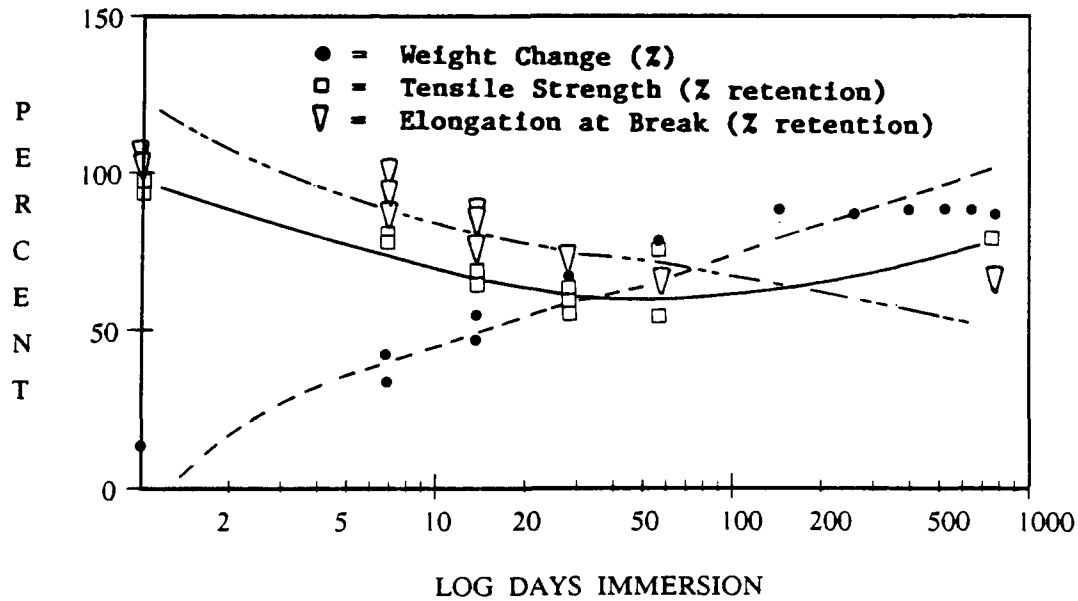



**Figure 42. Physical property change with immersion in ASTM #2 oil at 23°C for EPDM**

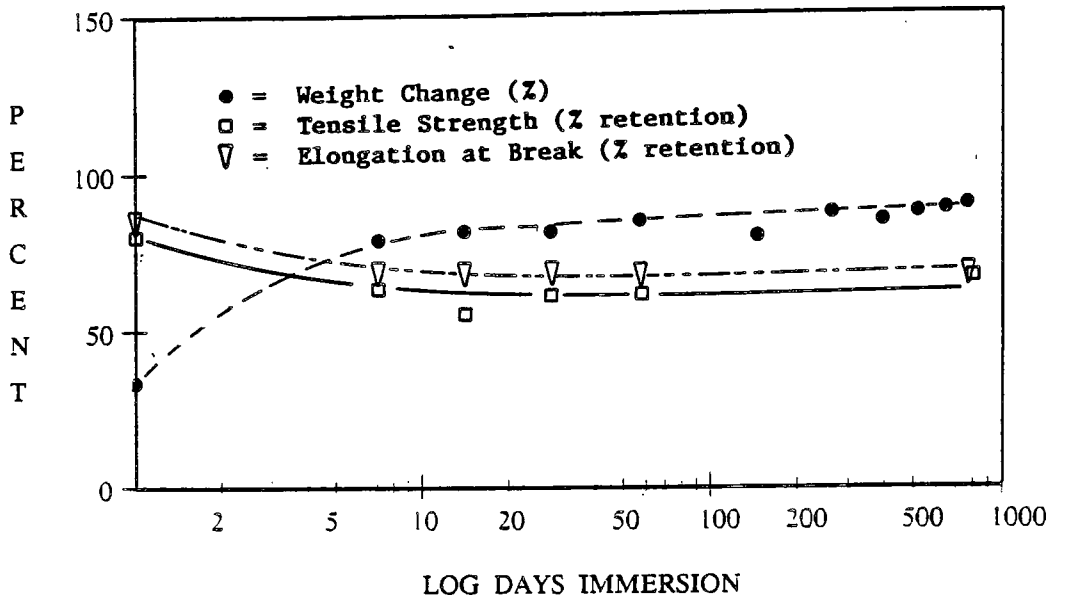



**Figure 43. Physical property change with immersion in ASTM #2 oil at 50°C for EPDM**

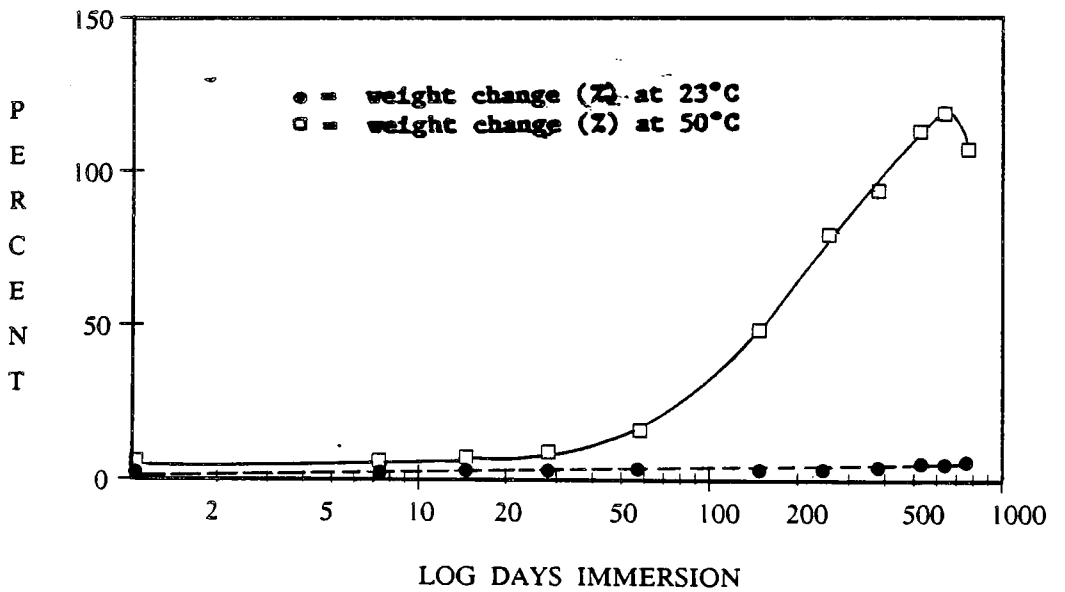



**Figure 44. Percent weight change with immersion in 10 percent hydrochloric acid solution at 23°C and 50°C for EPDM**

shows the difference in weight gain for the two temperatures. Differences in strength and elongation were also large for the two temperatures. After two years, the EPDM exposed at 50°C had lost 50 percent of its strength and 71 percent in elongation. Respective losses were only 12 and 9 percent at 23°C. This illustrates a case where the elevated temperature provided an environment too aggressive to serve as an accelerated test.

EPDM exposed to furfural solutions shows the clear effect of time, temperature, and chemical concentration. These effects are illustrated in Figures 45-50. Note the slow response of the EPDM liner. Weight gain begins slowly. No significant change can be seen in breaking strength or elongation during the short-term testing period (1 to 56 days). As the test progressed, however, differences in weight caused by temperature and concentration become apparent. And after two years, these weight gains are corroborated by degradation of mechanical properties. Breaking strength is less only for the saturated solutions, where weight gain was 48 percent at 23°C and 91 percent at 50°C. Elongation at break, however, decreased in all 50°C exposures and in the saturated exposure at 23°C.

The response of EPDM in furfural illustrates a situation where short-term testing is not suitable for chemical resistance determination.

The effect of phenol solutions on EPDM is much less severe after a two-year immersion period than the effect of acid or furfural. Phenol caused a slow, steady weight gain, dependent on time and temperature. The maximum weight gain in two years was only sixteen percent, however. Breaking strength and elongation showed moderate decreases (up to 17 percent loss) but were not dependent on concentration and temperature. Although significant degradation was not seen, the resistance of EPDM to phenol must be questioned because the response is so slow. Only the low concentration samples stabilized within two years. Figure 51 shows the response of EPDM to an 8 percent solution of phenol in water at 50°C. Although the values for mechanical properties have not significantly declined, the weight of the sample is still increasing after

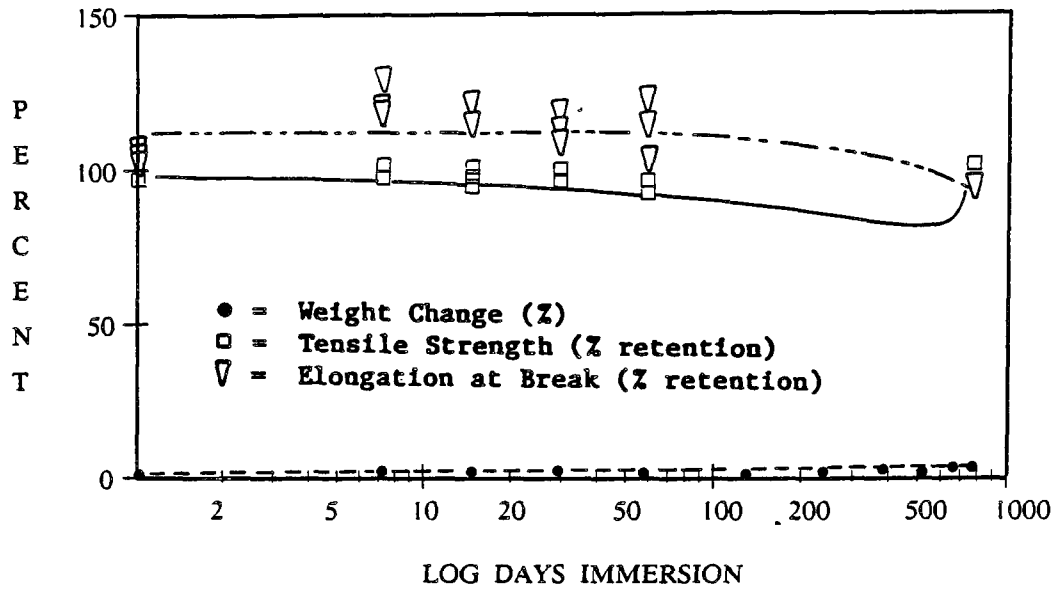



**Figure 45. Physical property change with immersion in 1 percent furfural solution at 23°C for EPDM**

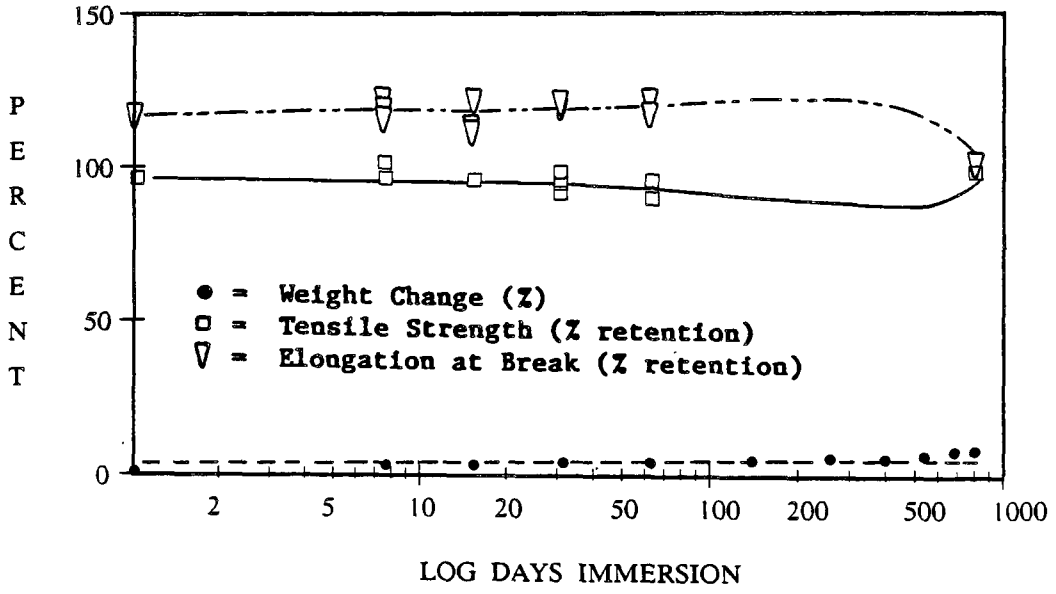



**Figure 46. Physical property change with immersion in 4 percent furfural solution at 23°C for EPDM**

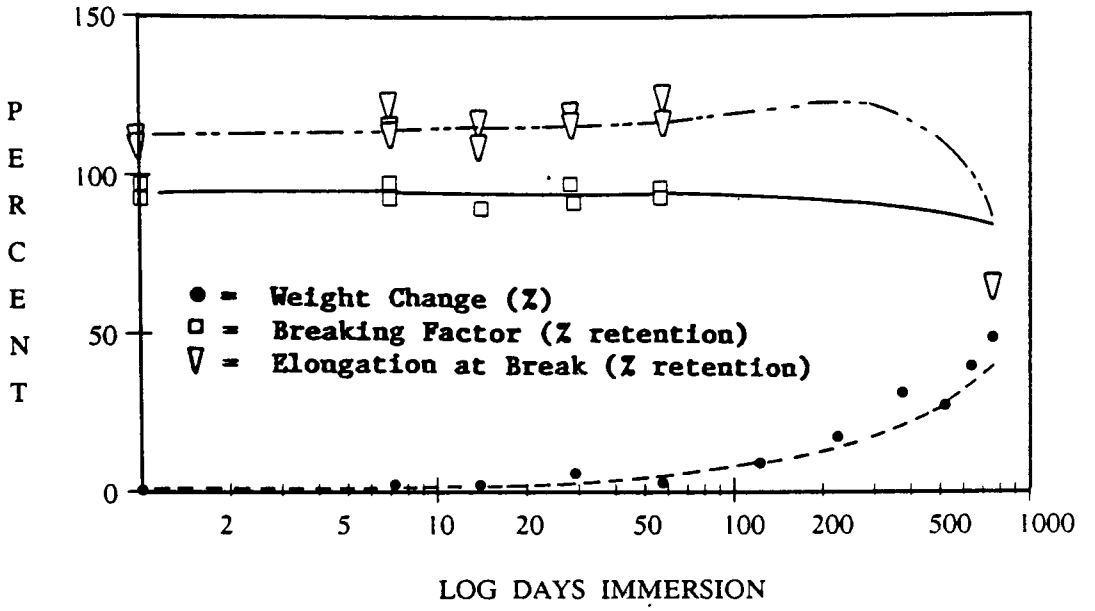



**Figure 47. Physical property change with immersion in 8 percent furfural solution at 23°C for EPDM**

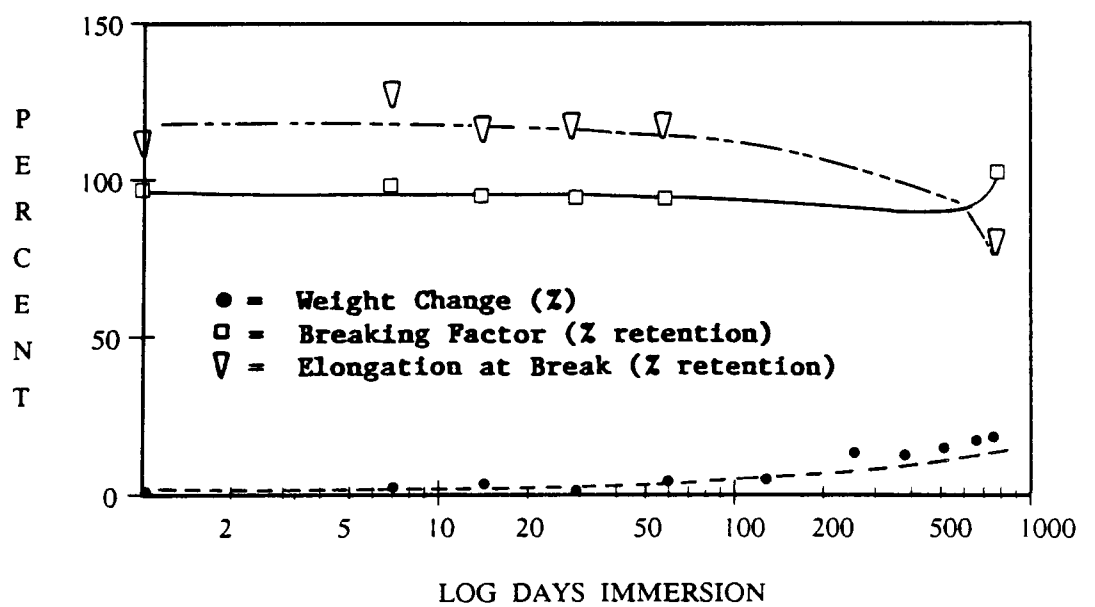



**Figure 48. Physical property change with immersion in 1 percent furfural solution at 50°C for EPDM**

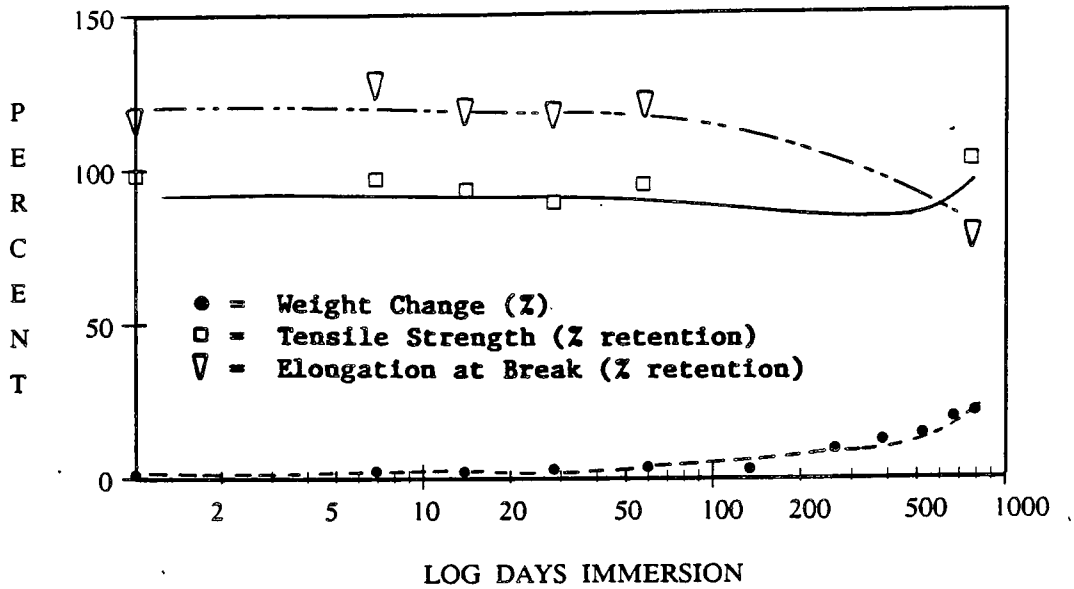



**Figure 49. Physical property change with immersion in 4 percent furfural solution at 50°C for EPDM**

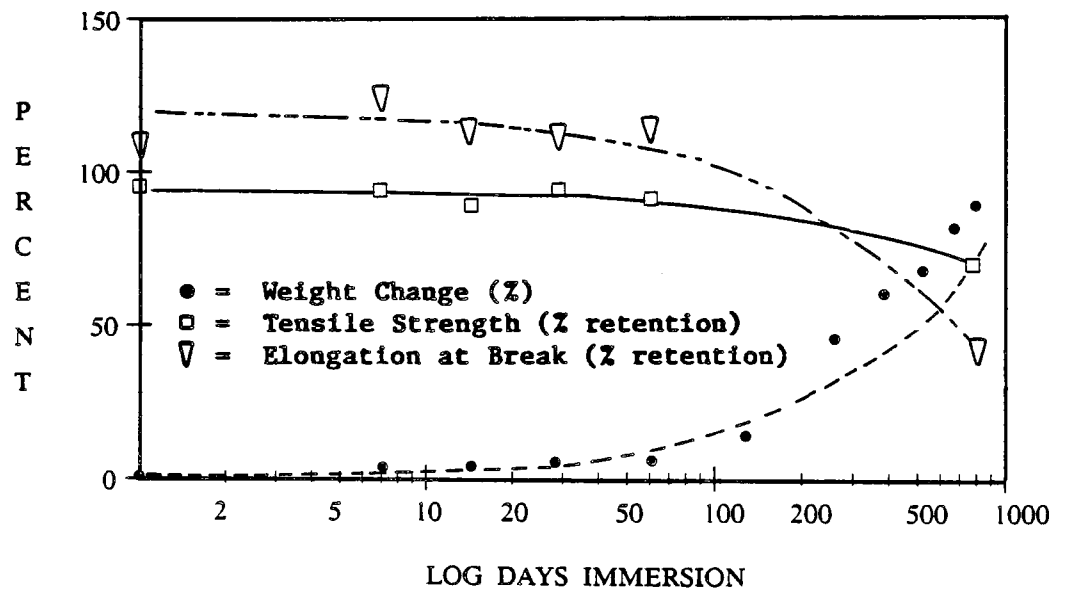



**Figure 50. Physical property change with immersion in 8 percent furfural solution at 50°C for EPDM**

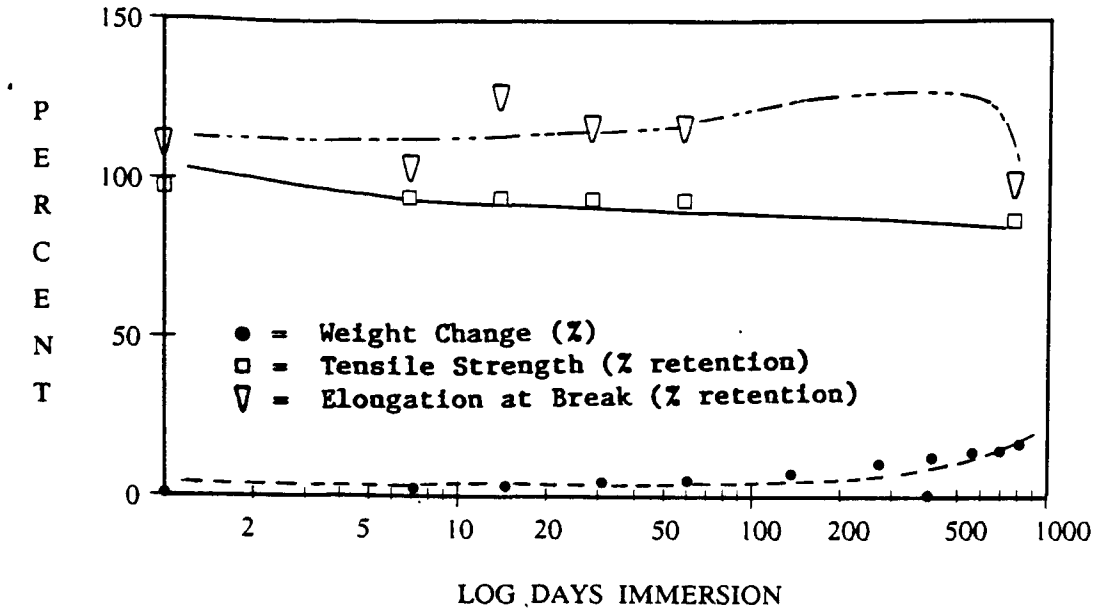



**Figure 51. Physical property change with immersion in 8 percent phenol solution at 50°C for EPDM**

two years. It is probable that further increase in weight would correspond to deterioration of the strength and elongation. This is an illustration of the importance of weight stability in evaluating chemical resistance.

## EPICHLOROHYDRIN (EPI-CO)

### Criteria for Determining FML Chemical Resistance

For this FML, based on the overall data in this project, the following criteria are proposed for determining EPI-CO chemical resistance with immersion tests:

- Stability of weight change and mechanical properties with time.
- A stabilized weight change of not more than 20 percent gain.
- The breaking factor must be at least 80 percent of the initial value and equal to or greater than the minimum as-received value in the material properties table of NSF Standard 54.
- The percent elongation at break must be at least 70 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.

Table 29. EPICHLOROHYDRON (EPI-CO): RESPONSE SUMMARY FOR CHEMICAL RESISTANCE

| CHEMICAL NAME | TYPE | TEMPERATURE EFFECT | CONCENTRATION EFFECT | TYPE OF RESPONSE | CONDITIONS | | STABILITY ACHIEVED~ | RESISTANT~ | REASONS FOR NON-RESISTANCE * |
|---|---|---|---|---|---|---|---|---|---|
| Water | - | yes | - | Minor with Loss of Elongation at 50 C | 23 C | 10% & | Y | Y | S(m) |
| | | | | | 50 C | sat'd | Y | Y | EL(m) |
| Sodium Chloride | SALT | yes | yes | Minor with Loss of Elongation at 50 C | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | N(10%) | EL(10%) |
| Potassium Dichromate | OXIDIZER | yes | - | Minor with Loss of Elongation at 50 C | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | Y | EL(m) |
| Sodium Hydroxide | BASE | yes | - | Minor with Loss of Elongation at 50 C | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | N | EL, TL(m) |
| ASTM #2 Oil | OIL | yes | - | Minor with Loss of Elongation at 50 C | 23 C | 100% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| 1,2-Dichloroethane | CHLORINATED HYDROCARBON | yes | yes | Moderate with Loss of Elongation at 50 C | 23 C | .1% | Y | Y | S(m) |
| | | | | | | .5% | Y | Y | |
| | | | | | | .8% | Y | N | WG |
| | | | | | 50 C | .1% | Y | N | WG, EL |
| | | | | | | .5% | Y | N | WG, EL |
| | | | | | | .8% | Y | N | WG, EL |
| Hydrochloric Acid | ACID | yes | - | Swell at 50 C with Loss of Elongation | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | N | N | S, WG, EL |
| Furfural | ALDEHYDE | yes | yes | Softening and Swelling with Loss of Elongation at 50 C | 23 C | 1% | N(m) | Y | S(m) |
| | | | | | | 4% | N | N | S, WG, BL, EL, TL |
| | | | | | | 8% | Y | N | WG, BL, EL, TL |
| | | | | | 50 C | 1% | N | N | S, WG, EL |
| | | | | | | 4% | Y | N | WG, BL, EL, TL |
| | | | | | | 8% | Y | N | WG, BL, EL, TL |
| Methyl Ethyl Ketone | KETONE | yes | yes | Softening and Swelling with Loss of Elongation at 50 C | 23 C | 3% | Y | Y | |
| | | | | | | 13% | Y | N | WG, BL, TL(m) |
| | | | | | | 26% | Y | N | WG, BL, EL, TL |
| | | | | | 50 C | 3% | Y | N | WG, EL |
| | | | | | | 13% | Y | N | WG, BL, EL(m), TL |
| | | | | | | 26% | Y | N | WG, BL, EL, TL |
| Phenol | PHENOL | yes | yes | Softening and Swelling with Loss of Elongation at 50 C | 23 C | 1% | N(m) | Y(m) | S(m), WG(m) |
| | | | | | | 4% | Y | N | WG, BL, EL, TL |
| | | | | | | 8% | Y | N | WG, BL, EL, TL |
| | | | | | 50 C | 1% | Y | N | WG, EL |
| | | | | | | 4% | Y | N | WG, BL, EL, TL |
| | | | | | | 8% | N | N | S, WG, BL, EL, TL |

* S = No Stability, WG = weight gain, BL = Breaking Factor Loss, EL = Elongation at Break Loss, TL = Tear Resistance Loss
~ Y = Yes, N = No, (m) = *marginal or borderline results*

These criteria are used in evaluating the FML's response to the chemicals in Table 29. Table 29 is a summary of the results of chemical resistance testing for EPI-CO liner. The table is explained and amplified in the sections that follow. The chemicals listed in Table 29 are grouped according to the type of response seen. Resistance or non-resistance is listed in the second to last columns, and the reasons for a non-resistance rating are given in the last column. Also listed in the table are whether temperature and concentration effects were seen, whether the liner achieved stability in contact with the chemical exposure, and whether EPI-CO is considered resistant to the chemical exposure.

The recommended criteria for breaking factor, S-100 modulus and elongation agree with those used by the EPA in the document "Resistance of Flexible Membrane Liners to Chemicals and Wastes" (27). Tear resistance was not included in the EPA list. This EPA document lists ten percent as the limit for weight gain. A 20 percent limit was set in this project based on the relationship of weight gain to loss of mechanical property, and is larger than the EPA document limit. The LA rubber guide (23) defines categories of compatibility for elastomers as follows:

| | | |
|---|---|---|
| minor effect: | 0 to 5 | percent volume change |
| moderate effect: | 5 to 10 | percent volume change |
| severe effect: | 10 to 20 | percent volume change |
| not recommended: | >20 | percent volume change |

For this EPI-CO liner, the ratio of weight change to volume change was 0.75. A 20 percent limit on weight gain would therefore mean approximately a 25-30 percent volume gain. This would be considered 'not recommended' by the rubber guide.

EPI-CO resistance ratings are listed in the EPA matrix (27) for only five chemical/temperature combinations tested in this project. Four of these five ratings given agree with ratings derived using the proposed criteria with project data (water and HCl at low and high temperature). EPI-CO was rated as

non-resistant only to HCl at high temperature (tested at 100 C) in the matrix, based on qualitative information. Disagreement between the EPA matrix and project data was for liner exposed to NaOH at 50°C, which was rated as non-resistant in this project because of loss of elongation with time. The matrix rating was based on a manufacturer's qualitative report, and the length of exposure was not given.

Agreement between percentage change criteria and absolute minimum property values (using Standard 54 tables) was good for elongation at break and tear resistance, although the percentage change criteria were more stringent. Agreement between percentage change and absolute criteria for breaking factor was not good, because the EPI-CO liner initial (unexposed) results were within 10 percent of the Standard 54 table values. In determining chemical resistance for Table 29, therefore, the absolute criteria for breaking factor is not used. This is done to focus the interpretation on the material response rather than the strength limitations of this particular EPI-CO liner sample.

A major limitation inherent in these proposed criteria for EPI-CO chemical resistance is the effect of temperature on chemical resistance. As discussed below, the long-term effect of a 50°C exposure is significant for EPI-CO. No service temperature limits can be proposed since only two temperatures were used for immersion testing, but long-term service at 50°C does not appear to be suitable for EPI-CO.

**Response Time and Stability**

An FML response to the chemical immersion must stabilize in order for it to be considered chemically resistant. Response time, or the time required for the liner to stabilize in a given solution, varied from less than one week to more than twenty months for this EPI-CO FML.

Significant weight changes (large enough to correspond with changes in breaking strength) were usually evident within a two-month test period,

although weight often continued to increase. Breaking strength and tear resistance stabilized faster than weight change, usually within two months. Changes observed in elongation at break were both rapid and slow. Rapid changes were associated with absorption of organic chemical solutions, while slow changes in elongation at break were evident for samples exposed for twenty-months at 50°C to water and inorganics.

## Magnitude of Liner Response

A two-part evaluation of the magnitude of physical property change was followed in determining EPI-CO chemical resistance. Both an absolute minimum value for a mechanical property (for example, elongation at break) and an allowable percent change of that property (from the initial value) were determined.

The range of changes seen in the EPI-CO liner was large. No losses in weight were seen, but weight gain varied overall from less than one percent to over 100 percent, depending on the exposure conditions. Exposure to water at 23°C and 50°C caused EPI-CO weight gains of 13 and 19 percent within twenty months, respectively. Weight gains seen in salt, potassium dichromate, sodium hydroxide, and ASTM #2 oil were less than those in water at each temperature. Solutions of organic chemicals (MEK, DCE, furfural, and phenol) in all cases caused weight gains larger than in water, and increased with increasing concentration and temperature.

Changes in the mechanical properties of the EPI-CO liner in general corresponded to weight changes. Minimum retention of breaking strength was 33 percent (eight percent phenol at 50°C, Figure 51), 22 percent of elongation (eight percent furfural at 50°C, Figure 51), and of tear resistance 23 percent (eight percent phenol at 23°C).

**Absolute Amount—**

Using the Standard 54 table values for elongation at break and tear resistance, three of the organic solutions (MEK, furfural, and phenol) were rated non-resistant at the highest concentration. Results for all other exposures were above the table values.

The breaking factor absolute value, 90 lb/inch width, was not used in determining non-resistance for EPI-CO because the unexposed liner breaking factor values were very close to or below the absolute limit, probably caused by testing variability. In actual waste testing, with a prospective FML, the liner should be evaluated using this absolute limit.

**Percent Change from Initial Value—**

The percent changes in material properties suggested as criteria for chemical resistance were developed by evaluating the variability in the material and testing process, and setting reasonable estimates of material degradation.

Figure 52 shows the relationship between breaking factor and weight change for machine direction samples. Breaking factor variability in this EPI-CO liner was approximately ± 15 percent, measured by looking at those samples with little or no weight change. (Variability in the transverse direction was similar.) A limit on change of 20 percent was chosen as a conservative estimate of real material degradation. (e.g., changes of greater than 20 percent may result from immersion in compatible chemicals, but this limit provides a safety factor until additional data can support a higher limit.)

Retention of ultimate elongation (machine direction) is shown as a function of weight change in Figure 53. Variability in elongation is about ± 25 percent. Decreases in elongation with time were from two causes: absorption of organic chemical solutions, which was relatively fast, and exposure at 50°C, apparent only after a twenty month immersion period. A 30 percent decrease in elongation was chosen as evidence of degradation.

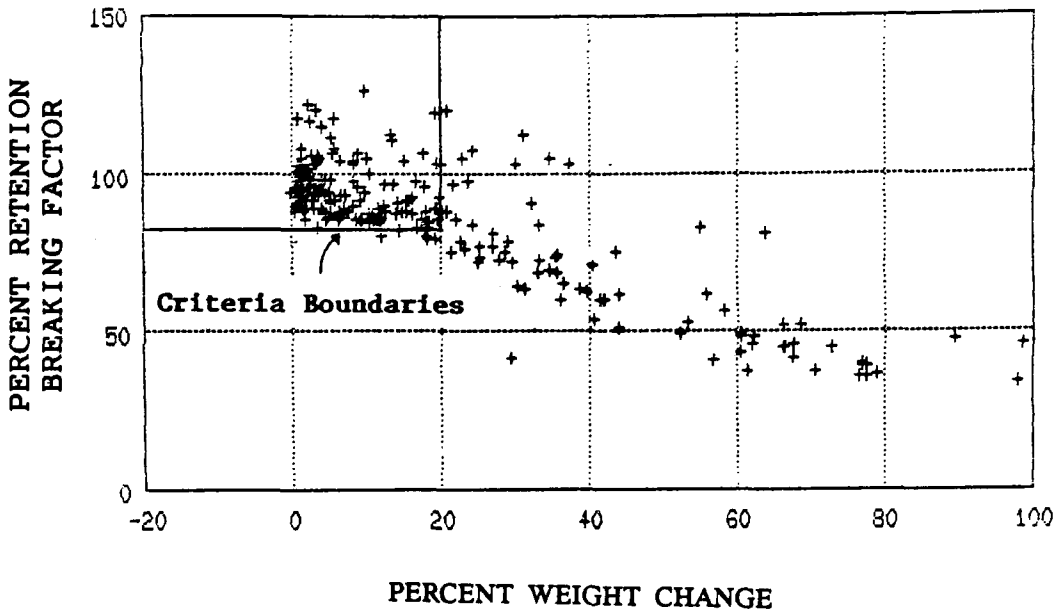



**Figure 52. Relationship between breaking factor and weight change for EPI-CO**

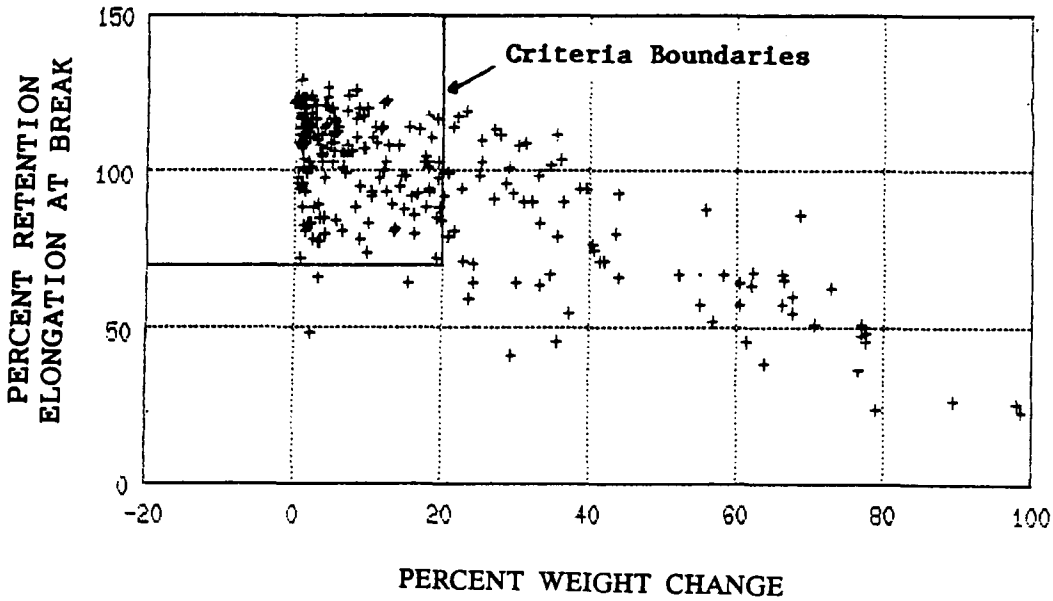



**Figure 53. Relationship between elongation at break and weight change for EPI-CO**

Tear resistance had a variability of about 25 percent. Figure 54 shows the relationship between weight change and retention of tear resistance. Although a trend of decreasing tear resistance with increasing weight is clear, the locus of points around zero weight change is centered at 90 percent retention.

A limit for allowable stabilized weight gain for this CPE liner was set at 20 percent, based on the relationship between changes in breaking factor and changes in weight, and on the relationship between tear resistance and weight change.

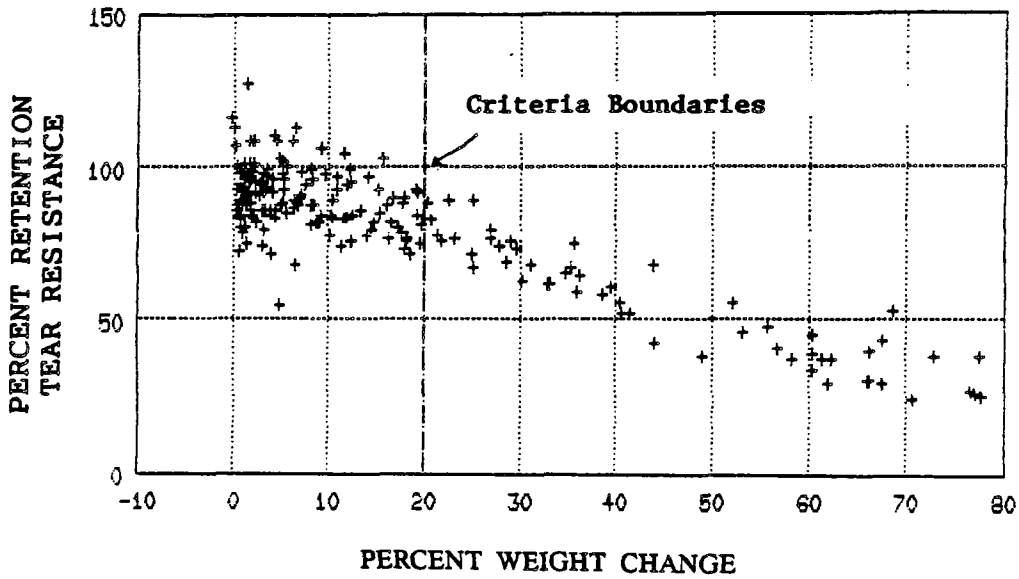



**Figure 54. Relationship between tear resistance and weight change for EPI-CO**

## Types of Effects

The results in Table 29 for EPI-CO, a polar elastomeric liner, are grouped according to the type of effects seen. Temperature and concentration effects are noted in the third and fourth columns. Three basic types of response to chemical immersion were observed with this liner: minor change, degradation due to temperature sometimes with indications of stiffening, and swelling and softening (sometimes accompanied by degradation due to temperature).

**Temperature Effects—**

The response of EPI-CO to increased immersion temperature shows that an elevated temperature may be suitable for accelerating the material response in short-term testing (perhaps up to four months). But for extended test duration, significant effects are seen due to temperature alone at 50°C. A decrease in the elongation at break after a two-year immersion period was observed in all exposures.

This long-term loss of elongation at 50°C was accompanied by an increase in the breaking factor for water, salt, dichromate, and ASTM #2 oil exposures. This indicates that the liner is becoming less flexible with time.

**Concentration Effects—**

Four organic chemicals were tested in three concentrations. All responses seen with these chemicals were affected by concentration. Percent weight gain increased with increasing concentration. Breaking strength and tear resistance decreased with increasing solution concentration. Elongation decreased with increasing concentration for phenol, MEK, and furfural exposures.

## Indicators of Non-Resistance

For this EPI-CO liner, the most important indicators of non-resistance were weight change, breaking strength, and elongation at break. Tear resistance generally followed the same trend as breaking strength, and volume change (swelling) corresponded to weight change. Since tear resistance testing was performed only for exposure up to two months in duration, no long-term trends in tear resistance are known.

In general, an increase in sample weight indicated a change in mechanical properties for EPI-CO. When weight gain was due primarily to absorption of organic chemicals, strength and elongation responded quickly and were less than initial values. When weight gain was due primarily to absorption of water at 50°C, elongation at break showed long-term deterioration.

**Minor Change—**

The following 23°C exposures produced only minor changes in weight and mechanical properties: water, sodium hydroxide, hydrochloric acid, salt, potassium dichromate, ASTM #2 oil, water with ASTM #2 oil added, one percent phenol, one percent MEK, 0.1 and 0.5 percent DCE, and one percent furfural. An example is shown in Figure 55. This figure shows the response of the EPI-CO liner to a saturated salt solution at 23°C. Weight gain is less than three percent over the two-year period. Breaking strength was not affected, nor was the elongation at break.

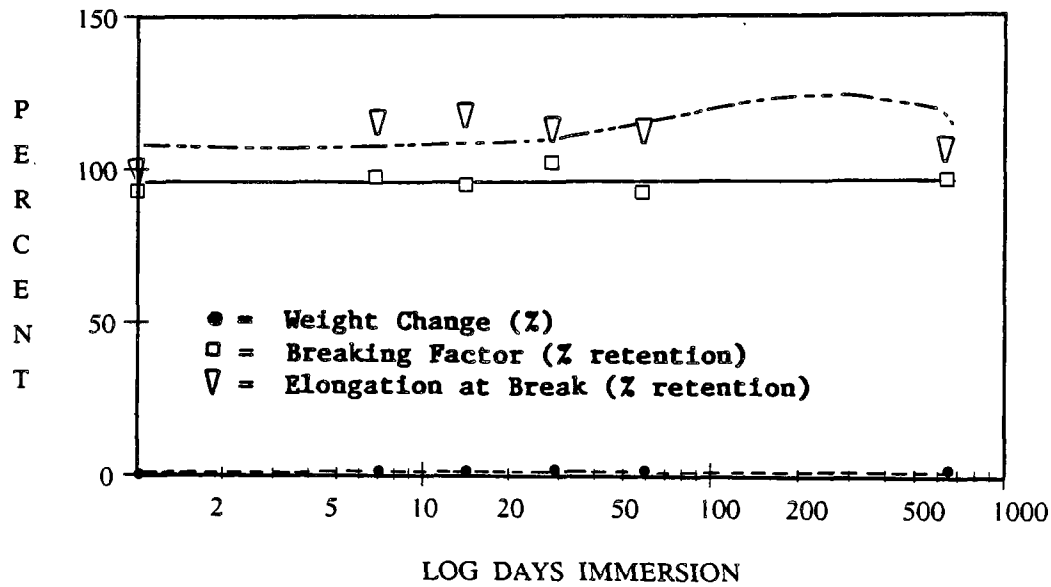



**Figure 55. Physical property change with immersion in saturated (35 percent) salt solution at 23°C for EPI-CO**

**Degradation Due to Temperature—**

As previously discussed, degradation in material properties was caused by exposure to 50°C solutions. While weight gain and elongation at break are the best indicators for this effect, breaking strength was also affected sometimes. Figures 56 and 57 compare the response of the EPI-CO liner to water at 23 and 50°C. In Figure 56, a moderate gain in weight (absorption of water) is

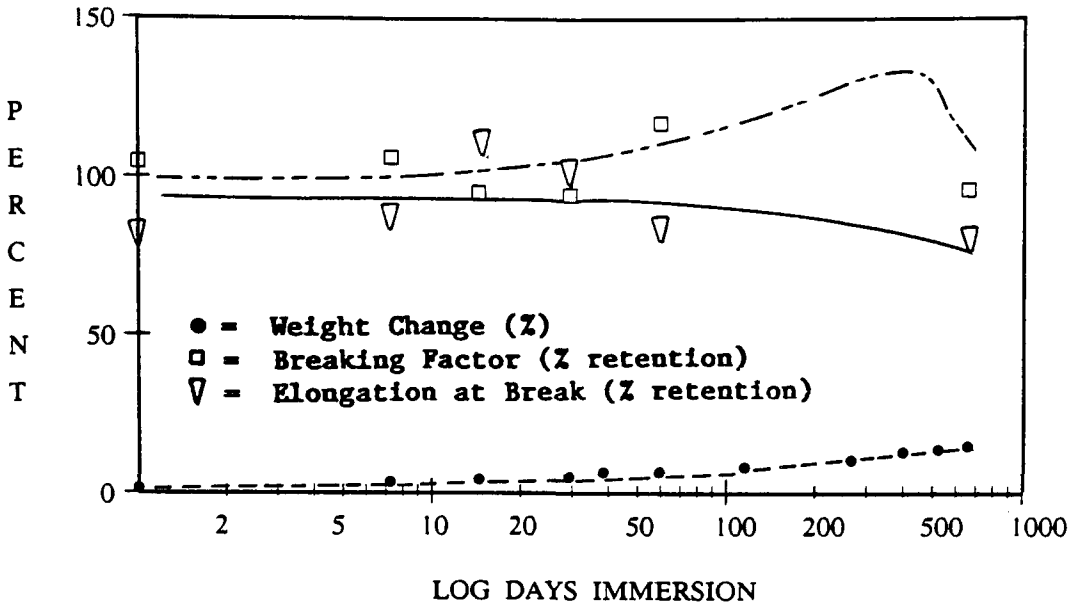



**Figure 56. Physical property change with immersion in water at 23°C for EPI-CO**

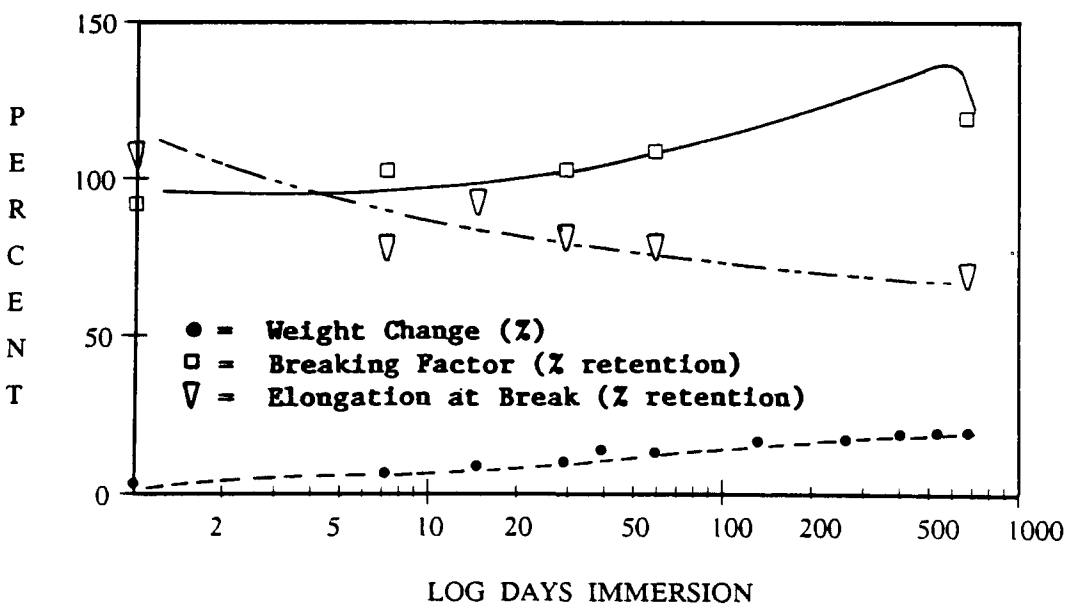



**Figure 57. Physical Property change with immersion in water at 50°C for EPI-CO**

seen. It is not clear whether weight stability has been achieved at the end of the twenty month testing period. Breaking factor and elongation, although variable for this sample, show no conclusive changes or trends.

In Figure 57 (50°C), however, changes are evident in the EPI-CO liner. Weight gain is only slightly more than the gain at 23°C, and has stabilized. Breaking strength shows an upward trend, and elongation a downward trend with time. This suggests that the liner is becoming stiffer with exposure to the hot water.

Exposure to HCl at 50°C also produced effects not seen in the 23°C exposure. At 23°C no conclusive changes were observed, and weight gain was smaller than in water alone. At 50°C, (Figure 58) however, weight gain is greater than water and has not stabilized at the end of the test period. Both breaking strength and elongation decreased. The liner is not becoming stiffer, as it is in water alone, but is becoming softer and weaker with time.

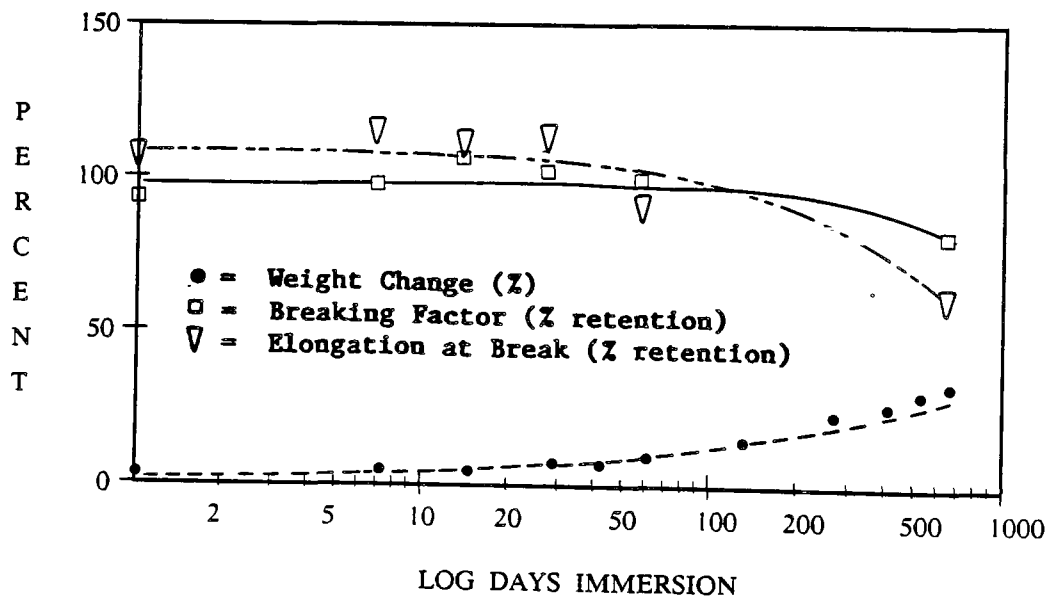



**Figure 58. Physical property change with immersion in 10 percent hydrochloric acid solution at 50°C for EPI-CO**

**Swelling and Softening—**

The EPI-CO response to organic solutions (phenol, furfural, MEK, and 1,2-dichloroethane) was primarily one of swelling and softening. The degree of the response was dependent on the chemical concentration in all cases. Typical responses were weight gain (and swelling), loss of breaking strength, and loss of elongation. Blisters were seen on some samples exposed to MEK and furfural. Additional deterioration in elongation was a result of exposure at 50°C.

These effects are illustrated in Figures 59-64. These figures show the response of EPI-CO liner to solutions of phenol in water. Weight change, retention of breaking factor, and retention of elongation at break are shown as a function of immersion time. Figures 59-61 show results for 23°C exposures, and 62-64 for 50°C exposures. Weight gains increase with concentration and with temperature. Variability in weight measurements is high at the highest concentration (8 percent). Weight stability is not achieved for the lowest concentration at low temperature, nor for the highest concentration at the high temperature (Figures 59 and 64).

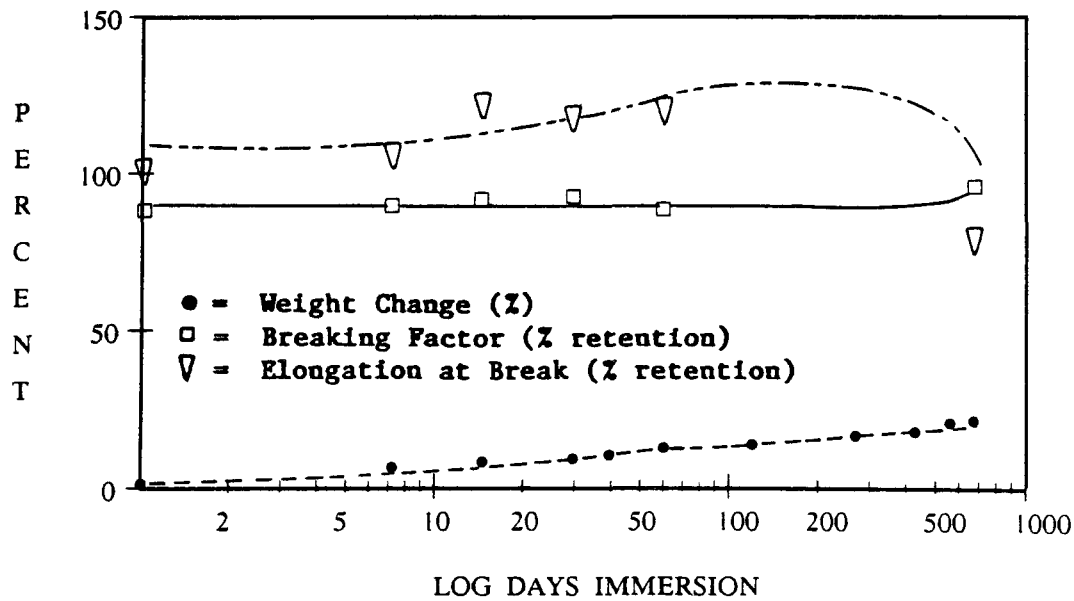



**Figure 59. Physical property change with immersion in 1 percent phenol solution at 23°C for EPI-CO**

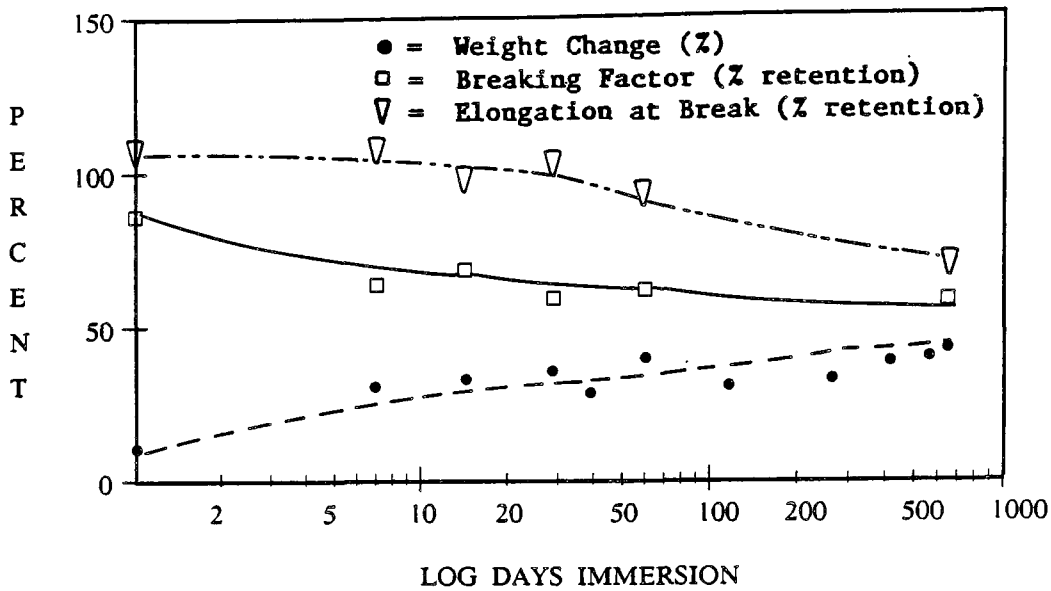



**Figure 60. Physical property change with immersion in 4 percent phenol solution at 23°C for EPI-CO**

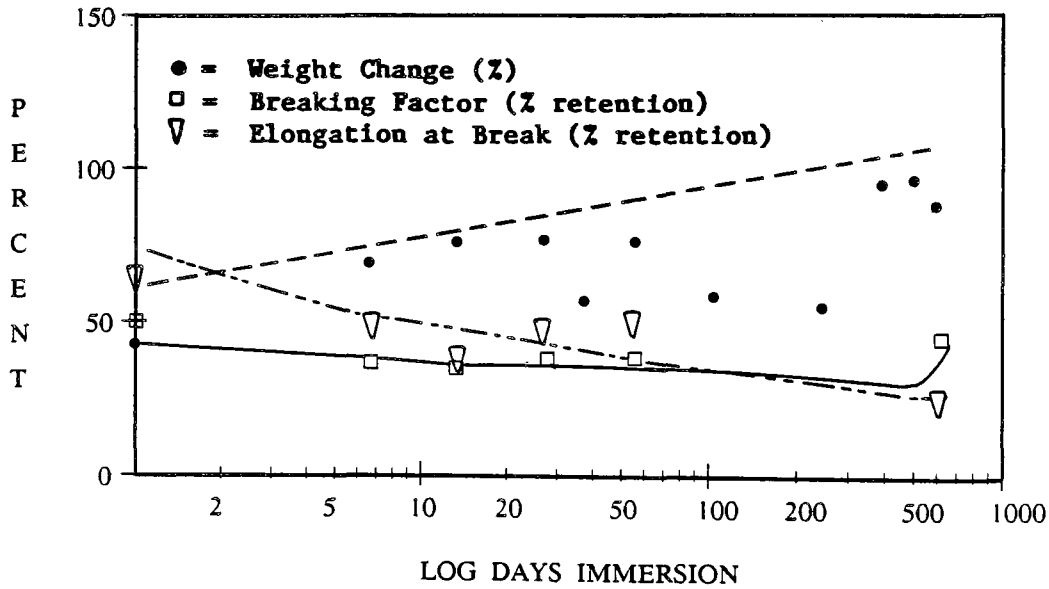



**Figure 61. Physical property change with immersion in 8 percent phenol solution at 23°C for EPI-CO**

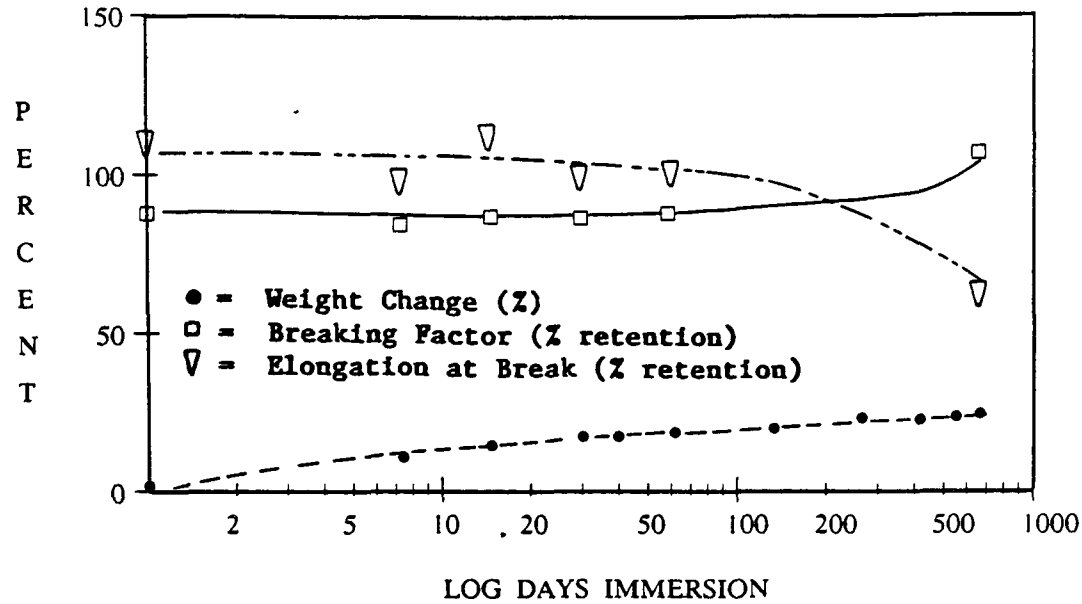



**Figure 62. Physical property change with immersion in 1 percent phenol solution at 50°C for EPI-CO**

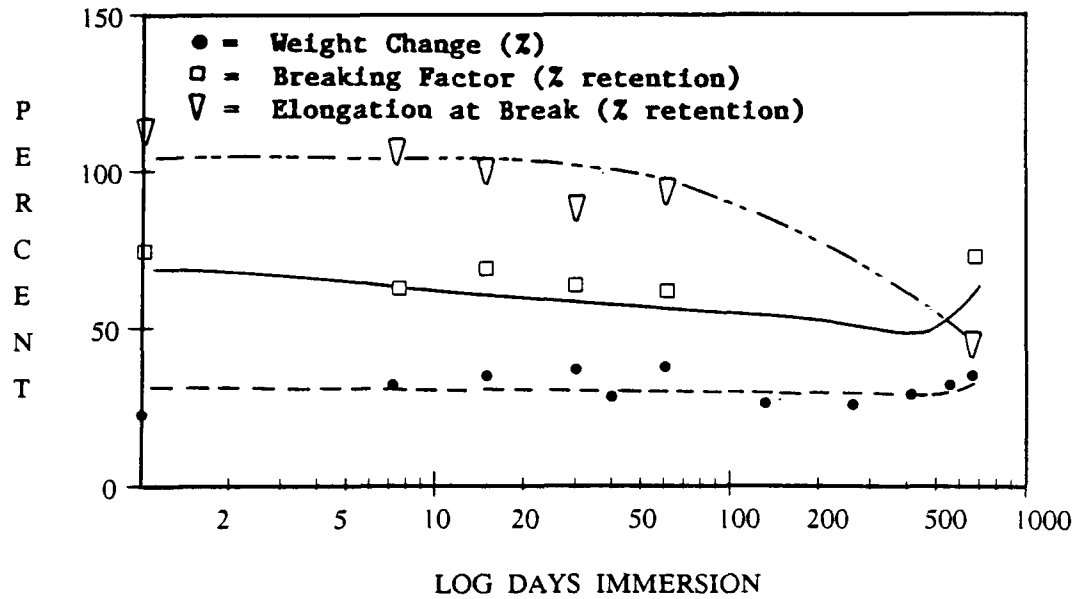



**Figure 63. Physical property change with immersion in 4 percent phenol solution at 50°C for EPI-CO**

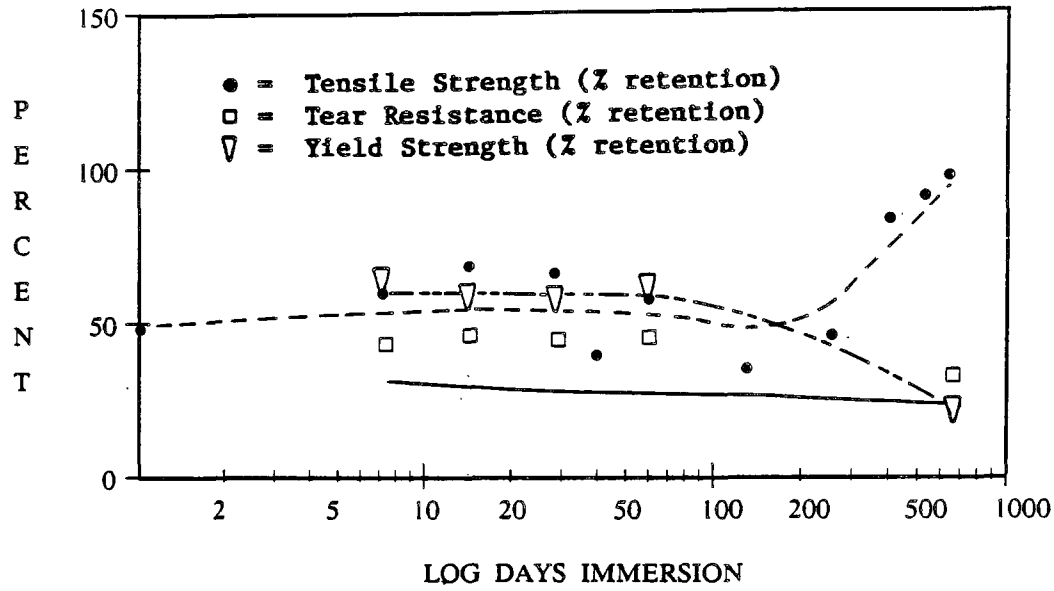



**Figure 64. Physical property change with immersion in 8 percent phenol solution at 50°C for EPI-CO**

The loss in breaking strength is clearly dependent on solution concentration, although the strength stabilizes quickly (generally in one week). There is no significant difference in retention of breaking strength between the two exposure temperatures. The exception to these two statements is the response to a 1 percent phenol solution at 50°C. Here the response is similar to the response in water at 50°C (Figure 57), with strength increasing with time. This suggests that the effect of water and heat is predominant over the effect of phenol.

## HIGH DENSITY POLYETHYLENE (HDPE)

### Criteria for Determining FML Chemical Resistance

For this FML, based on the overall data in this project, the following criteria are proposed for determining HDPE chemical resistance with immersion tests.

- Stability of weight change and mechanical properties with time.
- A stabilized weight gain of not more than 3 percent.
- The breaking factor must be at least 80 percent of the initial value and equal to or greater than the minimum as-received value in the material properties table of NSF Standard 54.
- The percent elongation at break must be at least 80 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- The yield strength must be at least 80 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- The elongation at yield must change no more than 20 percent in either direction and be equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- Tear resistance must be at least 80 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.
- Modulus of elasticity must be at least 70 percent of the initial value and equal to or greater than the minimum as-received value in the material property table of NSF Standard 54.

These criteria are used in evaluating the FML's response to the chemicals in Table 30. Table 30 is a summary of the results of chemical resistance testing for HDPE liner, and the table is explained and amplified in the sections that follow. The chemicals listed in Table 30 are grouped according to the type of response seen. Resistance or non-resistance is listed in the

Table 30. HIGH DENSITY POLYETHYLENE (HDPE): RESPONSE SUMMARY FOR CHEMICAL RESISTANCE

| CHEMICAL NAME | TYPE | TEMPERATURE EFFECT | CONCENTRATION EFFECT | TYPE OF RESPONSE | CONDITIONS | | STABILITY ACHIEVED- | RESISTANT- | REASONS FOR NON-RESISTANCE * |
|---|---|---|---|---|---|---|---|---|---|
| Water | - | no | - | minor | 23 C | - | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| Sodium Chloride | SALT | no | no | minor | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | Y | |
| Potassium Dichromate | OXIDIZER | yes | - | | 23 C | 10% | Y | (m) | BL(m), ML(m) |
| | | | | | 50 C | | Y | Y | |
| Hydrochloric Acid | ACID | no | - | minor | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| Furfural | ALDEHYDE | yes | yes | weight gain with | 23 C | 1% | Y | (m) | BL(m), EL(m) |
| | | | | decrease in | | 4% | Y(v) | (m) | BL(m), EL(m) |
| | | | | strength and | | 8% | Y(v) | (m) | WG(m), BL(m), EL(m) |
| | | | | elongation | 50 C | 1% | Y | (m) | BL(m), EL(m) |
| | | | | | | 4% | Y(v) | (m) | WG(m), BL(m), EL(m) |
| | | | | | | 8% | Y(v) | (m) | WG(m), BL(m), EL(m) |
| 1,2-Dichloroethane | CHLORINATED HYDROCARBON | yes | yes | weight gain with | 23 C | .1% | Y | (m) | BL(m), EL(m) |
| | | | | decrease in | | .5% | Y(v) | (m) | WG(m), BL(m), EL(m) |
| | | | | strength and | | .8% | Y | N | WG, BL(m), EL(m) |
| | | | | elongation | 50 C | .1% | Y | (m) | BL(m), EL(m) |
| | | | | | | .5% | Y(v) | (m) | WG(m), BL(m), EL(m) |
| | | | | | | .8% | Y | N | WG, BL(m), EL(m) |
| Sodium Hydroxide | BASE | no | - | minor | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| ASTM #2 Oil | OIL | yes | yes | weight gain, | 23 C | 100% | N | N | S, WG, EYG |
| | | | | softening | 50 C | | Y | N | WG, EYG, ML, TL(m) |
| Methyl Ethyl Ketone | KETONE | yes | yes | weight gain with | 23 C | 3% | Y(v) | Y | |
| | | | | decrease in | | 13% | Y(v) | Y | |
| | | | | strength and | | 26% | Y | (m) | WG(m) |
| | | | | elongation | 50 C | 3% | Y(v) | (m) | EYG(m) |
| | | | | | | 13% | Y(v) | (m) | WG(m), EYG(m), ML(m) |
| | | | | | | 26% | Y(v) | (m) | WG(m), ML(m) |
| Phenol | PHENOL | no | yes | weight gain with | 23 C | 1% | Y | (m) | BL(m), EL(m) |
| | | | | decrease in | | 4% | Y | (m) | BL(m), EL(m) |
| | | | | strength and | | 8% | Y | (m) | BL(m), EL(m) |
| | | | | elongation | 50 C | 1% | Y | (m) | EYG(m), BL(m), EL(m) |
| | | | | | | 4% | Y | N | WG(m), EYG, BL(m), EL(m) |
| | | | | | | 8% | Y | (m) | BL(m), EL(m) |

* S = No Stability, WG = weight gain, BL = Breaking Factor Loss, EL = Elongation at Break Loss, TL = Tear Resistance Loss
EYG = Elongation at Yield Gain, ML = Modulus Loss, (m) = marginal or borderline results
\- Y = Yes, N = No, (v) = variable results due to volatility of chemical

second to last columns, and the reasons for a non-resistance rating are given in the last column. Also listed in the table are whether temperature and concentration effects were seen, whether the liner achieved stability in contact with the chemical, and whether the HDPE is considered resistant to the chemical exposure.

These suggested criteria for weight change, breaking factor (calculated as tensile strength), and elongation at yield are the same as those proposed by the EPA in the document "Resistance of FMLs to Chemicals and Wastes" (27). Tear resistance, yield strength, elongation at break, and modulus of elasticity were not included in the EPA list.

The Modern Plastics Encyclopedia (16) considers a less than ten percent change in tensile strength of HDPE as 'usually not significant', a change of 10 to 20 percent 'significant but usually not conclusive', and more than 20 percent change 'usually significant'. To compare NSF results with this guidance, Table 30 shows changes between 10 and 20 percent as marginal (m) for breaking strength, yield strength, tear, modulus, and elongation at yeild and break. Weight gains between 2 and 3 percent are also listed as marginal (m).

HDPE resistance ratings are listed in the EPA matrix for nine of the chemicals tested in this project. Five of the favorable ratings given in the matrix agree with resistant ratings derived using the proposed criteria with project data (NaOH, HCl, dichromate, salt, and water). Two chemicals were rated as unfavorable in the matrix: phenol and 1,2-dichloroethane. NSF results for some concentrations of these two chemicals also showed non-resistance. Furfural and MEK were listed as resistant in the matrix, but NSF results were not conclusive. For both furfural and MEK, changes in properties in the 10 to 20 percent range were observed.

**Response Time and Stability**

The HDPE FML response to the chemical immersion must stabilize in order for it to be considered chemically resistant. Response time, or the time

required for the liner to stabilize in a given solution, varied from less than one week to two years for HDPE. Only one exposure, ASTM #2 oil at 23°C did not stabilize with respect to weight.

## Magnitude of Liner Response

A two-part evaluation of the magnitude of physical property change was followed in determining HDPE chemical resistance. Both an absolute minimum value for a mechanical property (for example, yield strength) and an allowable percent change of that property (from the initial value) were detemined. Note: the absolute minimum requirement was not used for elongation at break and modulus (see following section).

The range of changes seen in the HDPE liner was small. No losses in weight were seen, and weight gain varied overall from less than one percent to over six percent, depending on the exposure conditions. The largest weight gains were in ASTM #2 oil and saturated 1,2-dichloroethane.

Changes were generally between zero and 20 percent for all mechanical properties except elongation at yield and modulus of elasticity. Elongation at yield tended to increase with weight gain, and some values above 140 percent were measured. Modulus decreased with weight gain in oil exposures only to roughly 50 percent of its inital value.

**Absolute Amount—**

Standard 54 values were not critical in determining chemical resistance for the project data for two reasons. First, none of the results of strength properties (tear resistance, yield, and breaking strength) or elongation at yield were lower than the Standard 54 table values. In addition, only a few elongation at break and modulus of elasticity results were lower than the Standard 54 values. These were not used as resistance criteria in Table 30 because the method used for elongation measurement (grip separation) gives results less than when an extensometer is used.

In evaluating future test data, however, the table values do provide a benchmark for comparison. It appears that the strength properties in the Standard 54 table may be too low, based on the difference between project data and table values for breaking factor, yield strength, and tear resistance.

**Percent Change from Initial Value—**

The percent changes in property listed as recommended criteria were developed by evaluating the variability in the material and testing process, and setting reasonable estimates of material degradation.

Figure 65 shows the relationship between tensile strength (psi — breaking factor divided by thickness) and weight change (divided by thickness to indicate percent change per inch thickness) for machine direction samples. A weight change adjusted for thickness of 50 percent per inch thickness corresponds approximately to a 1.5 percent weight change. This presentation was chosen to minimize scatter in the data due to thickness variation. Reproducibility of the measurement of HDPE tensile strength was approximately ± 15 percent, measured by looking at those samples with zero weight change. A limit on change of 20 percent was chosen as an estimate of real material degradation. Changes between 10 and 20 percent were listed as borderline in the table.

Table 31 lists the test variability for each of the measured HDPE properties, the criteria that were chosen, and whether or not there is a relationship between weight gain and that measurement. The only changes in mechanical properties of the HDPE liner that corresponded to weight changes were modulus of elasticity and elongation at yield.

A limit for allowable stabilized weight gain for this HDPE liner was set at 3 percent for immersion tests. This limit is based on manufacturer's recommendations as listed in the EPA matrix (27). No weight criteria could be established from the project data, since there were not good correlations between weight and mechanical properties.

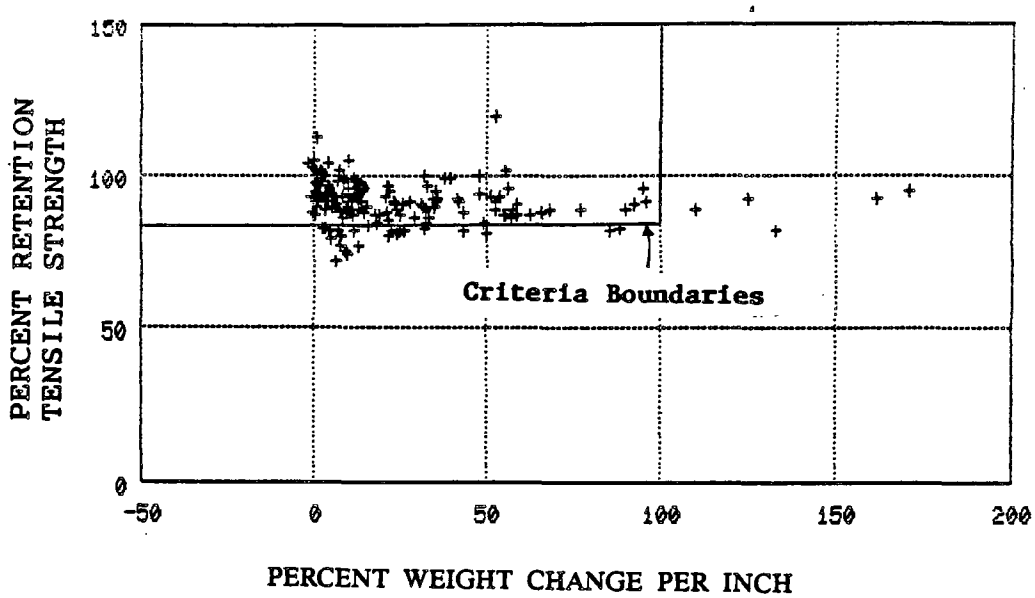



**Figure 65. Relationship between tensile strength (normalized for thickness) and weight change for HDPE**

**TABLE 31. VARIABILITY IN HDPE TEST MEASUREMENTS**

| Test | Variability (percent) | Criteria for Resistance | Relationship to Weight Change |
|---|---|---|---|
| Tensile Strength at Break | 15 | <20 | no |
| Elongation at Break | 10 | <20 | no |
| Tensile Strength at Yield | 10 | <20 | no |
| El. at Yield | 10 | <20 | yes |
| Modulus | 20 | <30 | yes |
| Tear | 10 | <20 | no |
| Weight | | < 3 | - |

## Types of Effects

The results in Table 30 for this partially crystalline HDPE liner are grouped according to the type of effects seen. Temperature and concentration effects are noted in the third and fourth columns. Three basic types of response to chemical immersion were observed with this liner: minor change, swelling and softening (oil), and weight gain with decrease of strength and elongation.

**Temperature Effects—**

Temperature had a moderate effect on HDPE FML results. Weight gains were slightly larger in those samples exposed at 50°C than at 23°C. Elongation at yield was greater in 50°C samples for immersions of phenol and MEK.

In ASTM #2 oil, the modulus of elasticity and the tear resistance were less for samples exposed at 50°C.

Only the immersion sample exposed to ASTM #2 oil at 23°C did not stabilize with respect to weight. The 50°C sample did stabilize, so the increased temperature appears to have accelerated the response. Increasing the temperature of immersion tests for HDPE appears to be a satisfactory option for accelerating response.

**Concentration Effects—**

Four organic chemicals were tested in three concentrations. All responses seen with these chemicals were affected by concentration. Percent weight gain increased with increasing solution concentration.

## Indicators of Non-Resistance

For this HDPE liner, the most important indicators of non-resistance were weight change, tensile strength, modulus, elongation at yield.

Weight change is generally smaller than other types of FMLs because of the crystalline nature of the HDPE. With smaller weight changes, the method reproducibility becomes more important, and extra care is needed in measuring.

Tensile strength appears to give indications of chemical resistance but no conclusive results were obtained, that is, no consistent changes more than 20 percent were seen. The variability in this measurement is about 15 percent, so it was difficult to definitely show changes.

Modulus of elasticity is a difficult measurement to take, and showed a variability of 20 percent. The elastic portion of the HDPE liner stress/strain curve is small, with yield occuring at about 10 to 20 percent elongation. Graphical methods were used to record much of the modulus data. Only for ASTM #2 oil was there a large decrease in modulus, so it is not possible to generalize the relationship of modulus change to weight change to all situations.

Elongation at yield increased with weight gain for some immersion samples. Only for a few exposures (mostly ASTM #2 oil) were the changes conclusive (greater than 20 percent).

It must be noted that environmental stress crack resistance (ESCR) was not considered in this project. ESCR is oftened considered an important parameter for HDPE and other partially crystalline materials. Susceptibility to stress cracking from exposure to the chemicals tested in the project would not be apparent from the results since the samples were not under stress during exposure.

**Minor Change—**

The following 23°C exposures produced only minor changes in weight and mechanical properties: water, sodium hydroxide, hydrochloric acid, salt, and potassium dichromate. An example is shown in Figure 66 and 67. These figures show the response of the HDPE liner to a 10 percent NaOH solution at 50°C. Weight gain (not shown) is less than one percent over the two-year period. Figure 66 shows tensile strength, yield strength, and tear resistance as a

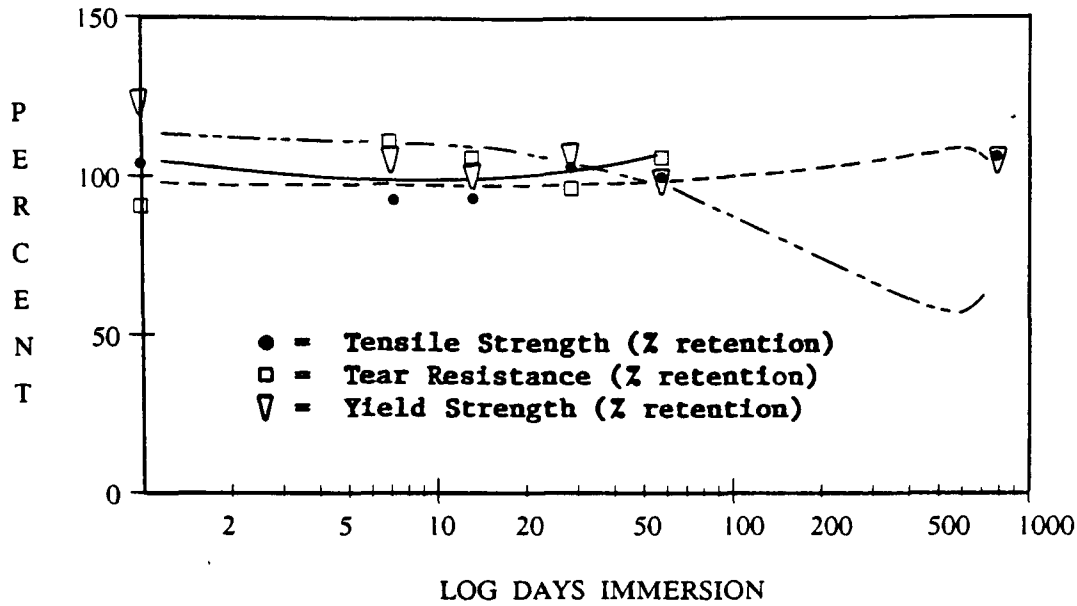



**Figure 66. Percent tensile, yield and tear resistant change with immersion in 10 percent sodium hydroxide solution at 50°C for HDPE**

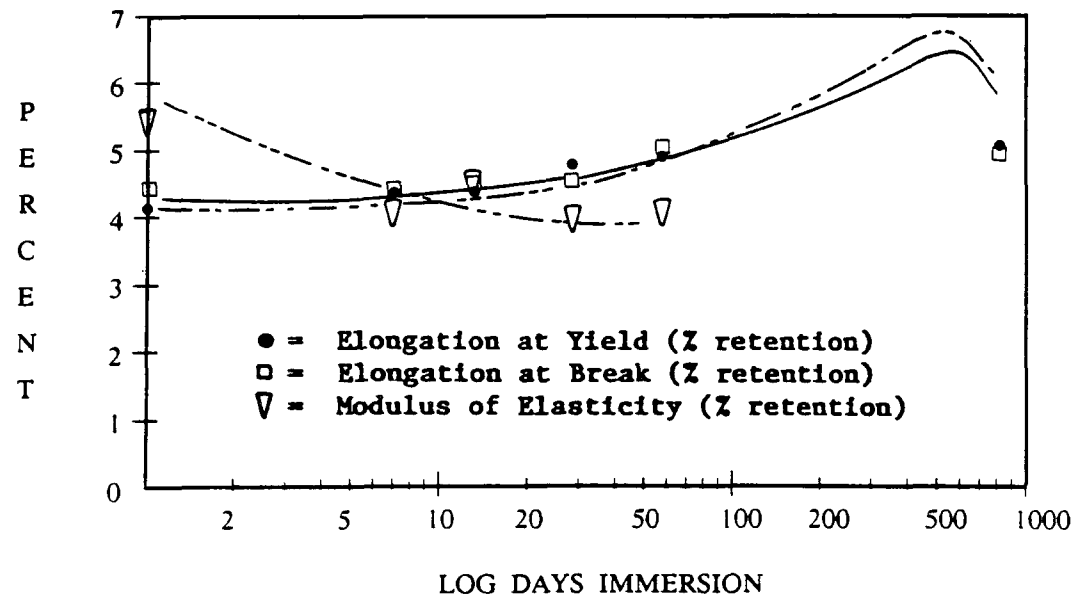



**Figure 67. Percent elongation at yield, elongation at break, and modulus of elasticity change with immersion in 10 percent sodium hydroxide solution at 50°C for HDPE**

function of immersion time. None show significant change over the immersion period. Figure 67 shows elongation at yield, elongation at break, and modulus of elasticity. No significant trends are seen.

**Weight Gain with Softening—**

The response to ASTM #2 oil at 50°C is illustrated in Figures 68,69 and 70. Weight gain was over six percent, and stabilized after about 150 days (Figure 67). No significant changes were seen in the strength properties: tensile strength, yield strength, and tear resistance (Figure 69). Figure 70, however, does illustrate changes in mechanical properties after immersion. Elongation at yield increased and the modulus of elasticity decreased with increasing immersion time. (Two year samples could not be tested for modulus due to the sample shape.) Elongation at break shows no change.

**Weight Gain with Decrease in Strength and Elongation—**

In the organic solutions, changes in physical properties generally fell in the the borderline region (2 to 3 percent for weight, 10 to 20 percent for mechanical). Weight, breaking strength and elongation were the main indicators. While for most immersion these changes were not conclusive due to the limits of significance of the testing, they indicate that there is question about the resistance of the HDPE to these chemicals.

Using the weight change criteria, HDPE was considered non-resistant to saturated 1,2-dichloroethane. Consistent weight changes above three percent were measured. Changes in mechanical properties were borderline (10 to 20 percent) and not conclusive.

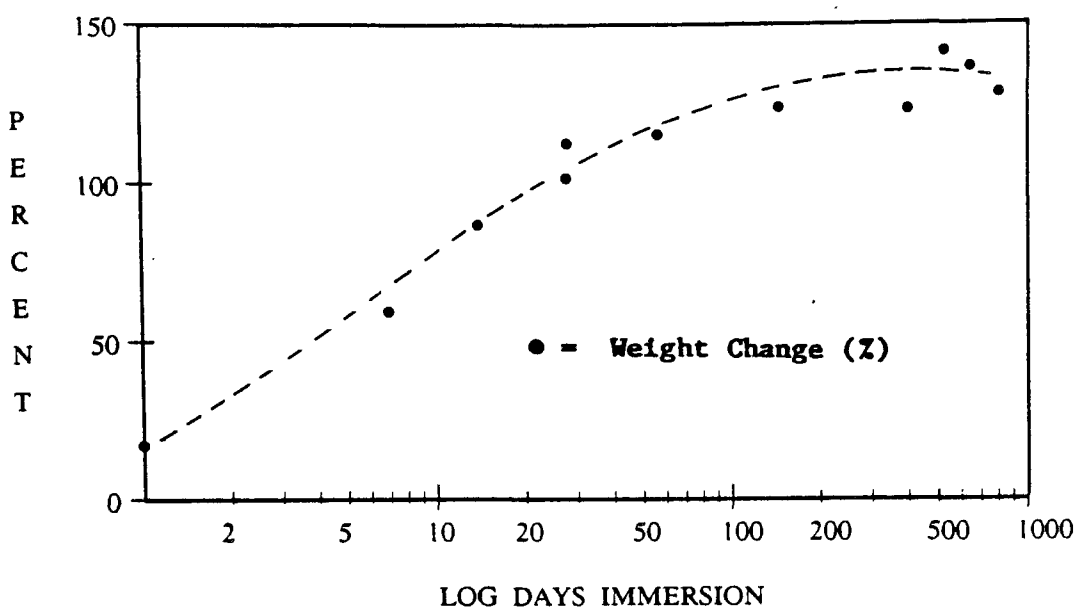



**Figure 68. Percent weight change with immersion in ASTM #2 oil at 50°C for HDPE**

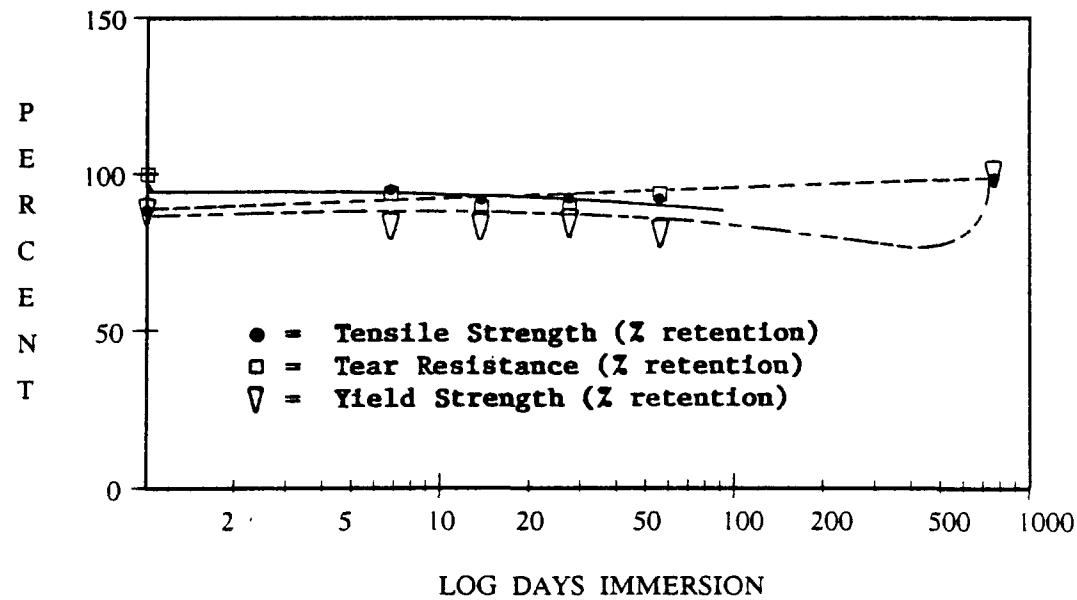



**Figure 69. Percent tensile yield and tear resistance change with immersion in ASTM #2 oil at 50°C for HDPE**

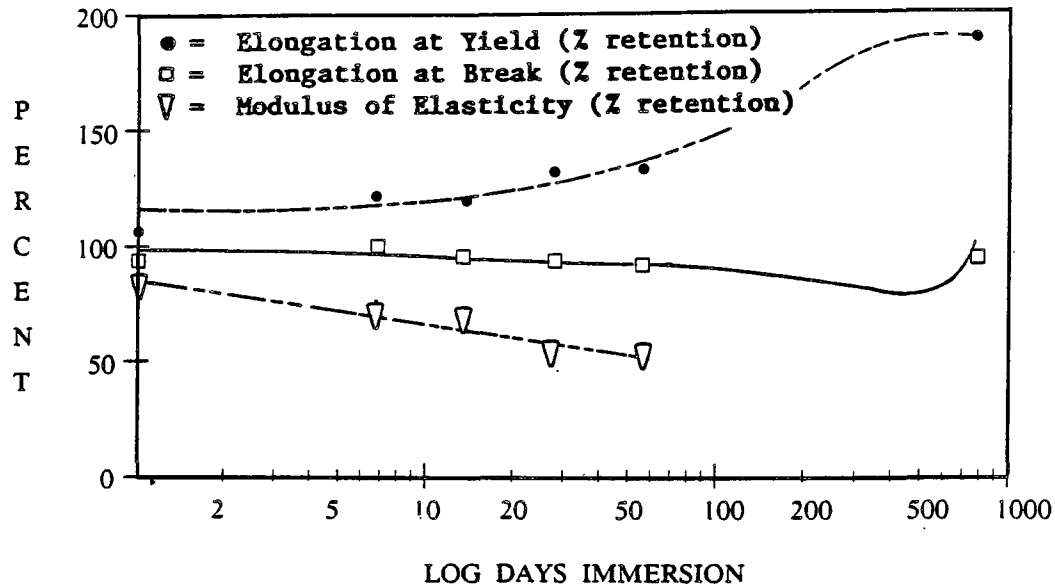



**Figure 70. Percent elongation at yield, elongation at break, and modulus of elasticity change with immersion in ASTM #2 oil at 50°C for HDPE**

## CHLOROSULFONATED POLYETHYLENE-LOW WATER ABSORPTION (CSPE-LW)

### Criteria for Determining FML Chemical Resistance

For this FML, based on the data in this project, the following criteria are proposed for determining the chemical resistance of CSPE-LW with immersion tests:

- A stabilized liner response
- A weight gain of not more than five percent for immersion testing at 23°C.
- The breaking factor must be at least 80 percent of the initial value.
- The S-100 modulus must be at least 70 percent of the initial value.
- The tear resistance must be at least 80 percent of the initial value.
- The elongation at break must not be more than 125 percent of the initial value.

These criteria are used in evaluating the FML's response to the chemicals in Table 32. Table 32 is a summary of the results of chemical resistance testing for CSPE-LW liner, and the table is explained and amplified in the sections that follow. The chemicals listed in Table 32 are grouped according to the type of response seen. Resistance or non-resistance is listed in the second to last columns, and the reasons for a non-resistance rating are given in the last column. Also listed in the table are whether temperature and concentration effects were seen,and whether the liner achieved stability in contact with the chemical exposure.

The suggested criteria for mechanical properties are based on the test reproducibility seen for this CSPE-LW liner.

Limits on weight change are specified for a 23°C immersion temperature. This was necessary since the CSPE-LW liner response was changed by elavating temperature.

These suggested criteria for breaking factor and S-100 modulus are the same as those proposed by the EPA in the document "Resistance of FMLs to Chemicals and Wastes" (27). Tear resistance was not included in the EPA list, and the limits for elongation at break were given as 70 percent retention. Because the liner tested showed no decrease in elongation for exposures at 23°C, a lower limit could not be determined from the data. This EPA document lists ten percent as the limit for weight gain, while this project specifies a five percent gain as the limit for exposures at 23°C. This more conservative limit, with temperature limitations was chosen based on the temperature effects and the limits of method reproducibility.

Comparison of Table 33 results to the EPA chemical resistance matrix mentioned above show reasonable agreement, although the matrix does not specify whether industrial grade CSPE (low water absorption) was used, or whether the material was thermoplastic or crosslinked. Results at 23°C for water and hydrochloric acid are termed resistant in both cases. Weight change in sodium hydroxide solution, however, was much higher in the NSF data than in the matrix reference, and resulted in the NSF non-resistant rating. For

TABLE 32. CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION (CSPE-LW): RESPONSE SUMMARY FOR CHEMICAL RESISTANCE

| CHEMICAL NAME | TYPE | TEMPERATURE EFFECT | CONCENTRATION EFFECT | TYPE OF RESPONSE | CONDITIONS | | STABILITY ACHIEVED~ | RESISTANT~ | REASONS FOR NON-RESISTANCE * |
|---|---|---|---|---|---|---|---|---|---|
| Water | - | yes | - | Minor Change | 23 C | - | (N) | Y | |
| | | | | Crosslinking at 50 | 50 C | | Y | N | WG, SL |
| Sodium Chloride | SALT | no | no | Minor Change | 23 C | 10% & | Y | Y | |
| | | | | | 50 C | sat'd | Y | Y | |
| Potassium Dichromate | OXIDIZER | no | - | Minor Change | 23 C | 10% | Y | Y | |
| | | | | | 50 C | | Y | Y | |
| Hydrochloric Acid | ACID | yes | - | Minor Change | 23 C | 10% | N | Y | |
| | | | | Swelling/Soft at 50 | 50 C | | N | N | WG, SL, TL, EG |
| Sodium Hydroxide | BASE | yes | - | Swelling and | 23 C | 10% | N | N | WG |
| | | | | Crosslinking | 50 C | | Y | N | WG, TL(m) |
| ASTM #2 Oil | OIL | yes | - | Swelling and | 23 C | 100% | N | Marg. | WG, SL(m), TL(m) |
| | | | | Softening | 50 C | | Y | N | WG, BL, SL, TL, EG |
| Furfural | ALDEHYDE | yes | yes | Swelling and | 23 C | 1% | N | Y | |
| | | | | Softening | | 4% | N | N | WG, SL(m), TL(m) |
| | | | | | | 8% | Y | N | WG, SL, TL(m), EG |
| | | | | | 50 C | 1% | N | N | WG, SL, TL(m) |
| | | | | | | 4% | Y | N | WG, SL, TL |
| | | | | | | 8% | Y | N | WG, BL, SL, TL, EG |
| 1,2-Dichloroethane | CHLORINATED HYDROCARBON | yes | yes | Swelling and | 23 C | .1% | Y | Y | |
| | | | | Softening | | .5% | Y | N | WG(m), SL |
| | | | | | | .8% | Y | N | WG, SL, TL, EG |
| | | | | | 50 C | .1% | N | N | WG, SL, EG(m) |
| | | | | | | .5% | N | N | WG, SL, TL(m) |
| | | | | | | .8% | N | N | WG, SL, TL, EG |
| Methyl Ethyl Ketone | KETONE | yes | yes | Swelling and | 23 C | 3% | N | Marg. | WG(m), SL(m) |
| | | | | Softening | | 13% | N | N | WG, SL, TL, EG |
| | | | | | | 26% | Y | N | WG, SL, TL, EG |
| | | | | | 50 C | 3% | Y | N | WG, SL, TL |
| | | | | | | 13% | Y | N | WG, BL, SL, TL, EG |
| | | | | | | 26% | Y | N | WG, BL, SL, TL, EG |
| Phenol | PHENOL | yes | yes | Swelling and | 23 C | 1% | Y | Y | |
| | | | | Softening | | 4% | Y | N | WG, SL, TL, EG |
| | | | | | | 8% | Y | N | WG, SL, TL, EG |
| | | | | | 50 C | 1% | N | N | WG, SL, TL |
| | | | | | | 4% | Y | N | WG, SL, TL, EG |
| | | | | | | 8% | N | N | WG, BL, SL, TL, EG |

* WG = weight gain, BL = Breaking Factor Loss, TL = Tear Resistance Loss, SL = S-100 Loss, EG = Elongation at Break Gain
~ Y = Yes, N = No, (m) = marginal or borderline results

phenol, the EPA matrix rates CSPE-LW resistant to < 30 percent phenol based on manufacturers' data. This weight data is compared with NSF data in Table 32. Although the concentration of phenol is not specified in the matrix reference, the data is similar to the NSF results for 4 percent phenol solution. CSPE was termed resistant to this phenol solution in the EPA matrix (using its weight change limit of 10 percent), whereas using the NSF criteria (5 percent weight change limit), the higher two concentrations are non-resistant.

**TABLE 33. COMPARISON OF MANUFACTURER'S DATA TO NSF DATA FOR CSPE-LW RESISTANCE TO PHENOL.**

| DAYS IMMERSION | PERCENT WEIGHT CHANGE | | | |
|---|---|---|---|---|
| | Matrix Reference | NSF Data (23°C, phenol) | | |
| | (24°C, < 30% phenol) | 1% | 4% | 8% |
| 1 | | 1 | 3 | 7 |
| 3 | 5.6 | | | |
| 7 | | 2 | 6 | 11 |
| 11 | 6.0 | | | |
| 14 | | 2 | 6 | 9 |
| 28 | | 2 | 6 | 9 |
| 36 | | 2 | 6 | 9 |
| 46 | | 2 | 6 | 11 |
| 56 | | 2 | 7 | 10 |
| 81 | 6.0 | | | |
| 130 | | 2 | 6 | 10 |
| 137 | | 2 | 7 | 12 |
| 241 | | 2 | 7 | 13 |

## Response Time and Stability

The maximum immersion time for this liner was eight months. Over half of the exposed CSPE-LW liners showed weight stability within this period, but other types of FML also sometimes required longer than eight months to achieve weight stability.

Response time, or the time required for the liner to stabilize in a given solution, varied from less than seven days to more than eight months for CSPE-LW. In most cases, though, a four-month exposure time would appear to be sufficient to determine chemical resistance. There were fifteen exposures for which CSPE-LW liner did not show stability within eight months. The liner appeared to be resistant to only three of these non-stabilized exposures (water, HCl, and 1 percent furfural, all at 23°C). In the other twelve cases, there were multiple indicators of non-resistance.

## Magnitude of Liner Response

A two-part evaluation of the magnitude of physical property change was not possible in evaluating CSPE-LW chemical resistance. There is no Standard 54 table for unsupported CSPE-LW FML. Only a maximum allowable percent change based on the control (unexposed) results was determined.

Changes in weight were always positive for CSPE-LW immersion tests; no samples showed a weight loss. Weight gains ranged from zero to over one hundred percent (ASTM #2 oil at 50°C).

Breaking strength and elongation at break showed both gain and loss due to chemical immersion. Breaking strength ranged from 30 percent retention (in saturated MEK) to 130 percent retention (in NaOH). Elongation ranged from 54 percent retention (in saturated furfural) to 188 percent retention (in ASTM #2 oil). In general, elongation decreased as breaking strength increased.

Tear resistance and S-100 modulus showed either minor change only or losses. Retention of tear resistance ranged from 21 percent (two months in ASTM #2 oil at 50°C) to 102 percent (one day in HCl). S-100 modulus ranged from 7 percent retention (eight months in ASTM #2 oil at 50°C) to 101 percent retention (two months in NaOH).

### Percent Change from Initial Value—

Limits on allowable change for the CSPE-LW liner were set by looking primarily at the 23°C data in order to separate the effects of temperature

from the effects of the chemical immersion. The material is sensitive to temperature, and tends to slowly crosslink on exposure to heat and moisture. The effect of crosslinking is increased breaking strength and decreased elongation. General chemical resistance improves with aging (from crosslinking), but the liner becomes difficult to seam. The higher temperature exposures in general had a wider range of weight gain, especially for the organic immersion solutions.

Figure 71 shows the relationship between breaking factor and weight change at 23°C. Breaking factor reproducibility in this CSPE-LW liner was approximately 15 percent, measured by looking at those samples with little or no weight change. A limit on change of 20 percent was chosen as a conservative estimate of real material degradation.

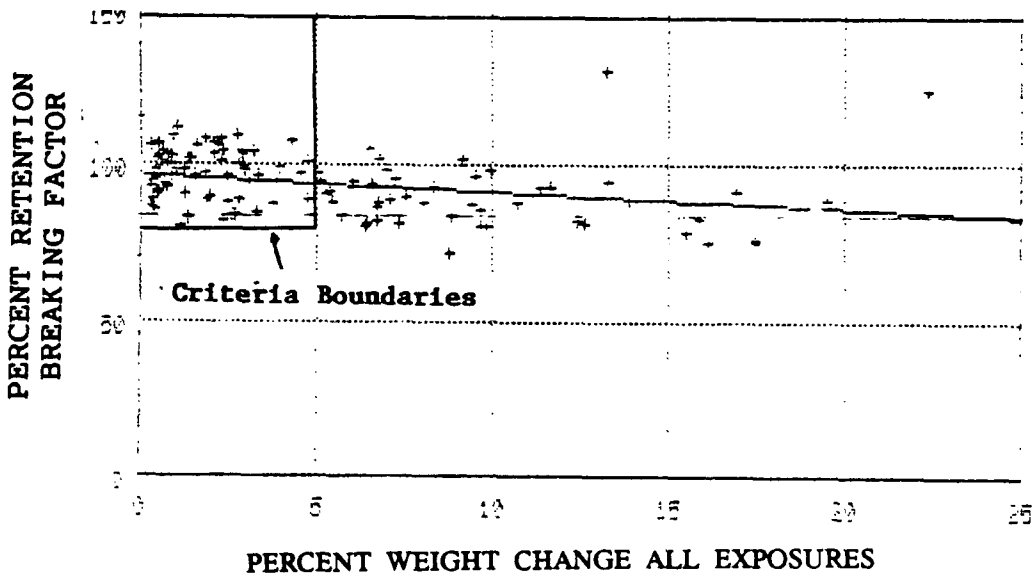



**Figure 71. Relationship between breaking factor and weight change at 23°C for CSPE-LW**

The S-100 modulus tended to decrease as a result of chemical immersion. Figure 72 shows the retention of S-100 modulus as a function of weight change. This figure contains data from both temperatures, since the S-100 modulus response was similar (ie., at the higher immersion temperature, although the

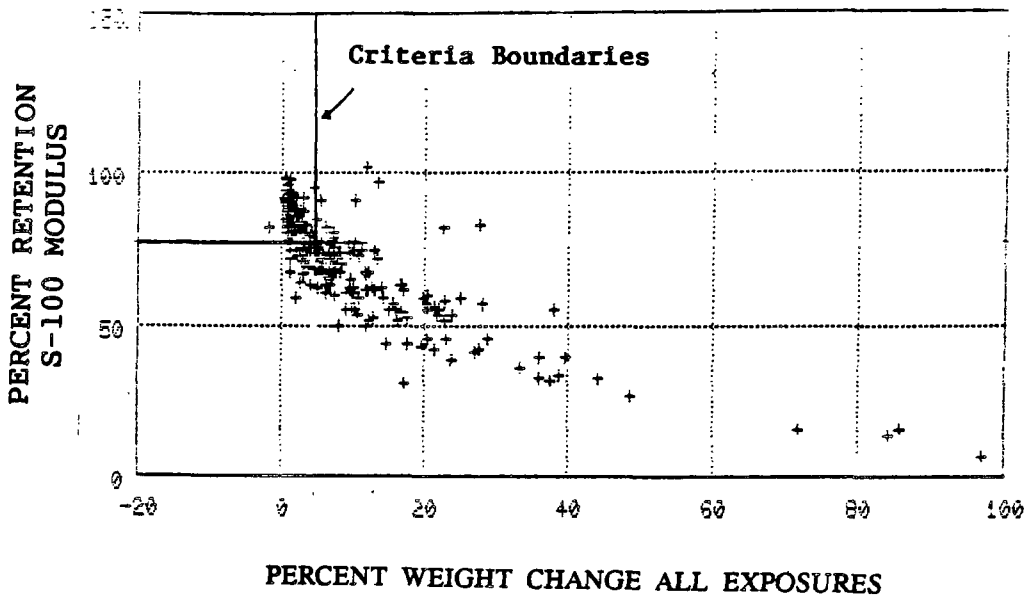



**Figure 72. Relationship between S-100 modulus and weight change for CSPE-LW**

weight gain may be greater, the S-100 modulus change is also proportionally greater). Although almost all immersion samples retained less than 100 percent of the modulus, the variability around zero weight change appears to be about percent. This represents inherent property variability after immersion but with no other effect evident. A limit of 30 percent loss of S-100 modulus was chosen as an indicator of real material degradation.

Like the S-100 modulus, retention of tear resistance was almost always less than 100 percent, and temperature did not change the basic response. To focus on the lower portion of the weight range, the data from 23°C exposures only is shown in Figure 73. Tear resistance variability around the zero weight change point is about ten percent, with a clear relationship between weight gain and loss of tear resistance. (Above a twenty percent weight gain, the tear resistance response is not linear with weight gain, but look similar to the curve for S-100 modulus (Figure 72).

A limit for weight gain for this CSPE-LW liner was set at 5 percent for a 30 mil liner. This limit was set using Figures 71 and 72, selecting the weight

gain for which the S-100 modulus and tear resistance properties fell below the percent change limit. The 5 percent limit is smaller than the limit in the EPA guide (27), which lists a ceiling 10 percent weight gain, but is justified by the drop in the tensile properties at five percent weight gain.

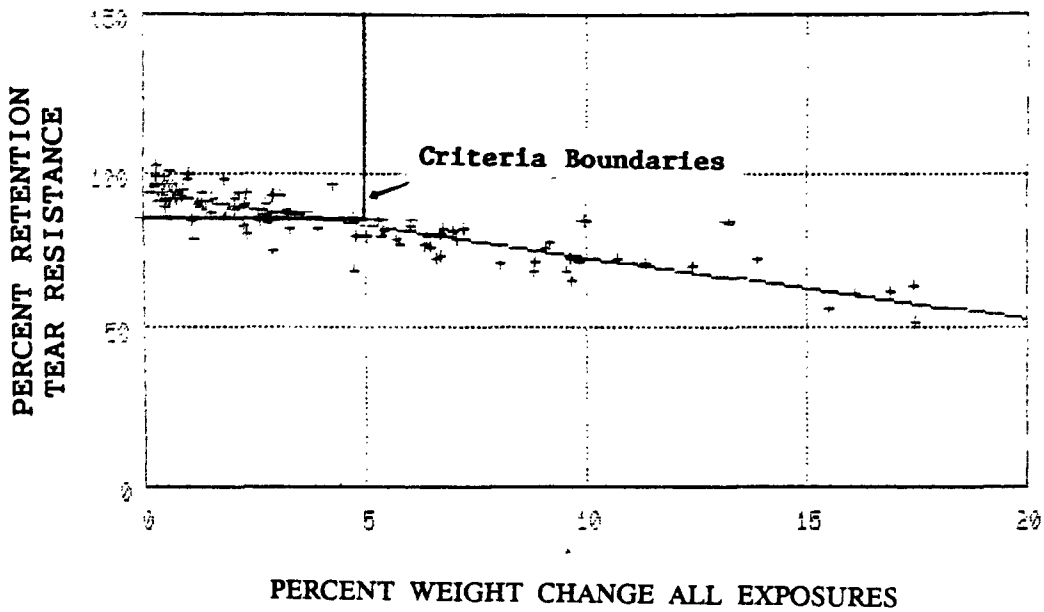



**Figure 73. Relationship between tear resistance and weight change at 23°C for CSPE-LW**

Retention of ultimate elongation is shown as a function of weight change in Figure 74. Variability in elongation is about 20 percent around the zero weight gain point. Data for both temperatures are included in the figure for illustration. Two separate types of response can be seen. For most immersions, elongation at break increased, probably due to the softening effect from liquid absorption. Some immersion samples, however, retained less elongation after immersion and appeared to be crosslinking. Most of the samples with decreased elongation were exposed at 50°C, in NaOH or water.

Because the trend for CSPE-LW was for the elongation at break to increase as a result of chemical immersion at 23°C, and because crosslinking is not considered material degradation, no lower limit on percent retention could be determined and probably is not appropriate. To set a limit of allowable

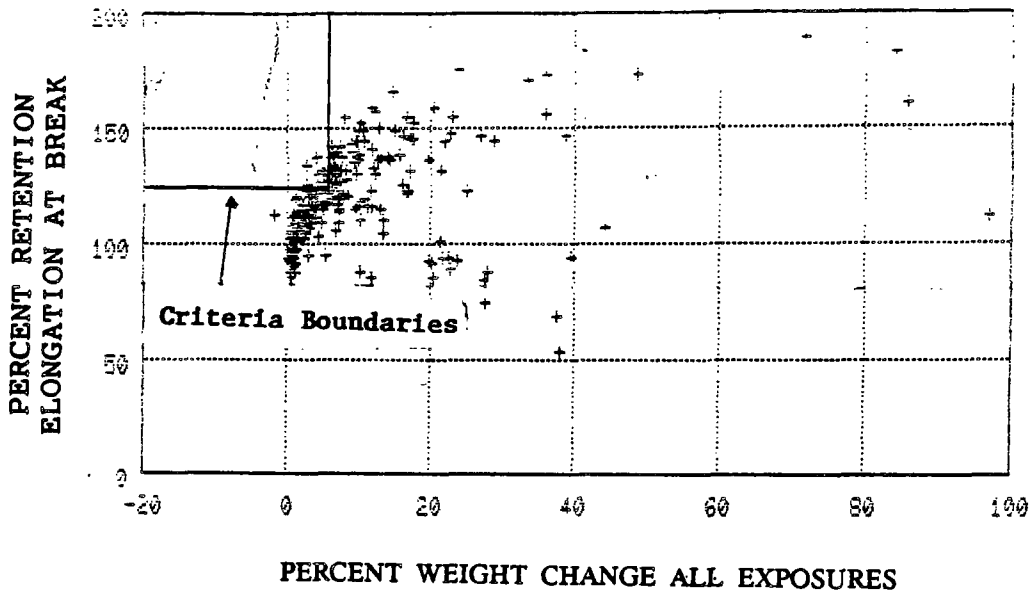



**Figure 74. Relationship between elongation at break and weight change for CSPE-LW**

increase in elongation, the relationship between elongation and other indicators was studied. Figures 75 and 76 show the relationship between elongation at break and S-100 modulus and tear resistance, respectively. An increase in elongation of 25 percent (125 percent retention) roughly corresponds to the limits set on both properties.

## Types of Effects

The results in Table 33 for CSPE-LW are grouped according to the type of effects seen. A temperature or concentration effect is noted in the third and fourth columns. Three basic types of response to chemical immersion were observed with this liner: minor change, crosslinking, and swelling and softening.

### Temperature Effects—

The response of this liner to increased immersion temperature shows that higher temperatures (at least up to 50°C) can sometimes accelerate the response, but must be interpreted with caution. Crosslinking of the CSPE-LW

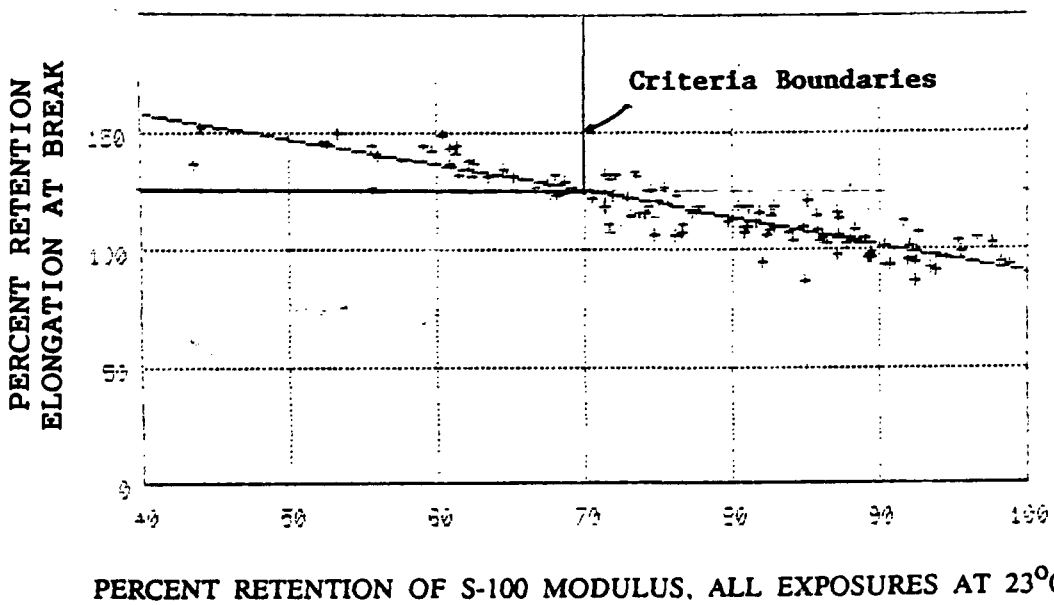



**Figure 75. Relationship between elongation at break and S-100 modulus at 23°C for CSPE-LW**

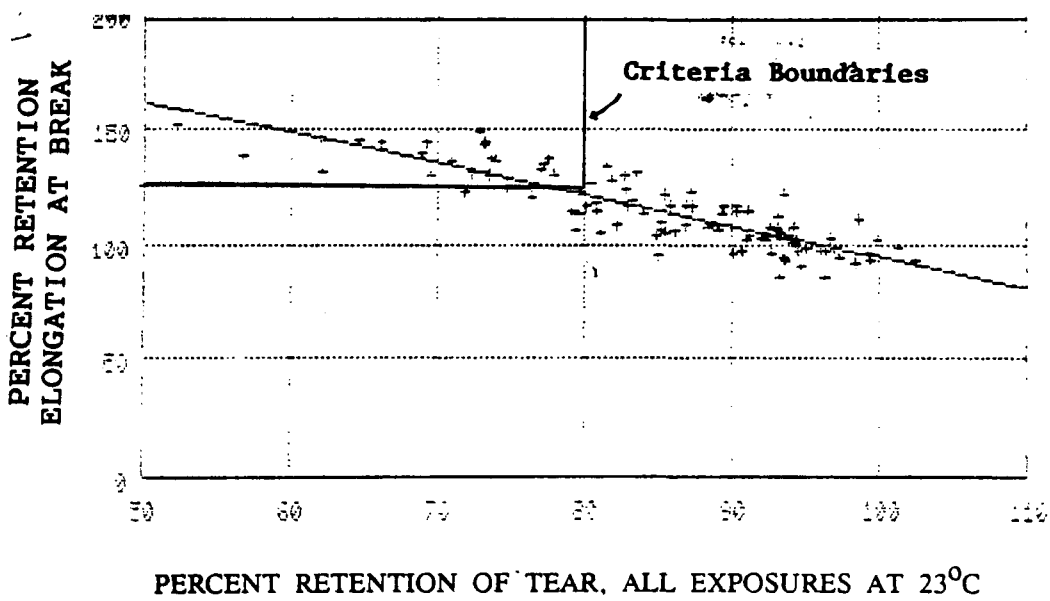



**Figure 76. Relationship between elongation at break and tear resistance at 23°C for CSPE-LW**

liner is a known response to heat and moisture. For water and sodium hydroxide, increased evidence of crosslinking was seen at 50°C. For these two exposures, the breaking strength increased with time, and the elongation at break decreased.

Increasing the temperature to 50°C generally resulted in more weight gain, and more severe losses of property, especially for organic solutions. In these cases, the increased temperature appeared to accelerate the test.

**Concentration Effects—**

Four organic chemicals were tested in three concentrations. All responses seen with these chemicals were affected by concentration, with more weight gain at higher concentration.

**Indicators of Non-Resistance**

For CSPE-LW, the most sensitive indicators of non-resistance are weight gain, decrease of S-100 modulus, and decrease of tear resistance. As discussed above, a weight gain of 5 percent corresponds to a 20 percent drop in tear resistance and a 30 percent drop in S-100 modulus.

Changes in breaking strength can indicate material degradation, but the measurement is much less sensitive. As shown previously in Figure 71, the 15 percent variability in breaking strength around zero weight gain means that changes in breaking strength less than 15 percent are not conclusive. Only for weight gains above 20 percent are conclusive changes in breaking factor seen.

Elongation at break is at best an indirect indicator of chemical non-resistance, since an increase in elongation can be correlated with decreases in S-100 modulus and tear resistance. Decreasing elongation, however, is not a good indicator of CSPE-LW chemical non-resistance since the FML may be crosslinking in response to heat and moisture (3).

**Minor change—**

In water (23°C only), salt, potassium dichromate, and hydrochloric acid (23°C only) minor changes in weight and mechanical properties were observed . An example is shown in Figure 77. This figure shows the response of CSPE-LW liner to a saturated salt solution at 50°C. No significant weight gain was recorded over the eight month immersion period. Both elongation at break and breaking strength were unchanged from their initial values. S-100 modulus and tear resistance were slightly lower.

**Crosslinking—**

In water (50°C), and in sodium hydroxide solutions at both temperatures evidence of crosslinking was seen. While not evidence of non-resistance in itself, crosslinking should be noted as a response. Figure 78 shows the response of CSPE-LW to 10 percent sodium hydroxide at 50°C. Weight gain was about 25 percent, and may have stabilized after 100 days. Elongation shows a downward trend with time, beginning after about one month immersion time. At the same time, the breaking strength increased to 130 percent of its initial value. It should be noted that the S-100 modulus, not shown on this figure, remained relatively steady and did not show the same increase as breaking factor. The responses may have not yet stabilized with respect to time.

**Swelling and softening—**

In all four organic series (MEK, phenol, furfural, and 1,2-dichloroethane), in ASTM #2 oil, and in hydrochloric acid (50°C only), swelling and softening was the primary response of the CSPE-LW liner. Exposure to these chemicals caused weight gain, reduced S-100 modulus, reduced tear resistance, and an increase in elongation at break. For the organic chemical series, only the lowest concentrations of each tested at 23°C did not change the CSPE-LW enough for it to be considered non-resistant.

At 50°C, the initial increase in elongation decreased with time for these exposures, and the breaking strength tended to remain the same or decrease. While some crosslinking may be occuring, caused by temperature, the material also appears to be weakening as a result of the exposure. As shown in

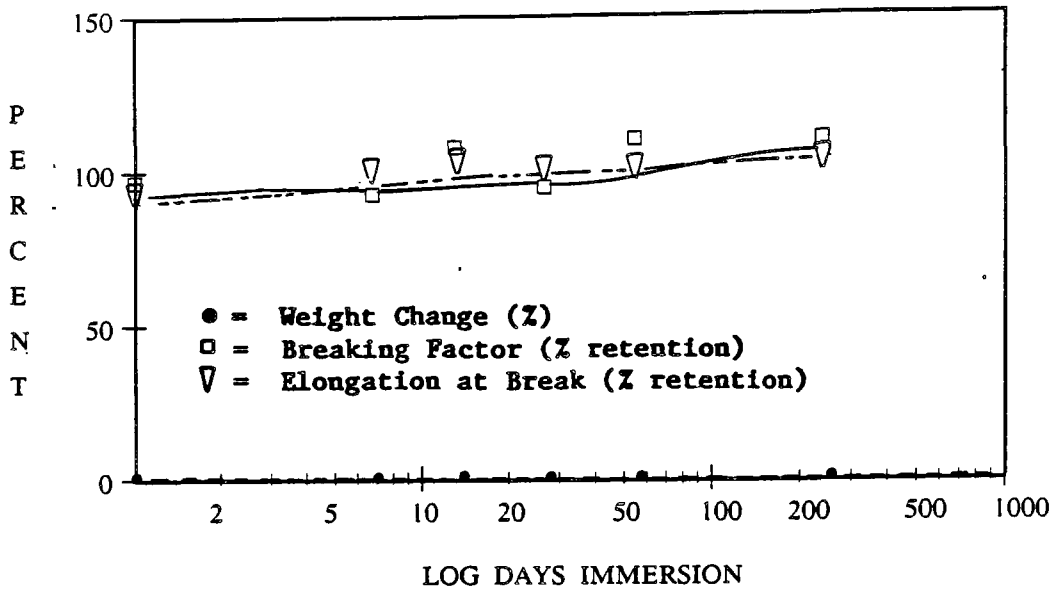



**Figure 77. Physical property change with immersion in saturated (35 percent) salt solution at 50°C for CSPE-LW**

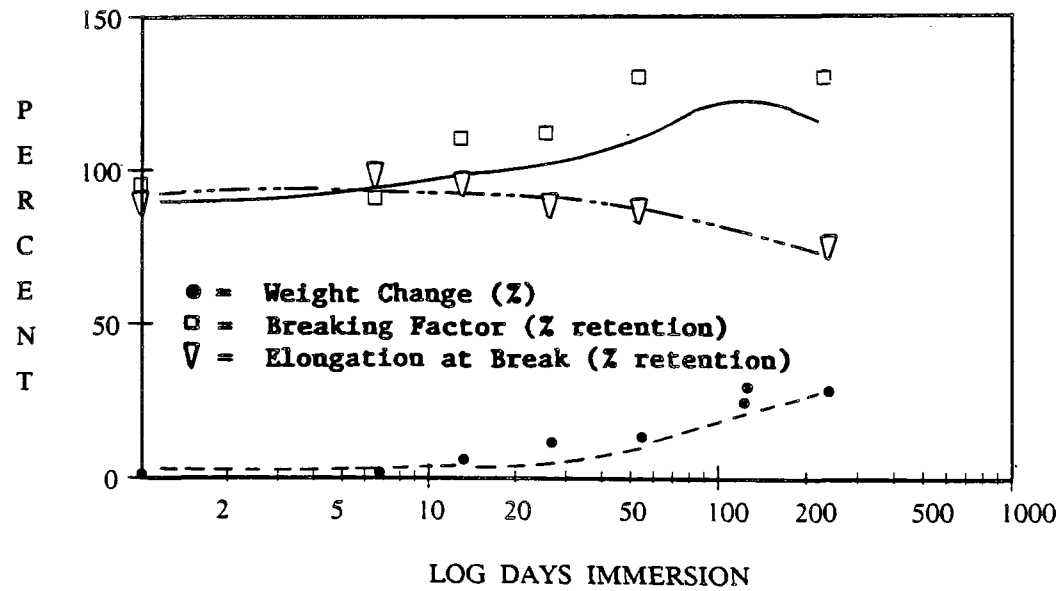



**Figure 78. Physical property change with immersion in 10 percent sodium hydroxide solution at 50°C for CSPE-LW**

Table 32, breaking strength is below 80 percent retention only for the higher concentrations of furfural, MEK, and phenol at 50°C only.

Figures 79 and 80 show the CSPE-LW response to ASTM #2 oil at both temperatures. At 23°C (Figure 79), the weight is above ten percent and still increasing with time, although the breaking strength and elongation show no effect. Retention of S-100 modulus and tear resistance, not shown are borderline and had not stabilized within the testing period. At 50°C (Figure 80) the response is much faster and more severe. Weight gain has stabilized at 100 percent, and breaking strength at around 50 percent retention. The initial large increase in elongation at break peaked at fourteen days and declined to just over 100 percent after eight months. The liner was quite soft and swollen after exposure to the hot oil.

The response to 8 percent phenol is shown in Figures 81 and 82. These figures again show the swelling response, and the difference between exposure at 23 and 50°C. Weight gain is much higher at 50°C than at 23°C and does not stabilize at the higher temperature. Elongation at break increases immediately and then declines again with time at 50°C.

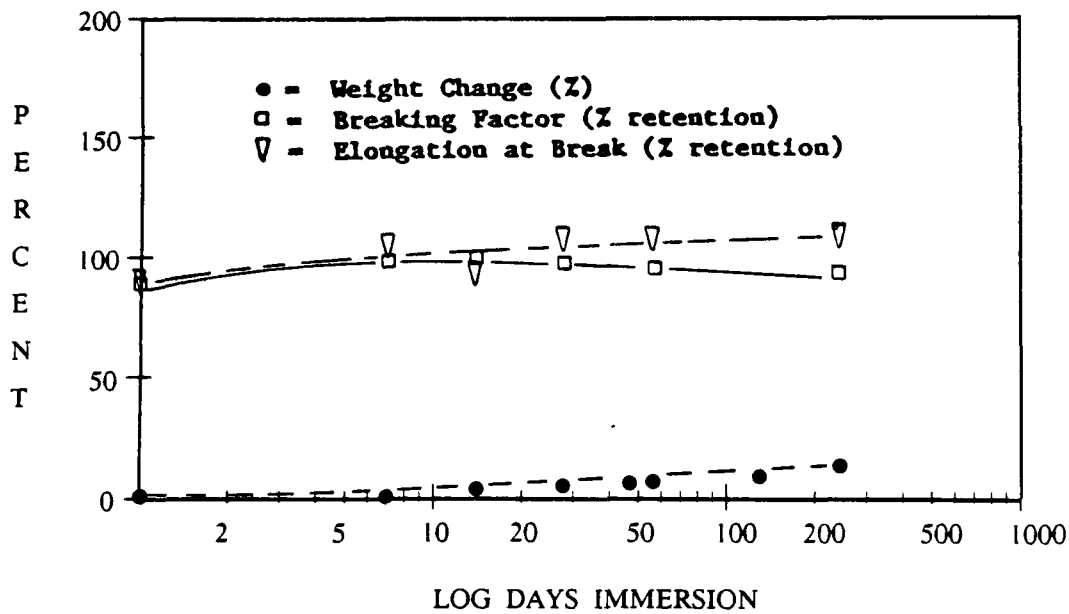



**Figure 79. Physical property change with immersion in ASTM #2 oil at 23°C for CSPE-LW**

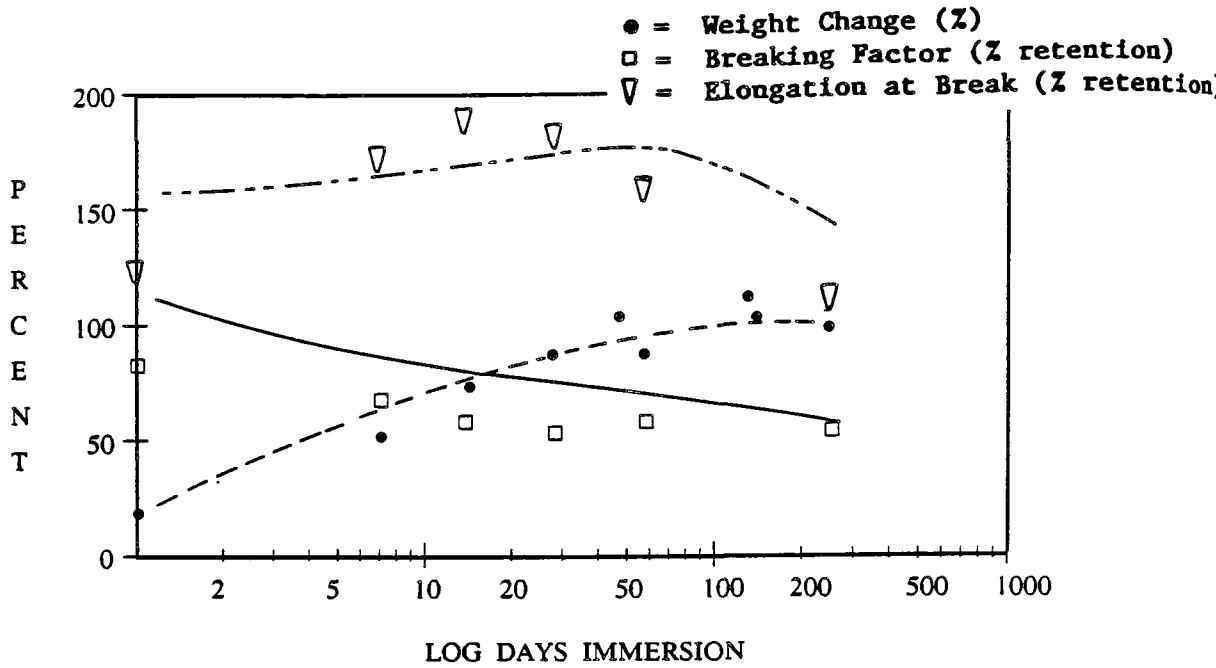



**Figure 80. Physical property change with immersion in ASTM #2 oil at 50°C for CSPE-LW**

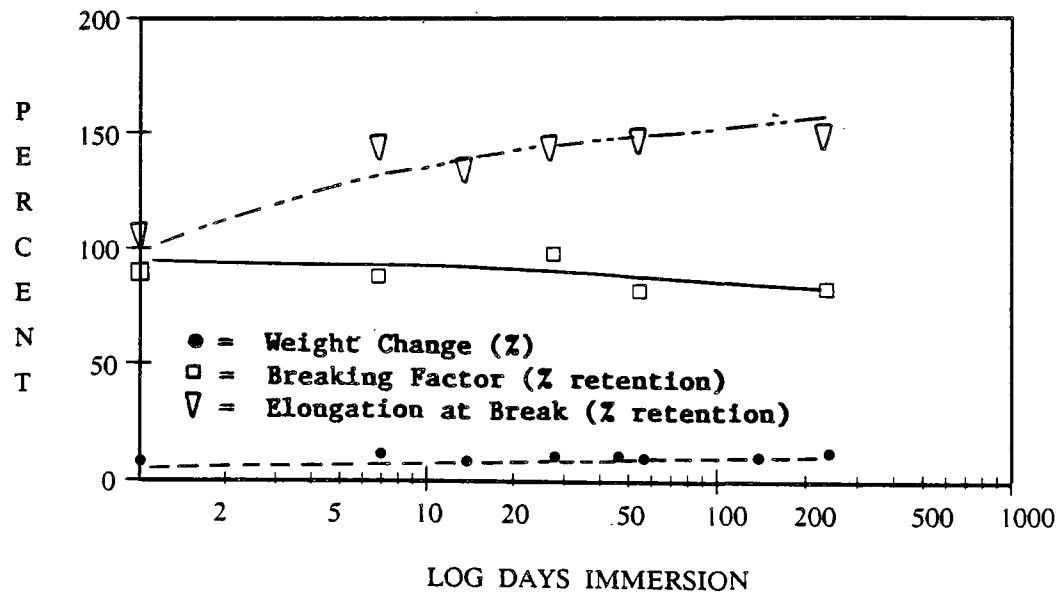



**Figure 81. Physical property change with immersion in 8 percent phenol at 23°C for CSPE-LW**

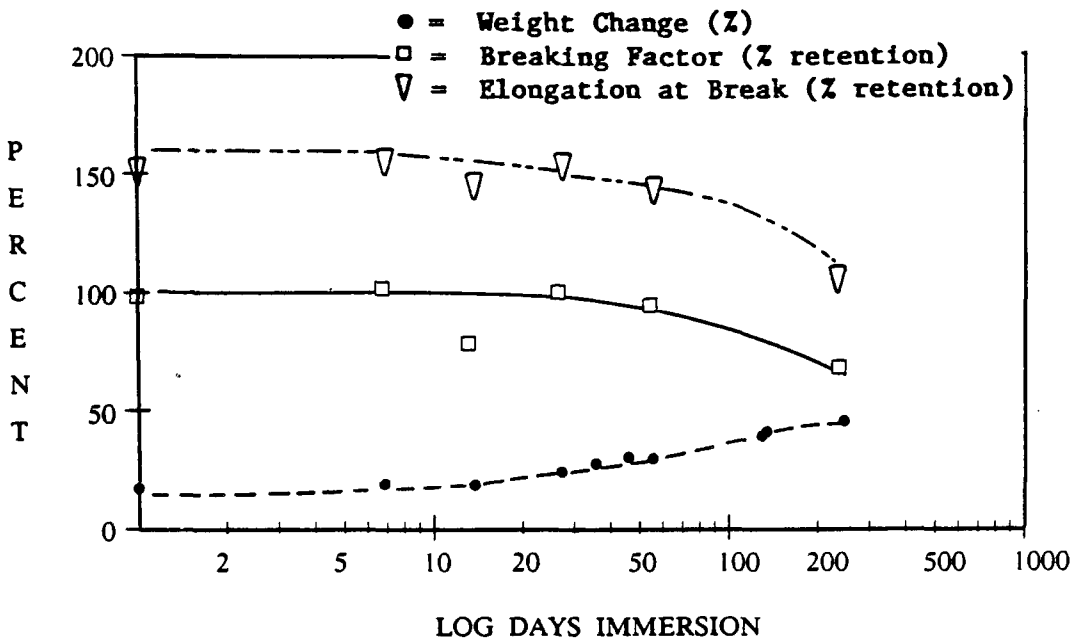



**Figure 82. Physical property change with immersion in 8 percent phenol at 50°C for CSPE-LW**

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# APPENDIX A

## ADVISORY COMMITTEE MEMBERS

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# APPENDIX B

# INITIAL SCREENING RESULTS

POLYVINYL CHLORIDE: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | 1 2 DICHLOROETHANE .9% | | | |
| 7 DAY IMMERSION | 4.4 | .6 | .9 | .2 | 1.7 |
| 7 DAY AIR-DRIED | 1.5 | .3 | 1.0 | 2.2 | 3.5 |
| | | 1 2 DICHLOROETHANE .5% | | | |
| 7 DAY IMMERSION | 6.6 | .6 | 1.1 | .9 | 2.7 |
| 7 DAY AIR-DRIED | 1.6 | .3 | 1.0 | 1.9 | 3.2 |
| | | 1 2 DICHLOROETHANE 100.0% | | | |
| 7 DAY IMMERSION | 470.7 | 77.1 | 57.3 | 94.9 | 442.9 |
| 7 DAY AIR-DRIED | * | * | * | * | * |
| | | FURFURAL 1.0% | | | |
| 7 DAY IMMERSION | 2.7 | .3 | .7 | 1.0 | 2.1 |
| 7 DAY AIR-DRIED | .2 | .3 | .1 | * | .2 |
| | | FURFURAL 5.0% | | | |
| 7 DAY IMMERSION | 15.9 | 4.8 | 4.7 | 5.3 | 15.5 |
| 7 DAY AIR-DRIED | 6.2 | 1.9 | 1.5 | 2.2 | 5.7 |
| | | FURFURAL 8.0% | | | |
| 7 DAY IMMERSION | 37.3 | 12.1 | 8.9 | 7.5 | 31.1 |
| 7 DAY AIR-DRIED | 15.2 | 6.0 | 3.4 | .7 | 10.4 |
| | | FURFURAL 100.0% | | | |
| 7 DAY IMMERSION | 70.2 | 18.8 | 14.6 | 18.5 | 61.4 |
| 7 DAY AIR-DRIED | 59.0 | * | 8.5 | 11.0 | * |
| | | METHYL ETHYL KETONE 1.0% | | | |
| 7 DAY IMMERSION | 1.7 | .6 | .6 | .9 | 2.1 |
| 7 DAY AIR-DRIED | .4 | .3 | .2 | .2 | .3 |
| | | METHYL ETHYL KETONE 10.0% | | | |
| 7 DAY IMMERSION | 13.1 | 4.8 | 3.6 | 4.8 | 13.8 |
| 7 DAY AIR-DRIED | .4 | 1.0 | 1.1 | .2 | .4 |
| | | METHYL ETHYL KETONE 26.0% | | | |
| 7 DAY IMMERSION | 67.8 | 21.8 | 13.1 | 21.2 | 66.9 |
| 7 DAY AIR-DRIED | .3 | 1.9 | 4.2 | 1.2 | 1.2 |

POLYVINYL CHLORIDE: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | METHYL ETHYL KETONE 99.0% | | | |
| 7 DAY IMMERSION | * | * | * | * | * |
| 7 DAY AIR-DRIED | * | * | * | * | * |
| | | ASTM #2 OIL SATURATED | | | |
| 7 DAY IMMERSION | .9 | * | .3 | .4 | .1 |
| 7 DAY AIR-DRIED | .6 | * | .4 | .8 | 1.2 |
| | | ASTM #2 OIL 100.0% | | | |
| 7 DAY IMMERSION | .6 | .3 | .5 | .5 | .7 |
| 7 DAY AIR-DRIED | 2.5 | .3 | 1.1 | 1.0 | 2.4 |
| | | PHENOL 1.0% | | | |
| 7 DAY IMMERSION | 3.1 | 1.3 | 1.1 | .8 | 3.2 |
| 7 DAY AIR-DRIED | 2.1 | .3 | .8 | .7 | 1.8 |
| | | PHENOL 5.0% | | | |
| 7 DAY IMMERSION | 6.8 | 2.9 | 1.3 | 2.0 | 6.3 |
| 7 DAY AIR-DRIED | 4.5 | 1.3 | 1.1 | 1.4 | 3.9 |
| | | PHENOL 8.0% | | | |
| 7 DAY IMMERSION | .5 | .3 | 1.5 | 1.8 | 3.0 |
| 7 DAY AIR-DRIED | 4.8 | 11.9 | 3.0 | 3.1 | 17.2 |
| | | PHENOL 88.0% | | | |
| 7 DAY IMMERSION | 4.2 | 1.3 | 3.5 | 3.2 | 7.8 |
| 7 DAY AIR-DRIED | 11.1 | | 6.4 | 6.1 | 12.1 |

CHLORINATED POLYETHYLENE: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | 1 2 DICHLOROETHANE .9% | | | |
| 7 DAY IMMERSION | 21.4 | 26.0 | .9 | 9.4 | 36.7 |
| 7 DAY AIR-DRIED | 3.3 | 14.4 | 1.6 | 3.9 | 16.9 |
| | | 1 2 DICHLOROETHANE .5% | | | |
| 7 DAY IMMERSION | 12.7 | 13.8 | .5 | 4.7 | 18.6 |
| 7 DAY AIR-DRIED | 2.9 | 3.4 | .5 | 1.3 | 4.3 |
| | | 1 2 DICHLOROETHANE 100.0% | | | |
| 7 DAY IMMERSION | * | * | * | * | * |
| 7 DAY AIR-DRIED | * | * | * | * | * |
| | | FURFURAL 1.0% | | | |
| 7 DAY IMMERSION | 2.5 | 2.0 | .1 | .2 | 2.3 |
| 7 DAY AIR-DRIED | 1.2 | .3 | * | * | .4 |
| | | FURFURAL 5.0% | | | |
| 7 DAY IMMERSION | 19.5 | 17.5 | 1.6 | 5.7 | 22.3 |
| 7 DAY AIR-DRIED | 10.5 | 8.6 | 2.5 | 2.1 | 8.1 |
| | | FURFURAL 8.0% | | | |
| 7 DAY IMMERSION | 65.4 | 49.5 | 2.2 | 19.6 | 74.8 |
| 7 DAY AIR-DRIED | 20.1 | 17.7 | 2.7 | 9.0 | 24.9 |
| | | FURFURAL 100.0% | | | |
| 7 DAY IMMERSION | 79.5 | 47.3 | 3.7 | 20.6 | 71.0 |
| 7 DAY AIR-DRIED | 48.4 | 36.0 | 10.7 | 12.5 | 36.5 |
| | | METHYL ETHYL KETONE 1.0% | | | |
| 7 DAY IMMERSION | 3.0 | 3.1 | * | .5 | 3.6 |
| 7 DAY AIR-DRIED | .2 | .3 | * | .3 | .7 |
| | | METHYL ETHYL KETONE 10.0% | | | |
| 7 DAY IMMERSION | 27.2 | 30.5 | 3.3 | 12.9 | 42.5 |
| 7 DAY AIR-DRIED | 3.2 | 9.9 | 2.7 | 3.2 | 10.4 |
| | | METHYL ETHYL KETONE 26.0% | | | |
| 7 DAY IMMERSION | 191.3 | 131.7 | 4.4 | 44.8 | 220.6 |
| 7 DAY AIR-DRIED | 92.1 | 98.6 | 10.2 | 31.4 | 134.3 |

CHLORINATED POLYETHYLENE: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | METHYL ETHYL KETONE 99.0% | | | |
| 7 DAY IMMERSION | * | * | * | * | * |
| 7 DAY AIR-DRIED | * | * | * | * | * |
| | | ASTM #2 OIL SATURATED | | | |
| 7 DAY IMMERSION | 2.4 | 8.2 | * | .4 | 7.8 |
| 7 DAY AIR-DRIED | .5 | .3 | .1 | .2 | .4 |
| | | ASTM #2 OIL 100.0% | | | |
| 7 DAY IMMERSION | 1.5 | 1.7 | .1 | .3 | 2.1 |
| 7 DAY AIR-DRIED | .7 | 1.0 | .1 | .2 | .8 |
| | | PHENOL 1.0% | | | |
| 7 DAY IMMERSION | 2.4 | 2.4 | .2 | .2 | 2.8 |
| 7 DAY AIR-DRIED | .1 | * | .2 | * | .2 |
| | | PHENOL 5.0% | | | |
| 7 DAY IMMERSION | 11.2 | 10.3 | .3 | 2.0 | 12.9 |
| 7 DAY AIR-DRIED | 7.0 | 3.1 | .5 | .8 | 4.4 |
| | | PHENOL 8.0% | | | |
| 7 DAY IMMERSION | 26.3 | 23.2 | .6 | 5.9 | 31.3 |
| 7 DAY AIR-DRIED | 10.8 | 10.2 | | 3.1 | 13.7 |
| | | PHENOL 88.0% | | | |
| 7 DAY IMMERSION | 42.7 | 36.9 | .2 | 9.2 | 49.1 |
| 7 DAY AIR-DRIED | 21.8 | 21.0 | 1.9 | 5.4 | 25.2 |

ETHYLENE PROPYLENE DIENE MONOMER: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | METHYL ETHYL KETONE 99.0% | | | |
| 7 DAY IMMERSION | 16.1 | 8.8 | 7.4 | 5.3 | 20.1 |
| 7 DAY AIR-DRIED | 20.9 | 11.6 | 9.8 | 7.5 | 26.2 |
| | | ASTM #2 OIL SATURATED | | | |
| 7 DAY IMMERSION | 1.5 | .3 | .4 | .1 | .8 |
| 7 DAY AIR-DRIED | 1.2 | * | .5 | .7 | 1.2 |
| | | ASTM #2 OIL 100.0% | | | |
| 7 DAY IMMERSION | 40.5 | 15.1 | 13.9 | 11.3 | 45.8 |
| 7 DAY AIR-DRIED | 40.3 | 15.1 | 14.4 | 11.3 | 46.5 |
| | | PHENOL 1.0% | | | |
| 7 DAY IMMERSION | .5 | .3 | .1 | .4 | .1 |
| 7 DAY AIR-DRIED | * | * | * | .4 | .4 |
| | | PHENOL 5.0% | | | |
| 7 DAY IMMERSION | 1.0 | .2 | .1 | .3 | .6 |
| 7 DAY AIR-DRIED | .5 | .2 | .1 | .1 | * |
| | | PHENOL 8.0% | | | |
| 7 DAY IMMERSION | 1.4 | 9.3 | .2 | .4 | 10.0 |
| 7 DAY AIR-DRIED | .6 | 7.9 | .2 | .4 | 7.3 |
| | | PHENOL 88.0% | | | |
| 7 DAY IMMERSION | .7 | .5 | .7 | .3 | 1.5 |
| 7 DAY AIR-DRIED | 2.1 | 1.5 | 1.0 | .8 | 3.3 |

ETHYLENE PROPYLENE DIENE MONOMER: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | 1 2 DICHLOROETHANE .9% | | | |
| 7 DAY IMMERSION | 3.1 | 1.7 | .8 | .8 | 3.3 |
| 7 DAY AIR-DRIED | .2 | * | .1 | * | .1 |
| | | 1 2 DICHLOROETHANE .5% | | | |
| 7 DAY IMMERSION | 3.1 | .8 | .8 | .9 | 2.5 |
| 7 DAY AIR-DRIED | .1 | .5 | * | * | .5 |
| | | 1 2 DICHLOROETHANE 100.0% | | | |
| 7 DAY IMMERSION | 9.9 | 7.1 | 6.7 | 6.0 | 18.6 |
| 7 DAY AIR-DRIED | 22.7 | 11.8 | 9.3 | 8.8 | 27.1 |
| | | FURFURAL 1.0% | | | |
| 7 DAY IMMERSION | .4 | .7 | * | * | .7 |
| 7 DAY AIR-DRIED | * | .5 | .1 | .1 | .3 |
| | | FURFURAL 5.0% | | | |
| 7 DAY IMMERSION | 1.4 | 1.5 | .2 | .6 | 2.3 |
| 7 DAY AIR-DRIED | .1 | .2 | .1 | .1 | .3 |
| | | FURFURAL 8.0% | | | |
| 7 DAY IMMERSION | 1.9 | 1.5 | .4 | .5 | 2.3 |
| 7 DAY AIR-DRIED | .1 | | .2 | .2 | |
| | | FURFURAL 100.0% | | | |
| 7 DAY IMMERSION | 1.8 | 1.0 | .8 | .4 | 2.1 |
| 7 DAY AIR-DRIED | 2.8 | .7 | 1.1 | .4 | 2.2 |
| | | METHYLETHYL KETONE 1.0% | | | |
| 7 DAY IMMERSION | .4 | .5 | .2 | .2 | .5 |
| 7 DAY AIR-DRIED | .1 | * | * | .5 | .5 |
| | | METHYL ETHYL KETONE 10.0% | | | |
| 7 DAY IMMERSION | 1.5 | * | * | * | * |
| 7 DAY AIR-DRIED | * | .7 | .3 | .1 | 1.1 |
| | | METHYL ETHYL KETONE 26.0% | | | |
| 7 DAY IMMERSION | 5.5 | 2.4 | 2.2 | 2.1 | 6.9 |
| 7 DAY AIR-DRIED | .2 | 1.0 | .2 | .4 | .8 |

EPICHLOROHYDRIN: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | 1 2 DICHLOROETHANE 100.0% | | | |
| 7 DAY IMMERSION | 223.8 | 62.6 | 41.0 | 33.3 | 205.6 |
| 7 DAY AIR-DRIED | 1.9 | 1.3 | .7 | .4 | 2.4 |
| | | FURFURAL 100.0% | | | |
| 7 DAY IMMERSION | 189.0 | 62.6 | 48.8 | 39.4 | 237.4 |
| 7 DAY AIR-DRIED | 3.0 | 1.6 | 1.0 | .8 | 3.5 |
| | | METHYL ETHYL KETONE 99.0% | | | |
| 7 DAY IMMERSION | 110.3 | 44.8 | 28.1 | 19.9 | 122.6 |
| 7 DAY AIR-DRIED | 3.4 | 1.6 | .9 | .8 | 3.2 |
| | | PHENOL 88.0% | | | |
| 7 DAY IMMERSION | 176.9 | 63.5 | 49.3 | 39.1 | 239.7 |
| 7 DAY AIR-DRIED | 49.1 | 30.1 | 18.1 | 12.9 | 73.5 |

HIGH DENSITY POLYETHYLENE: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | 1 2 DICHLOROETHANE .9% | | | |
| 7 DAY IMMERSION | 1.6 | 8.7 | .6 | .1 | 8.1 |
| 7 DAY AIR-DRIED | * | 8.7 | * | .7 | 9.3 |
| | | 1 2 DICHLOROETHANE .5% | | | |
| 7 DAY IMMERSION | 1.6 | 4.3 | .6 | .2 | 3.6 |
| 7 DAY AIR-DRIED | * | 6.4 | * | .6 | 7.0 |
| | | 1 2 DICHLOROETHANE 100.0% | | | |
| 7 DAY IMMERSION | 4.3 | 1.9 | 1.7 | .8 | .6 |
| 7 DAY AIR-DRIED | .1 | 2.2 | * | .6 | 2.8 |
| | | FURFURAL 1.0% | | | |
| 7 DAY IMMERSION | .3 | 3.4 | .1 | .4 | 3.8 |
| 7 DAY AIR-DRIED | .2 | 3.1 | .1 | .2 | 3.4 |
| | | FURFURAL 5.0% | | | |
| 7 DAY IMMERSION | 1.1 | .3 | * | .2 | .5 |
| 7 DAY AIR-DRIED | .3 | .3 | * | .1 | .4 |
| | | FURFURAL 8.0% | | | |
| 7 DAY IMMERSION | .9 | 3.6 | .2 | .1 | 3.7 |
| 7 DAY AIR-DRIED | .4 | .3 | .1 | .3 | .1 |
| | | FURFURAL 100.0% | | | |
| 7 DAY IMMERSION | .5 | * | .2 | * | .2 |
| 7 DAY AIR-DRIED | .1 | * | .1 | .1 | * |
| | | METHYL ETHYL KETONE 1.0% | | | |
| 7 DAY IMMERSION | .3 | 2.2 | * | * | 2.3 |
| 7 DAY AIR-DRIED | * | 2.9 | * | .3 | 3.2 |
| | | METHYL ETHYL KETONE 10.0% | | | |
| 7 DAY IMMERSION | .8 | 2.8 | .5 | .1 | 2.3 |
| 7 DAY AIR-DRIED | * | 1.6 | .2 | .1 | 1.3 |
| | | METHYL ETHYL KETONE 26.0% | | | |
| 7 DAY IMMERSION | 1.5 | .6 | 1.6 | .6 | 1.6 |
| 7 DAY AIR-DRIED | * | .3 | .2 | * | .1 |

HIGH DENSITY POLYETHYLENE: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| METHYL ETHYL KETONE 99.0% | | | | | |
| 7 DAY IMMERSION | 1.8 | 1.3 | 1.0 | .2 | .1 |
| 7 DAY AIR-DRIED | .1 | 1.6 | * | * | 1.6 |
| ASTM #2 OIL SATURATED | | | | | |
| 7 DAY IMMERSION | .5 | .7 | * | .2 | .8 |
| 7 DAY AIR-DRIED | .5 | 1.0 | .1 | .1 | .8 |
| ASTM #2 OIL 100.0% | | | | | |
| 7 DAY IMMERSION | .6 | * | * | .1 | .1 |
| 7 DAY AIR-DRIED | .5 | * | .1 | .1 | .2 |
| PHENOL 1.0% | | | | | |
| 7 DAY IMMERSION | * | 1.9 | * | .1 | 1.8 |
| 7 DAY AIR-DRIED | * | 1.0 | * | * | .9 |
| PHENOL 5.0% | | | | | |
| 7 DAY IMMERSION | .5 | * | * | .4 | .4 |
| 7 DAY AIR-DRIED | * | .6 | .1 | .7 | 1.5 |
| PHENOL 8.0% | | | | | |
| 7 DAY IMMERSION | .2 | 1.7 | * | .3 | 1.4 |
| 7 DAY AIR-DRIED | .2 | .3 | .2 | .3 | .8 |
| PHENOL 88.0% | | | | | |
| 7 DAY IMMERSION | .2 | 1.3 | * | .3 | 1.6 |
| 7 DAY AIR-DRIED | .1 | .3 | .2 | 1 | .3 |

CHLOROSULPHONATED POLYETHYLENE, LOW WATER ABSORPTION: INITIAL SCREENING, RETENTION OF PROPERTIES, 23°C

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT LENGTH CHANGE | PERCENT WIDTH CHANGE | PERCENT VOLUME CHANGE |
|---|---|---|---|---|---|
| | | 1 2 DICHLOROETHANE 100.0% | | | |
| 7 DAY IMMERSION | 105.7 | 34.6 | 3.3 | 9.7 | 42.8 |
| 7 DAY AIR-DRIED | 11.7 | 2.9 | 10.6 | .2 | 13.4 |
| | | FURFURAL 100.0% | | | |
| 7 DAY IMMERSION | 10.1 | 9.7 | 2.1 | 3.7 | 16.1 |
| 7 DAY AIR-DRIED | 1.4 | .3 | .7 | .3 | 1.3 |
| | | METHYL ETHYL KETONE 99.0% | | | |
| 7 DAY IMMERSION | 14.0 | 9.8 | .7 | 3.4 | 12.6 |
| 7 DAY AIR-DRIED | 5.9 | 1.7 | 4.4 | 1.3 | 7.2 |
| | | PHENOL 88.0% | | | |
| 7 DAY IMMERSION | 13.2 | 10.3 | 2.5 | 3.9 | 17.5 |
| 7 DAY AIR-DRIED | 1.5 | * | .8 | .3 | 1.1 |

# APPENDIX C

# WEIGHT AND DIMENSION PROCEDURES

# INSTRUCTIONS FOR MEASURING FML SAMPLES

## USING THE FEDERAL 691B MICROMETER

Before beginning, make sure the measuring surfaces are clean. (The anvil and presser foot, see illustration.) Zero the micrometer by loosening the knob A and adjusting the dial face, retightening the knob when done. Check the zero by lifting the presser foot slightly a couple of times, using the lever B, and seeing that the dial indicator goes back to zero at rest.

Lift the presser foot with the lever. Insert the sample to be measured under the presser foot. Gently release the lever and lower the foot onto the sample. Lift the foot slightly a couple of times to make sure the reading is stable. Read the dial as shown below and record the reading.

To read the dial: First, the small dial on the lower left portion of the big one is the hundredths of an inch reading. The scale goes from one to ten, or from 0.01 to 0.10 inch. Then read the main dial, from 00 to 99, or from .0000 to .0099 inches. Example, the dial is as shown in the figure: Read the small dial at 3 (use the next lower number from where the needle rests). Read the large dial at 44. This gives you a value of 0.0344 inches, or 34.4 mils. (A mil is one thousandth of an inch.)

For FML samples, measure the thickness at three places along the sample: each end and in the middle. Make sure the end readings are at least 1/4

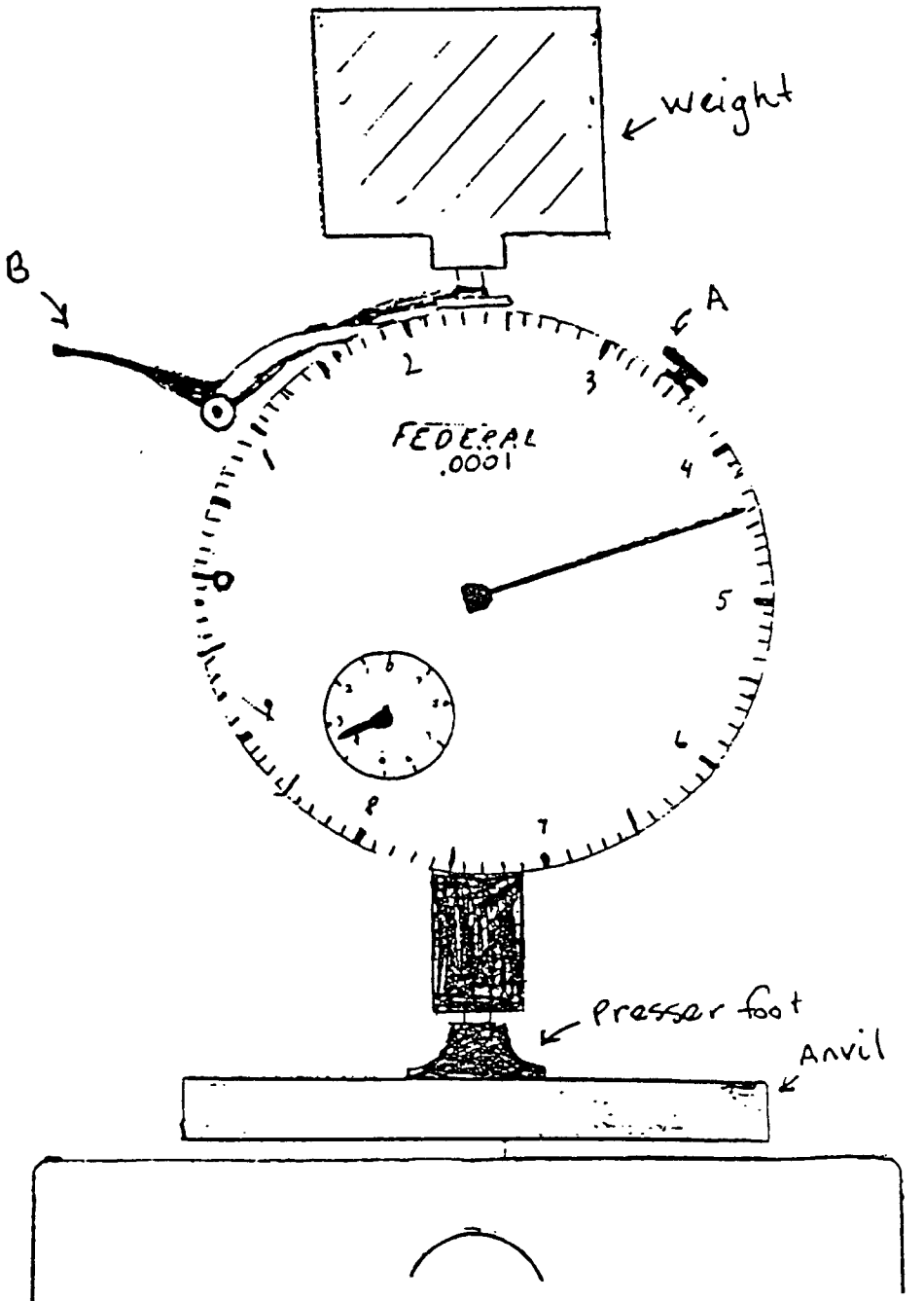


FIGURE 1. FEDERAL 690B MICROMETER

inch in from the edges of the sample. Record the readings and average them on the data sheet.

To calibrate: use a calibration sheet like the one in Figure 2. Zero the micrometer and then measure the gage blocks 0.0500 and 0.1001 inches. Determine the difference between the measurements and the actual thickness. Average the two values. If the average is more than .5 mil (0.0005 inches), correct your thickness readings on future FML samples by this difference. Report the difference to the lab supervisor.

CALIBRATION RECORD FOR FEDERAL [illegible] DIAL [illegible] METER

ICIAN: ..... DATE: .....

N FOR CALIBRATION: SCHEDULED ..... UNSCHEDULED: .....
unscheduled give description of problem)

| GAGE BLOCK | READING | DIFFERENCE |
|---|---|---|
| NONE | (SET TO ZERO) | |
| 0.0500 INCHES | ..... | ..... |
| 0.1001 INCHES | ..... | ..... |

AVERAGE DIFFERENCE: .....

IF AVERAGE DIFFERENCE IS LESS THAN 0.0005 INCHES, NO CORRECTION IS TO BE APPLIED TO THE READINGS.

IF AVERAGE DIFFERENCE IS MORE THAN 0.0005 INCHES. CORRECT ALL READINGS BY THE AVERAGE DIFFERENCE. REPORT THE DIFFERENCE TO THE LAB SUPERVISOR.

ACTION TAKEN: .....

**FIGURE 2. CALIBRATION SHEET**

USING THE CALIPERS

Before measuring the samples, you need to make sure that the calipers are calibrated. This should be done EACH DAY. If in doubt, calibrate them.

To Calibrate: Use the one inch gage block. Measure this block and set the dial on the calipers to read exactly 1.000 inches. This dial is set by loosening the black knob in back of the dial, rotating the dial to be set exactly at the zero mark, and retightening the black dial.

To measure FML Samples: Open the calipers wider than the sample and slowly close them until you just contact the edge of the sample. Be careful not to squeeze and flex the material. You can tell when you have the correct position when the sample will just be caught and moved on both edges, but not lifted all the way up, when the calipers are lifted.

Read the calipers as follows: Read the inches and tenths of inches from the lower scale. For example, 0.9 inches. Then use the dial to read the next two decimal places. NOTE: The dial uses only 1/2 rotation to go from 00 to 100.

For Example: On the calipers in Figure 3, the reading is 0.956 inches.

For FML Samples: Measure the length at two points.

Measure the width at three, at both ends and in the middle.

Average each of these and record.

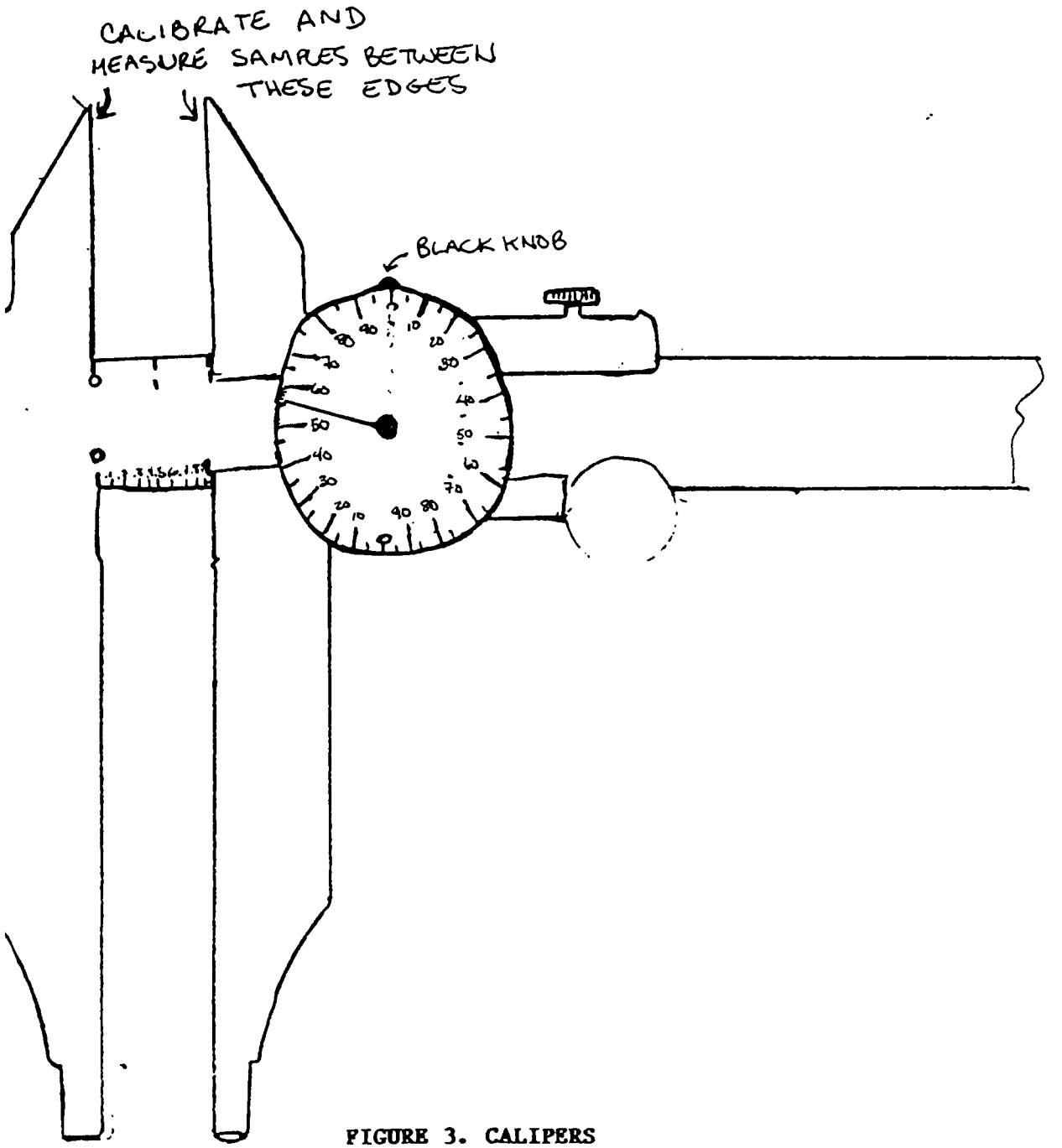


FIGURE 3. CALIPERS

USING THE METTLER A30 ANALYTICAL BALANCE

Before starting, check to see that the balance is level by looking to see that the level indicator bubble is inside the circle. (See Figure 4.)

If you are weighing samples that have been immersed in a chemical solution, use a plastic weighing tray to protect the balance surface.

With all the balance doors closed, zero the balance by pressing the tare bar. Allow time for the reading to stabilize. If using a weighing tray, put the tray on the balance pan and re-zero. Allow to stabilize.

Open one door and place the sample in the tray (or on the pan). Close the door and allow the reading to stabilize. Record the weight on your data sheet.

Open door and remove sample. Check to see that the balance reads zero again before weighing another sample. Use the tare bar if necessary.

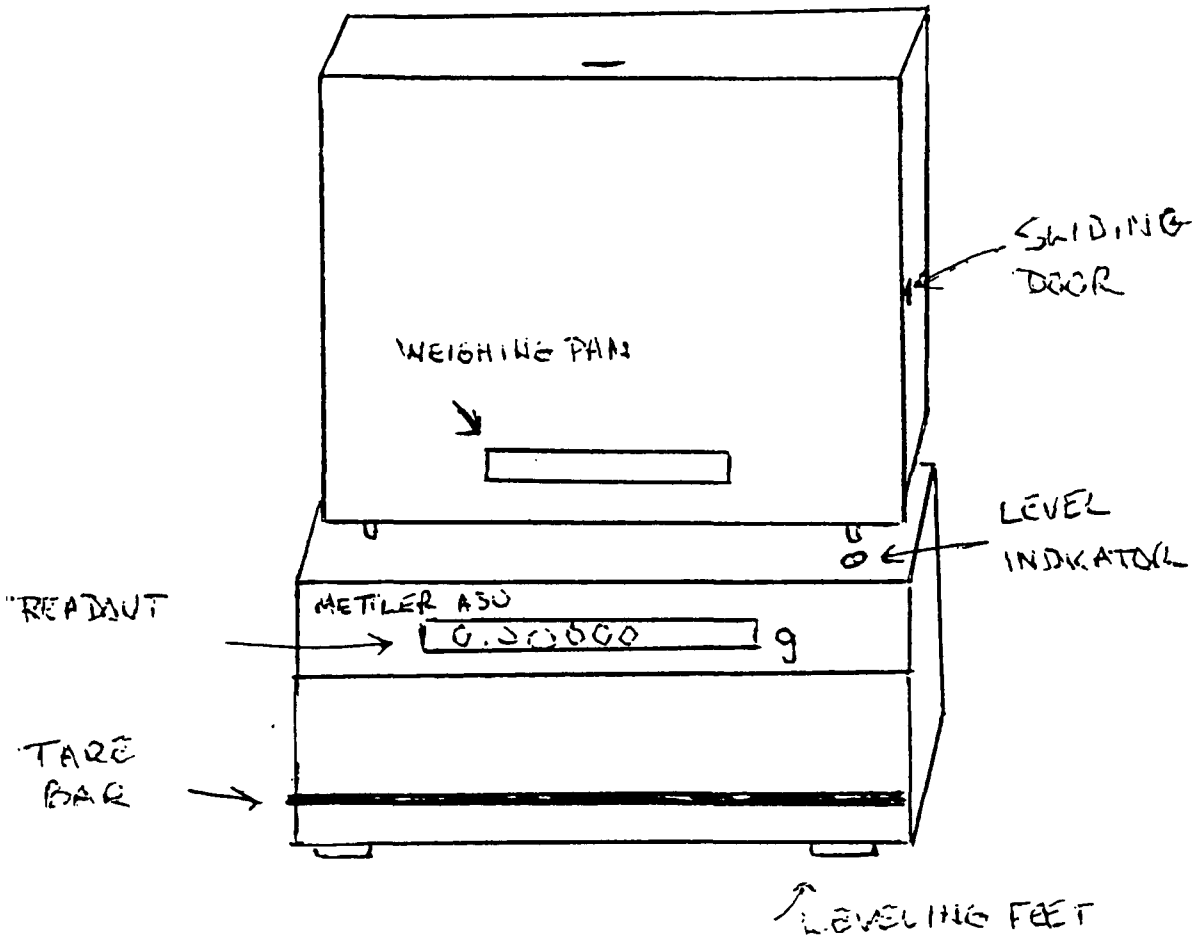


**FIGURE 4. METTLER A30 ANALYTICAL BALANCE**

# APPENDIX D

# PERCENT OF TARGET CONCENTRATION

CHEMICAL CONCENTRATIONS AFTER IMMERSION (WEIGHT PERCENT)

| | | ELAPSED DAYS | TARGET CONCENTRATION | 23°C PERCENT OF TARGET | 50°C PERCENT OF TARGET |
|---|---|---|---|---|---|
| CPE | NaOH | 150 | 10.0 | 119.00 | 100.00 |
| CPE | DCE | * | .5 | * | 72.00 |
| CPE | DCE | * | .1 | * | 53.00 |
| CPE | DCE | * | .8 | * | 73.75 |
| CPE | DCE | 7 | .8 | * | 42.50 |
| CPE | DCE | 7 | .1 | * | 38.00 |
| CPE | DCE | 7 | .5 | * | 50.00 |
| CPE | DCE | 56 | .5 | 40.20 | 20.80 |
| CPE | DCE | 56 | .1 | 46.00 | 4.00 |
| CPE | DCE | 56 | .8 | 35.88 | 24.25 |
| CPE | FURFURAL | 14 | 4.0 | * | 101.25 |
| CPE | FURFURAL | 28 | 1.0 | * | 102.00 |
| CPE | FURFURAL | 28 | 4.0 | 100.00 | 101.25 |
| CPE | FURFURAL | 56 | 4.0 | 250.00 | 100.00 |
| CPE | FURFURAL | 56 | 1.0 | * | 110.00 |
| CPE | MEK | 14 | 13.0 | * | 92.31 |
| CPE | MEK | 16 | 13.0 | * | 15.38 |
| CPE | MEK | 28 | 13.0 | 61.54 | 61.54 |
| CPE | MEK | 56 | 13.0 | 76.92 | 107.69 |
| CPE | MEK | 113 | 13.0 | * | 92.31 |
| CPE | MEK | 126 | 13.0 | * | 107.69 |
| CPE | PHENOL | 14 | 4.0 | 107.50 | 110.00 |
| CPE | PHENOL | 28 | 4.0 | 107.50 | 105.00 |
| CPE | PHENOL | 56 | 8.0 | * | 95.00 |
| CPE | PHENOL | 56 | 4.0 | * | 100.00 |
| CPE | PHENOL | 56 | 1.0 | 7.60 | 100.00 |
| EPDM | NaOH | 150 | 10.0 | 110.00 | 102.00 |
| EPDM | DCE | * | .1 | * | 70.00 |
| EPDM | DCE | * | .8 | * | 50.00 |
| EPDM | DCE | * | .5 | * | 56.00 |
| EPDM | DCE | 7 | .8 | * | 48.75 |
| EPDM | DCE | 7 | .5 | * | 60.00 |
| EPDM | DCE | 7 | .1 | * | 51.00 |
| EPDM | DCE | 56 | .8 | 54.13 | 45.13 |
| EPDM | DCE | 56 | .1 | 41.00 | 20.00 |
| EPDM | DCE | 56 | .5 | 55.00 | 1.20 |
| EPDM | FURFURAL | 14 | 4.0 | 4.15 | 103.75 |
| EPDM | FURFURAL | 28 | 1.0 | .94 | 94.00 |

CHEMICAL CONCENTRATIONS AFTER IMMERSION (WEIGHT PERCENT)

| | | ELAPSED DAYS | TARGET CONCENTRATION | 23°C PERCENT OF TARGET | 50°C PERCENT OF TARGET |
|---|---|---|---|---|---|
| EPDM | FURFURAL | 28 | 4.0 | 105.00 | 103.75 |
| EPDM | FURFURAL | 56 | 4.0 | 97.50 | 107.50 |
| EPDM | FURFURAL | 56 | 1.0 | * | 110.00 |
| EPDM | MEK | 7 | 13.0 | 69.23 | 100.00 |
| EPDM | MEK | 14 | 13.0 | 69.23 | 53.85 |
| EPDM | MEK | 21 | 13.0 | 53.85 | 7.69 |
| EPDM | MEK | 56 | 13.0 | 46.15 | 53.85 |
| EPDM | MEK | 113 | 13.0 | 100.00 | 100.00 |
| EPDM | MEK | 126 | 13.0 | * | 84.62 |
| EPDM | PHENOL | * | 4.0 | 107.50 | 112.50 |
| EPDM | PHENOL | * | 8.0 | 101.25 | 96.25 |
| EPDM | PHENOL | * | 1.0 | 110.00 | 110.00 |
| EPDM | PHENOL | 14 | 4.0 | 115.00 | 105.00 |
| EPDM | PHENOL | 28 | 4.0 | 110.00 | 117.50 |
| EPDM | PHENOL | 56 | 4.0 | * | 100.00 |
| EPDM | PHENOL | 56 | 1.0 | * | 100.00 |
| EPDM | PHENOL | 56 | 8.0 | * | 93.75 |
| HDPE | DCE | * | .1 | * | 70.00 |
| HDPE | DCE | * | .5 | * | 86.00 |
| HDPE | DCE | * | .8 | * | 77.50 |
| HDPE | DCE | 7 | .5 | * | 58.00 |
| HDPE | DCE | 7 | .1 | * | 54.00 |
| HDPE | DCE | 7 | .8 | * | 57.50 |
| HDPE | DCE | 28 | .8 | 72.25 | 80.38 |
| HDPE | DCE | 28 | .5 | 61.00 | 7.80 |
| HDPE | DCE | 28 | .1 | 61.00 | 78.00 |
| HDPE | DCE | 56 | .1 | 184.00 | 32.00 |
| HDPE | DCE | 56 | .8 | 78.38 | 9.00 |
| HDPE | DCE | 56 | .5 | 53.60 | 65.60 |
| HDPE | FURFURAL | 14 | 4.0 | * | 102.50 |
| HDPE | FURFURAL | 28 | 4.0 | 102.50 | 105.00 |
| HDPE | FURFURAL | 28 | 1.0 | * | 101.00 |
| HDPE | FURFURAL | 56 | 4.0 | 95.00 | 107.50 |
| HDPE | MEK | 14 | 13.0 | * | 23.08 |
| HDPE | MEK | 56 | 13.0 | 92.31 | 53.85 |
| HDPE | MEK | 113 | 13.0 | * | 69.23 |
| HDPE | MEK | 126 | 13.0 | * | 84.62 |
| HDPE | PHENOL | 14 | 4.0 | 112.50 | 115.00 |
| HDPE | PHENOL | 28 | 4.0 | 110.00 | 112.50 |
| HDPE | PHENOL | 56 | 1.0 | * | 100.00 |
| HDPE | PHENOL | 56 | 8.0 | * | 100.00 |
| HDPE | PHENOL | 56 | 4.0 | * | 97.50 |

CHEMICAL CONCENTRATIONS AFTER IMMERSION (WEIGHT PERCENT)

| | | ELAPSED DAYS | TARGET CONCENTRATION | 23°C PERCENT OF TARGET | 50°C PERCENT OF TARGET |
|---|---|---|---|---|---|
| EPI-CO | DCE | * | .5 | * | 72.00 |
| EPI-CO | DCE | * | .8 | * | 67.50 |
| EPI-CO | DCE | * | .1 | * | 74.00 |
| EPI-CO | DCE | 7 | .1 | * | 47.00 |
| EPI-CO | DCE | 7 | .5 | * | 34.00 |
| EPI-CO | DCE | 7 | .8 | * | 38.75 |
| EPI-CO | DCE | 56 | .5 | 33.60 | 1.60 |
| EPI-CO | DCE | 56 | .8 | 52.50 | * |
| EPI-CO | DCE | 56 | .1 | 76.00 | 8.00 |
| EPI-CO | FURFURAL | 14 | 4.0 | * | 97.50 |
| EPI-CO | FURFURAL | 28 | 1.0 | * | 103.00 |
| EPI-CO | FURFURAL | 28 | 4.0 | 92.50 | 92.50 |
| EPI-CO | FURFURAL | 56 | 1.0 | * | 110.00 |
| EPI-CO | FURFURAL | 56 | 4.0 | 98.00 | 98.25 |
| EPI-CO | MEK | 14 | 13.0 | * | 61.54 |
| EPI-CO | MEK | 56 | 13.0 | * | 30.77 |
| EPI-CO | MEK | 113 | 13.0 | 130.77 | 84.62 |
| EPI-CO | PHENOL | * | 4.0 | 97.50 | 92.50 |
| EPI-CO | PHENOL | * | 1.0 | 90.00 | 100.00 |
| EPI-CO | PHENOL | * | 8.0 | 91.25 | 101.25 |
| EPI-CO | PHENOL | 14 | 4.0 | 90.00 | 100.00 |
| EPI-CO | PHENOL | 28 | 4.0 | 92.50 | 92.50 |
| EPI-CO | PHENOL | 56 | 8.0 | * | 87.50 |
| EPI-CO | PHENOL | 56 | 1.0 | * | 80.00 |
| EPI-CO | PHENOL | 56 | 4.0 | * | 85.00 |
| PVC | DCE | * | .8 | * | 83.75 |
| PVC | DCE | * | .1 | * | 57.00 |
| PVC | DCE | * | .5 | * | 82.00 |
| PVC | DCE | 7 | .8 | * | 53.75 |
| PVC | DCE | 7 | .5 | * | 54.00 |
| PVC | DCE | 7 | .1 | * | 22.00 |
| PVC | DCE | 56 | .8 | 38.75 | 2.38 |
| PVC | DCE | 56 | .5 | 32.20 | 30.00 |
| PVC | DCE | 56 | .1 | 36.00 | 190.00 |
| PVC | FURFURAL | 14 | 4.0 | * | 102.50 |
| PVC | FURFURAL | 28 | 1.0 | * | 94.00 |
| PVC | FURFURAL | 28 | 4.0 | 97.50 | 102.50 |
| PVC | FURFURAL | 56 | 4.0 | 92.50 | 93.75 |
| PVC | FURFURAL | 56 | 1.0 | * | 105.00 |
| PVC | MEK | 14 | 13.0 | 76.92 | 23.08 |

CHEMICAL CONCENTRATIONS AFTER IMMERSION (WEIGHT PERCENT)

| | | ELAPSED DAYS | TARGET CONCENTRATION | 23°C PERCENT OF TARGET | 50°C PERCENT OF TARGET |
|---|---|---|---|---|---|
| PVC | MEK | 19 | 13.0 | * | 23.08 |
| PVC | MEK | 28 | 13.0 | 84.62 | 100.00 |
| PVC | MEK | 28 | 3.0 | 100.00 | 66.67 |
| PVC | MEK | 56 | 13.0 | 61.54 | 15.38 |
| PVC | MEK | 113 | 13.0 | 100.00 | 76.92 |
| PVC | MEK | 126 | 13.0 | * | 69.23 |
| PVC | PHENOL | 14 | 4.0 | 100.00 | 102.50 |
| PVC | PHENOL | 28 | 4.0 | 105.00 | 100.00 |
| PVC | PHENOL | 56 | 4.0 | * | 92.50 |
| PVC | PHENOL | 56 | 8.0 | * | 90.00 |
| PVC | PHENOL | 56 | 1.0 | * | 100.00 |
| CSPE-LW | DCE | * | .8 | * | 82.50 |
| CSPE-LW | DCE | * | .1 | * | 63.00 |
| CSPE-LW | DCE | * | .5 | * | 74.00 |
| CSPE-LW | DCE | 7 | .5 | * | 48.00 |
| CSPE-LW | DCE | 7 | .1 | * | 43.00 |
| CSPE-LW | DCE | 7 | .8 | * | 53.75 |
| CSPE-LW | DCE | 28 | .5 | 62.60 | 53.60 |
| CSPE-LW | DCE | 28 | .8 | 58.50 | 68.50 |
| CSPE-LW | DCE | 28 | .1 | 69.00 | 72.00 |
| CSPE-LW | DCE | 56 | .1 | 32.00 | 3.00 |
| CSPE-LW | DCE | 56 | .8 | 43.75 | 13.88 |
| CSPE-LW | DCE | 56 | .5 | 41.00 | 35.40 |
| CSPE-LW | MEK | 91 | 13.0 | 84.62 | 84.62 |
| CSPE-LW | PHENOL | 14 | 4.0 | 112.50 | 107.50 |
| CSPE-LW | PHENOL | 28 | 4.0 | 107.50 | 100.00 |
| CSPE-LW | PHENOL | 56 | 4.0 | * | 97.50 |
| CSPE-LW | PHENOL | 56 | 8.0 | * | 96.25 |
| CSPE-LW | PHENOL | 56 | 1.0 | * | 100.00 |
| CONTROL | DCE | * | .1 | 74.00 | 54.00 |
| CONTROL | DCE | * | .5 | 50.00 | 72.00 |
| CONTROL | DCE | * | .8 | 70.00 | 77.50 |
| CONTROL | DCE | 7 | .1 | * | 46.00 |
| CONTROL | DCE | 7 | .5 | * | 28.00 |
| CONTROL | DCE | 7 | .8 | * | 73.75 |
| CONTROL | DCE | 56 | .1 | 76.00 | 20.00 |
| CONTROL | DCE | 56 | .5 | 64.60 | 3.40 |
| CONTROL | DCE | 56 | .8 | 46.00 | 17.88 |
| CONTROL | FURFURAL | 1 | 4.0 | 102.75 | 101.00 |
| CONTROL | FURFURAL | 1 | 8.0 | 108.38 | 106.75 |
| CONTROL | FURFURAL | 1 | 1.0 | 107.00 | 95.00 |
| CONTROL | FURFURAL | 7 | 1.0 | 113.00 | 100.00 |

CHEMICAL CONCENTRATIONS AFTER IMMERSION (WEIGHT PERCENT)

| | | ELAPSED DAYS | TARGET CONCENTRATION | 23°C PERCENT OF TARGET | 50°C PERCENT OF TARGET |
|---|---|---|---|---|---|
| CONTROL | FURFURAL | 7 | 8.0 | 105.63 | 101.63 |
| CONTROL | FURFURAL | 7 | 4.0 | 111.50 | 102.75 |
| CONTROL | FURFURAL | 14 | 4.0 | 113.25 | 102.25 |
| CONTROL | FURFURAL | 14 | 8.0 | 92.13 | 92.63 |
| CONTROL | FURFURAL | 14 | 1.0 | 104.00 | 95.00 |
| CONTROL | FURFURAL | 28 | 4.0 | 97.50 | 90.00 |
| CONTROL | FURFURAL | 28 | 1.0 | 100.00 | 110.00 |
| CONTROL | FURFURAL | 28 | 8.0 | 96.25 | 92.50 |
| CONTROL | MEK | 28 | 13.0 | 69.23 | 69.23 |
| CONTROL | MEK | 28 | 3.0 | 66.67 | 66.67 |
| CONTROL | MEK | 14 | 13.0 | 69.23 | 53.85 |
| CONTROL | MEK | 28 | 13.0 | 30.00 | 107.69 |
| CONTROL | MEK | 56 | 13.0 | 76.92 | 38.46 |
| CONTROL | MEK | 113 | 13.0 | 84.62 | 30.77 |
| CONTROL | DCE | 36 | .1 | 61.00 | 11.00 |
| CONTROL | DCE | 36 | .8 | 58.75 | 71.25 |
| CONTROL | DCE | 36 | .5 | 780.00 | 76.00 |
| CONTROL | FURFURAL | 36 | 4.0 | 97.50 | 102.50 |
| CONTROL | MEK | 36 | 13.0 | 30.00 | 92.31 |
| CONTROL | PHENOL | 36 | 4.0 | 97.50 | 105.00 |

# APPENDIX E

# IMMERSION RESULTS

# PVC :. FINAL PROPERTIES

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| PH01AM1 1 | 1.86 | 31.80 | 2.98 | 1.01 | 50.50 | 43.94 | 88.30 | 78.42 | 429.60 | 433.40 | 10.38 | 9.46 |
| PH07AM1 7 | 1.94 | 32.40 | 3.01 | 1.02 | 44.02 | 41.10 | 84.06 | 75.25 | 482.00 | 465.75 | 10.74 | 10.38 |
| PH14AM1 14 | 1.97 | 32.40 | 3.05 | 1.03 | 50.34 | 47.90 | 88.98 | 84.42 | 454.70 | 469.10 | 11.30 | 10.94 |
| PH99AM1 28 | 2.01 | 32.80 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PH28AM1 29 | 1.94 | 33.10 | 2.96 | 1.04 | 55.42 | 54.74 | 89.06 | 82.22 | 367.60 | 344.30 | 12.04 | 12.21 |
| PH56AM1 56 | 34.88 | 33.50 | 7.72 | 7.13 | 51.42 | 49.34 | 87.74 | 81.06 | 411.10 | 384.40 | 10.74 | 10.62 |
| PH99AM2 144 | 2.20 | 34.20 | 3.13 | 1.07 | * | * | * | * | * | * | * | * |
| PH99AM3 252 | 2.35 | 35.30 | 3.23 | 1.10 | * | * | * | * | * | * | * | * |
| PH99AM4 368 | 2.41 | 35.50 | 3.23 | 1.11 | * | * | * | * | * | * | * | * |
| PH99AM5 511 | 2.50 | 35.70 | 3.26 | 1.11 | * | * | * | * | * | * | * | * |
| PH99AM6 621 | 2.53 | 35.90 | 3.28 | 1.12 | * | * | * | * | * | * | * | * |
| PH99AM7 733 | 2.56 | 36.30 | 3.30 | 1.13 | 57.80 | * | 89.30 | * | 523.00 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| PL01AM2 1 | 1.88 | 31.60 | 3.00 | 1.00 | 47.50 | 41.74 | 84.10 | 80.70 | 422.30 | 470.10 | 10.18 | 9.86 |
| PL01AM1 1 | 1.90 | 31.70 | 3.00 | 1.00 | 45.78 | 43.26 | 78.06 | 77.98 | 372.40 | 428.30 | 10.06 | 9.70 |
| PL01AM3 1 | 1.89 | 31.70 | 3.00 | 1.00 | 46.70 | 44.78 | 83.46 | 81.06 | 416.90 | 456.10 | 9.98 | 9.90 |
| PL07AM1 7 | 1.90 | 31.60 | 3.01 | 1.00 | 42.15 | 39.20 | 79.25 | 76.97 | 431.38 | 469.33 | 10.98 | 9.82 |
| PL07AM3 7 | 1.87 | 31.30 | 3.00 | 1.00 | 42.70 | 39.00 | 82.80 | 78.20 | 456.88 | 485.80 | 11.46 | 10.42 |
| PL07AM2 7 | 1.85 | 31.00 | 3.00 | 1.00 | 42.75 | 41.60 | 82.70 | 76.50 | 439.88 | 438.00 | 10.50 | 10.90 |
| PL14AM3 14 | 1.89 | 31.80 | 3.01 | 1.00 | 48.50 | 47.30 | 86.94 | 84.90 | 427.30 | 482.75 | 11.22 | 10.86 |
| PL14AM1 14 | 1.90 | 32.10 | 3.00 | 1.00 | 49.78 | 45.38 | 91.82 | 81.74 | 486.00 | 455.40 | 11.62 | 10.74 |
| PL14AM2 14 | 1.91 | 32.10 | 3.01 | 1.00 | 49.30 | 45.20 | 90.86 | 84.62 | 482.10 | 487.00 | 11.34 | 11.46 |
| PL99AM1 28 | 1.92 | 31.80 | 2:99 | 1.00 | * | * | * | * | * | * | * | * |
| PL28AM1 29 | 1.89 | 31.80 | 3.00 | 1.00 | 52.26 | 47.78 | 93.10 | 83.50 | 433.90 | 436.50 | 11.10 | 9.88 |
| PL28AM2 29 | 1.87 | 31.60 | 3.00 | 1.01 | 50.26 | 48.54 | 92.02 | 83.70 | 464.80 | 410.10 | 10.44 | 10.68 |
| PL28AM3 29 | 1.89 | 32.00 | 3.01 | 1.00 | 52.18 | 47.78 | 90.86 | 82.86 | 425.50 | 422.40 | 10.76 | 9.90 |
| PL56AM1 56 | 32.53 | 32.00 | 7.43 | 6.91 | 49.58 | 44.02 | 90.70 | 82.10 | 431.40 | 438.10 | 11.22 | 11.26 |
| PL56AM3 56 | 32.80 | 32.20 | 7.46 | 6.92 | 52.18 | 46.10 | 92.74 | 82.62 | 430.20 | 423.60 | 11.38 | 10.86 |
| PL56AM2 56 | 33.15 | 32.50 | 7.44 | 6.93 | 53.26 | 44.78 | 89.18 | 82.58 | 392.30 | 442.30 | 11.34 | 10.70 |
| PL99AM2 144 | 1.94 | 32.00 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| PL99AM3 238 | 1.95 | 32.10 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PL99AM4 368 | 1.96 | 32.40 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99AM5 538 | 1.98 | 32.10 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99AM6 621 | 1.98 | 32.30 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PL99AM7 735 | 1.99 | 32.60 | 3.04 | 1.02 | 47.60 | * | 89.60 | * | 581.00 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| PH01BM1 1 | 1.89 | 31.40 | 3.00 | 1.00 | 40.42 | 46.98 | 81.06 | 91.26 | 512.30 | 502.90 | 10.80 | 11.48 |
| PH07BM1 7 | 1.71 | 30.90 | 2.85 | 0.97 | 59.66 | 64.58 | 94.30 | 89.90 | 483.40 | 501.70 | 14.36 | 14.70 |
| PH14BM1 14 | 1.66 | 30.50 | 2.84 | 0.96 | 72.10 | 71.10 | 92.58 | 89.46 | 402.30 | 387.80 | 22.98 | 21.48 |
| PH28BM1 28 | 1.60 | 30.20 | 2.76 | 0.94 | 80.40 | 79.22 | 97.20 | 101.82 | 284.50 | 294.40 | 22.78 | 23.58 |
| PH99BM1 29 | * | 32.00 | 2.76 | 0.93 | * | * | * | * | * | * | * | * |

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| PH56BM1 56 | 1.56 | 30.90 | 2.75 | 0.93 | 85.02 | 79.74 | 110.26 | 107.14 | 420.70 | 400.50 | 30.99 | 29.60 |
| PH99BM2 144 | 1.53 | 32.90 | 2.72 | 0.92 | * | * | * | * | * | * | * | * |
| PH99BM3 252 | 1.52 | 29.30 | 2.70 | 0.91 | * | * | * | * | * | * | * | * |
| PH99BM4 368 | 1.51 | 29.50 | 2.68 | 0.91 | * | * | * | * | * | * | * | * |
| PH99BM5 510 | 1.51 | 29.10 | 2.67 | 0.90 | * | * | * | * | * | * | * | * |
| PH99BM6 622 | 1.48 | 35.60 | 2.67 | 0.90 | * | * | * | * | * | * | * | * |
| PH99BM7 733 | 1.47 | 29.80 | 2.66 | 0.90 | * | * | 122.00 | * | 9.00 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| PL01BM3 1 | 1.88 | 31.10 | 2.99 | 1.00 | 42.54 | 39.90 | 88.50 | 82.06 | 507.60 | 540.20 | 11.20 | 11.22 |
| PL01BM1 1 | 1.89 | 31.30 | 3.00 | 1.00 | 44.50 | 45.70 | 82.54 | 86.38 | 501.60 | 463.70 | 10.19 | 10.60 |
| PL01BM2 1 | 1.88 | 31.20 | 2.99 | 1.00 | 42.46 | 40.18 | 89.46 | 80.46 | 525.90 | 503.20 | 11.44 | 11.30 |
| PL07BM3 7 | 1.86 | 31.60 | 2.99 | 0.99 | 48.10 | 46.02 | 90.22 | 85.30 | 492.50 | 520.40 | 11.02 | 10.58 |
| PL07BM2 7 | 1.90 | 31.50 | 2.99 | 1.00 | 49.30 | 45.50 | 91.66 | 85.66 | 500.00 | 530.70 | 11.04 | 10.48 |
| PL07BM1 7 | 1.88 | 31.30 | 2.99 | 1.00 | 45.38 | 40.98 | 94.10 | 83.26 | 578.40 | 567.40 | 10.62 | 10.14 |
| PL14BM2 14 | 1.90 | 31.70 | 2.98 | 1.00 | 39.98 | 37.26 | 87.46 | 78.82 | 537.70 | 548.60 | 10.22 | 9.98 |
| PL14BM1 14 | 1.87 | 31.40 | 2.99 | 1.00 | 51.22 | 44.75 | 88.82 | 83.05 | 425.40 | 471.75 | 11.66 | 10.52 |
| PL14BM3 14 | 1.90 | 31.60 | 2.98 | 1.00 | 41.38 | 36.22 | 86.22 | 77.22 | 505.30 | 522.00 | 10.50 | 9.68 |
| PL28BM2 28 | 1.85 | 31.30 | 2.98 | 0.99 | 40.46 | 49.54 | 78.98 | 91.42 | 480.90 | 489.80 | 10.98 | 11.60 |
| PL99BM1 28 | 1.89 | 31.70 | 2.97 | 0.99 | * | * | * | * | * | * | * | * |
| PL28BM1 28 | 1.84 | 31.30 | 2.97 | 0.99 | 47.54 | 44.62 | 88.42 | 81.38 | 466.40 | 494.20 | 11.50 | 10.70 |
| PL28BM3 32 | 1.84 | 31.10 | 2.98 | 0.99 | 42.02 | 51.18 | 79.66 | 92.10 | 486.20 | 475.60 | 11.32 | 11.68 |
| PL56BM3 56 | 1.74 | 31.10 | 2.89 | 0.96 | 68.02 | 63.90 | 96.58 | 89.38 | 480.70 | 469.20 | 16.50 | 16.67 |
| PL56BM1 56 | 1.71 | 30.50 | 2.89 | 0.96 | 61.42 | 60.06 | 92.10 | 88.34 | 435.50 | 488.00 | 15.13 | 16.53 |
| PL56BM2 56 | 1.72 | 30.90 | 2.90 | 0.96 | 61.22 | 65.30 | 89.34 | 89.50 | 476.70 | 444.00 | 15.90 | 15.44 |
| PL99BM2 144 | 1.66 | 31.10 | 2.83 | 0.95 | * | * | * | * | * | * | * | * |
| PL99BM3 238 | 1.59 | 30.50 | 3.00 | 0.94 | * | * | * | * | * | * | * | * |
| PL99BM4 368 | 1.58 | 30.30 | 2.80 | 0.93 | * | * | * | * | * | * | * | * |
| PL99BM5 510 | 1.57 | 29.20 | 2.77 | 0.92 | * | * | * | * | * | * | * | * |
| PL99BM6 622 | 1.55 | 31.30 | 2.77 | 0.92 | * | * | * | * | * | * | * | * |
| PL99BM7 735 | 1.55 | 30.80 | 2.76 | 0.92 | 82.00 | * | 136.00 | * | 175.00 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| PH01DH1 1 | 2.24 | 33.00 | 3.06 | 1.05 | 21.15 | 20.31 | 62.09 | 61.15 | 498.58 | 535.98 | 6.73 | 6.07 |
| PH07DH1 7 | 2.17 | 33.10 | 3.07 | 1.07 | 22.67 | 23.40 | 56.53 | 61.15 | 459.20 | 531.28 | 8.83 | 8.06 |
| PH14DH1 14 | 2.13 | 33.10 | 3.04 | 1.04 | 28.84 | 31.23 | 69.66 | 67.91 | 502.09 | 481.38 | 6.48 | 5.99 |
| PH99DH1 28 | 2.24 | 32.50 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PH28DH1 29 | 2.19 | 32.80 | 3.06 | 1.05 | 23.10 | 22.66 | 62.73 | 58.84 | 506.10 | 510.25 | 7.33 | 6.32 |
| PH56DH1 56 | 2.00 | 32.30 | 2.99 | 1.02 | 31.87 | 29.93 | 71.39 | 69.25 | 466.68 | 494.28 | 8.99 | 8.89 |
| PH99DH2 133 | 1.98 | 32.20 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DH3 244 | 2.31 | 32.70 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| PH99DH4 364 | 2.04 | 32.80 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| PH99DH5 495 | 2.07 | 32.90 | 3.03 | 1.03 | * | * | * | * | * | * | * | * |
| PH99DH6 629 | 1.93 | 31.70 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DH7 726 | 2.19 | 33.30 | 3.06 | 1.04 | 32.84 | * | 64.71 | * | 492.67 | * | * | * |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| PL01DH3 1 | 2.14 | 32.70 | 3.05 | 1.04 | 26.34 | 25.23 | 67.97 | 66.49 | 515.15 | 509.73 | 6.42 | 5.93 |
| PL01DH2 1 | 2.16 | 32.60 | 3.05 | 1.04 | 19.40 | 19.81 | 58.68 | 60.80 | 509.80 | 548.30 | 6.65 | 5.95 |
| PL01DH1 1 | 2.13 | 32.30 | 3.04 | 1.04 | 25.97 | 23.58 | 70.21 | 66.05 | 508.15 | 525.78 | 7.36 | 6.75 |
| PL07DH1 7 | 2.11 | 32.80 | 3.04 | 1.04 | 19.57 | 19.18 | 60.90 | 59.65 | 534.48 | 553.63 | 9.36 | 8.70 |
| PL07DH2 7 | 2.03 | 32.20 | 3.03 | 1.03 | 26.38 | 25.52 | 62.41 | 65.11 | 475.15 | 529.40 | 7.36 | 6.59 |
| PL07DH3 7 | 2.15 | 32.40 | 3.03 | 1.04 | 20.96 | 20.30 | 58.20 | 59.10 | 506.60 | 554.80 | 7.91 | 7.27 |
| PL14DH2 14 | 2.16 | 32.80 | 3.04 | 1.04 | 34.29 | 34.75 | 75.95 | 76.23 | 503.35 | 495.25 | 6.88 | 6.98 |
| PL14DH1 14 | 2.21 | 32.80 | 3.08 | 1.05 | 28.65 | 23.66 | 69.23 | 62.97 | 492.53 | 527.30 | 6.48 | 5.74 |
| PL14DH3 14 | 2.12 | 32.10 | 3.02 | 1.03 | 31.79 | 30.06 | 74.28 | 69.85 | 492.15 | 511.80 | 7.11 | 7.84 |
| PL28DH2 28 | 2.22 | 32.60 | 3.11 | 1.05 | * | * | * | * | * | * | 7.60 | 7.46 |
| PL28DH3 28 | 2.08 | 32.20 | 3.04 | 1.03 | * | * | * | * | * | * | 7.28 | 6.36 |
| PL99DH1 28 | 2.00 | 31.70 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PL28DH1 29 | 2.16 | 32.70 | 3.10 | 1.05 | 26.14 | 22.05 | 64.52 | 59.62 | 494.20 | 526.28 | 6.16 | 5.71 |
| PL56DH1 56 | 2.07 | 32.60 | 3.01 | 1.03 | 21.71 | 20.62 | 60.71 | 57.00 | 485.15 | 486.00 | 7.04 | 6.64 |
| PL56DH2 56 | 2.13 | 32.70 | 3.03 | 1.03 | 31.90 | 30.96 | 67.33 | 63.98 | 462.80 | 468.38 | 9.07 | 8.39 |
| PL56DH3 56 | 2.15 | 32.70 | 3.04 | 1.04 | 33.54 | 29.71 | 71.00 | 64.16 | 480.70 | 483.55 | 9.99 | 9.16 |
| PL99DH2 134 | 2.09 | 31.70 | 3.05 | 1.02 | * | * | * | * | * | * | * | * |
| PL99DH3 231 | 2.05 | 32.10 | 3.10 | 1.05 | * | * | * | * | * | * | * | * |
| PL99DH4 364 | 2.07 | 32.00 | 3.07 | 1.03 | * | * | * | * | * | * | * | * |
| PL99DH5 495 | 1.99 | 31.60 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DH6 630 | 2.13 | 33.00 | 3.04 | 1.04 | * | * | * | * | * | * | * | * |
| PL99DH7 728 | 2.15 | 32.30 | 3.06 | 1.04 | 25.30 | * | 68.70 | * | 715.00 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| PH01DL1 1 | 1.94 | 32.20 | 2.96 | 1.01 | 36.24 | 34.05 | 78.86 | 75.82 | 476.20 | 504.93 | 9.63 | 9.27 |
| PH07DL1 7 | 1.94 | 31.80 | 2.98 | 1.01 | 37.88 | 36.50 | 81.38 | 76.49 | 498.09 | 506.00 | 10.04 | 9.38 |
| PH14DL1 14 | 1.95 | 32.10 | 2.96 | 1.01 | 35.88 | 34.25 | 78.47 | 74.89 | 495.93 | 511.83 | 9.23 | 8.37 |
| PH99DL1 28 | 1.95 | 32.20 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PH28DL1 29 | 1.93 | 31.70 | 2.97 | 1.01 | 34.47 | 32.32 | 76.97 | 72.92 | 505.85 | 525.78 | 9.08 | 9.23 |
| PH56DL1 56 | 1.98 | 32.20 | 2.98 | 1.02 | 30.36 | 29.97 | 68.54 | 67.29 | 470.50 | 489.78 | 8.64 | 8.64 |
| PH99DL2 139 | 1.95 | 31.90 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DL3 246 | 1.97 | 32.00 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DL4 366 | 1.96 | 32.10 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DL5 496 | 1.96 | 31.90 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DL6 631 | 1.96 | 32.00 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PH99DL7 728 | 1.96 | 32.10 | 3.01 | 1.02 | 47.80 | * | 86.70 | * | 643.00 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| PL01DL3 1 | 1.93 | 31.50 | 2.99 | 1.01 | 38.57 | 35.61 | 85.10 | 79.44 | 516.90 | 542.15 | 9.90 | 9.19 |
| PL01DL2 1 | 1.92 | 31.60 | 2.99 | 1.01 | 33.11 | 30.65 | 80.65 | 75.97 | 519.35 | 554.48 | 9.57 | 8.14 |
| PL01DL1 1 | 1.91 | 31.30 | 3.00 | 1.01 | 35.52 | 32.95 | 80.98 | 76.04 | 488.78 | 515.58 | 10.18 | 8.75 |
| PL07DL1 7 | 1.95 | 31.80 | 3.00 | 1.01 | 35.59 | 31.88 | 79.78 | 74.47 | 494.50 | 535.75 | 9.42 | 8.70 |
| PL07DL2 7 | 1.94 | 31.50 | 3.01 | 1.01 | 32.50 | 29.25 | 76.95 | 73.47 | 523.00 | 566.00 | 9.05 | 8.71 |
| PL07DL3 7 | 1.97 | 31.90 | 3.02 | 1.01 | 33.16 | 30.72 | 79.95 | 73.96 | 530.70 | 557.70 | 9.38 | 8.65 |

| | | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | |
| PL14DL1 | 14 | 1.95 | 31.70 | 3.00 | 1.01 | 33.59 | 30.50 | 76.11 | 74.19 | 471.83 | 527.78 | 8.93 | 7.77 |
| PL14DL2 | 14 | 1.96 | 31.70 | 3.00 | 1.01 | 33.21 | 30.47 | 80.07 | 73.57 | 516.38 | 530.95 | 9.75 | 9.26 |
| PL14DL3 | 14 | 1.95 | 31.70 | 3.00 | 1.01 | 32.40 | 29.12 | 78.18 | 71.68 | 491.33 | 516.40 | 8.41 | 8.60 |
| PL28DL3 | 28 | 1.95 | 31.80 | 3.00 | 1.01 | * | * | * | * | * | * | 10.52 | 9.58 |
| PL99DL1 | 28 | 1.91 | 31.40 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL28DL2 | 28 | 1.93 | 31.60 | 3.00 | 1.01 | * | * | * | * | * | * | 9.63 | 9.42 |
| PL28DL1 | 29 | 1.95 | 31.90 | 3.00 | 1.01 | 33.11 | 31.34 | 78.44 | 75.56 | 503.40 | 535.45 | 9.65 | 8.78 |
| PL56DL2 | 56 | 1.92 | 31.60 | 3.00 | 1.00 | 34.34 | 31.92 | 74.23 | 71.17 | 467.55 | 509.08 | 10.07 | 9.44 |
| PL56DL3 | 56 | 1.93 | 31.70 | 3.00 | 1.01 | 31.41 | 31.96 | 75.41 | 71.63 | 527.70 | 543.08 | 9.81 | 8.84 |
| PL56DL1 | 56 | 1.97 | 31.60 | 3.02 | 1.02 | 38.17 | 35.09 | 81.14 | 76.30 | 457.48 | 469.03 | 9.56 | 9.06 |
| PL99DL2 | 136 | 1.93 | 31.40 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99DL3 | 233 | 1.93 | 31.50 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DL4 | 366 | 1.93 | 31.60 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DL5 | 496 | 1.91 | 31.40 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DL6 | 632 | 1.92 | 31.50 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DL7 | 730 | 1.91 | 31.70 | 3.00 | 1.01 | 44.98 | * | 86.23 | * | 588.83 | * | * | * |
| | | | | | 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | |
| PH01DM1 | 1 | 2.06 | 32.20 | 3.01 | 1.03 | 27.14 | 26.09 | 68.62 | 67.18 | 485.50 | 515.60 | 7.69 | 7.62 |
| PH07DM1 | 7 | 2.01 | 32.00 | 3.00 | 1.02 | 24.87 | 24.30 | 65.71 | 60.55 | 516.35 | 495.73 | 8.43 | 8.02 |
| PH14DM1 | 14 | 2.05 | 32.60 | 3.00 | 1.03 | 27.48 | 27.33 | 66.59 | 65.19 | 478.68 | 493.20 | 8.80 | 7.25 |
| PH99DM1 | 28 | 2.00 | 31.90 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PH28DM1 | 29 | 2.04 | 32.50 | 2.99 | 1.03 | 28.08 | 27.06 | 65.97 | 63.19 | 483.63 | 496.28 | 7.91 | 7.41 |
| PH56DM1 | 56 | 2.00 | 32.20 | 2.97 | 1.02 | 32.00 | 30.53 | 71.27 | 69.42 | 480.13 | 509.33 | 9.46 | 9.09 |
| PH99DM3 | 245 | 2.01 | 31.90 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PH99DM4 | 365 | 1.95 | 31.90 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| PH99DM5 | 496 | 1.96 | 31.90 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| PH99DM6 | 630 | 1.96 | 32.00 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| PH99DM7 | 727 | 1.97 | 32.00 | 3.01 | 1.02 | 41.98 | * | 80.44 | * | 637.25 | * | * | * |
| | | | | | 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | |
| PL01DM3 | 1 | 2.07 | 32.20 | 3.04 | 1.02 | 26.89 | 23.94 | 72.76 | 66.37 | 521.80 | 539.48 | 6.39 | 5.94 |
| PL01DM2 | 1 | 2.06 | 32.40 | 3.03 | 1.03 | 28.12 | 25.23 | 73.10 | 68.79 | 517 15 | 553.55 | 7.08 | 7.39 |
| PL01DM1 | 1 | 2.07 | 32.20 | 3.04 | 1.04 | 29.55 | 25.09 | 72.99 | 69.27 | 473.23 | 512.63 | 7.27 | 6.49 |
| PL07DM2 | 7 | 2.03 | 32.00 | 3.04 | 1.02 | 26.79 | 25.31 | 70.84 | 62.46 | 505.80 | 495.83 | 7.93 | 7.59 |
| PL07DM3 | 7 | 1.98 | 31.80 | 3.01 | 1.02 | 30.00 | 28.10 | 72.47 | 70.10 | 502.20 | 552.60 | 8.95 | 8.13 |
| PL07DM1 | 7 | 2.06 | 32.20 | 3.03 | 1.03 | 22.55 | 21.95 | 62.04 | 62.36 | 500.23 | 542.88 | 8.64 | 8.00 |
| PL14DM3 | 14 | 2.00 | 32.00 | 3.03 | 1.02 | 26.62 | 27.12 | 70.86 | 72.42 | 507.68 | 556.70 | 9.14 | 8.72 |
| PL14DM2 | 14 | 2.05 | 32.10 | 3.03 | 1.03 | 24.37 | 22.11 | 69.55 | 64.12 | 532.25 | 548.08 | 7.95 | 7.77 |
| PL14DM1 | 14 | 2.06 | 32.60 | 3.05 | 1.04 | 28.55 | 24.54 | 71.14 | 65.84 | 503.13 | 520.73 | 7.02 | 6.32 |
| PL99DM1 | 28 | 2.06 | 32.40 | 3.05 | 1.02 | * | * | * | * | * | * | * | * |
| PL28DM2 | 28 | 2.08 | 32.50 | 3.04 | 1.03 | * | * | * | * | * | * | 8.32 | 7.54 |
| PL28DM3 | 28 | 2.05 | 32.00 | 3.03 | 1.03 | * | * | * | * | * | * | 7.28 | 7.13 |
| PL28DM1 | 29 | 2.05 | 32.00 | 3.06 | 1.04 | 24.55 | 23.36 | 63.61 | 62.89 | 493.55 | 533.15 | 7.42 | 6.77 |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| PL56DM1 56 | 1.93 | 31.80 | 3.00 | 1.01 | 29.71 | 26.75 | 70.23 | 67.91 | 455.13 | 497.83 | 8.45 | 7.79 |
| PL56DM3 56 | 2.07 | 32.50 | 3.02 | 1.02 | 32.33 | 30.24 | 71.99 | 68.14 | 487.23 | 502.98 | 9.14 | 8.25 |
| PL56DM2 56 | 2.00 | 32.20 | 3.00 | 1.02 | 32.04 | 31.48 | 71.46 | 68.78 | 486.08 | 505.73 | 9.80 | 8.86 |
| PL99DM2 135 | 1.99 | 32.10 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DM3 233 | 2.05 | 32.60 | 3.06 | 1.03 | * | * | * | * | * | * | * | * |
| PL99DM4 365 | 1.97 | 32.30 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| PL99DM5 496 | 2.03 | 32.40 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PL99DM6 631 | 2.05 | 32.50 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PL99DM7 729 | 2.12 | 33.00 | 3.07 | 1.03 | 28.78 | * | 73.29 | * | 675.58 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| PH01FH1 1 | 1.96 | 31.90 | 2.98 | 1.02 | 17.60 | 15.90 | 38.66 | 37.58 | 481.00 | 523.00 | 5.62 | 6.19 |
| PH07FH1 7 | 3.07 | 37.40 | 3.35 | 1.21 | 3.92 | 4.56 | 19.30 | 17.84 | 511.20 | 489.60 | 2.35 | 1.91 |
| PH14FH1 14 | 2.64 | 35.10 | 3.24 | 1.15 | 6.30 | 5.60 | 24.62 | 22.63 | 567.50 | 564.00 | 2.64 | 2.52 |
| PH28FH1 28 | 2.79 | 36.60 | 3.21 | 1.17 | 5.10 | 4.50 | 23.34 | 20.82 | 635.00 | 615.00 | 2.39 | 2.14 |
| PH99FH1 28 | 2.85 | 36.30 | 3.30 | 1.15 | * | * | * | * | * | * | * | * |
| PH56FH1 56 | 2.79 | 35.90 | 3.29 | 1.17 | 6.43 | 5.02 | 23.83 | 21.08 | 560.00 | 489.00 | 2.14 | 2.14 |
| PH99FH2 117 | 2.75 | 36.50 | 3.29 | 1.15 | * | * | * | * | * | * | * | * |
| PH99FH3 236 | 3.34 | 37.50 | 3.45 | 1.20 | * | * | * | * | * | * | * | * |
| PH99FH4 350 | 3.31 | 38.60 | 3.49 | 1.23 | * | * | * | * | * | * | * | * |
| PH99FH5 485 | 3.05 | 38.10 | 3.44 | 1.20 | * | * | * | * | * | * | * | * |
| PH99FH6 616 | 3.41 | 39.70 | 3.53 | 1.24 | * | * | * | * | * | * | * | * |
| PH99FH7 713 | 3.57 | 39.80 | 3.63 | 1.26 | 11.98 | * | 30.03 | * | 468.25 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| PL01FH3 1 | 2.35 | 34.90 | 3.28 | 1.14 | 5.41 | 5.44 | 22.45 | 18.91 | 557.90 | 532.10 | 3.41 | 3.18 |
| PL01FH2 1 | 2.44 | 35.40 | 3.30 | 1.14 | 5.63 | 5.14 | 19.32 | 18.36 | 525.30 | 561.20 | 2.96 | 3.06 |
| PL01FH1 1 | 1.92 | 31.40 | 3.02 | 1.01 | 38.40 | 36.80 | 79.70 | 77.30 | 465.00 | 509.00 | 6.44 | 6.96 |
| PL07FH2 7 | 2.68 | 35.20 | 3.30 | 1.15 | 6.44 | 6.68 | 20.56 | 19.96 | 458.40 | 798.40 | 2.49 | 2.38 |
| PL07FH3 7 | 2.69 | 35.30 | 3.32 | 1.14 | 6.54 | 7.26 | 23.02 | 23.10 | 528.00 | 562.40 | 2.73 | 2.53 |
| PL07FH1 7 | 2.75 | 36.00 | 3.39 | 1.15 | 6.36 | 6.36 | 21.00 | 21.06 | 494.40 | 560.00 | 2.63 | 2.40 |
| PL14FH1 14 | 2.64 | 35.00 | 3.26 | 1.13 | 7.00 | 4.80 | 20.80 | 18.45 | 497.00 | 538.00 | 2.36 | 2.27 |
| PL14FH3 14 | 2.65 | 35.40 | 3.26 | 1.14 | 6.30 | 6.50 | 21.22 | 21.40 | 505.00 | 569.00 | 2.22 | 2.32 |
| PL14FH2 14 | 2.74 | 36.20 | 3.29 | 1.15 | 6.30 | 6.40 | 20.76 | 18.04 | 515.00 | 488.00 | 2.32 | 2.08 |
| PL28FH1 28 | 2.87 | 36.30 | 3.29 | 1.16 | 6.00 | 5.40 | 22.24 | 19.42 | 619.00 | 597.00 | 2.45 | 2.39 |
| PL28FH3 28 | 2.90 | 36.20 | 3.35 | 1.07 | 5.70 | 5.40 | 20.72 | 19.26 | 519.00 | 568.00 | 2.08 | 2.46 |
| PL99FH1 28 | 2.88 | 35.80 | 3.33 | 1.15 | * | * | * | * | * | * | * | * |
| PL28FH2 28 | 2.00 | 36.10 | 3.34 | 1.17 | 5.00 | 5.00 | 21.02 | 20.08 | 496.00 | 601.00 | 2.34 | 2.40 |
| PL56FH1 56 | 2.80 | 35.90 | 3.30 | 1.15 | 4.94 | 5.66 | 19.30 | 18.72 | 632.00 | 603.00 | 2.37 | 2.40 |
| PL56FH2 56 | 3.01 | 36.90 | 3.36 | 1.18 | 5.60 | 5.20 | 21.24 | 18.40 | 536.00 | 526.30 | 2.27 | 2.15 |
| PL56FH3 56 | 2.93 | 36.10 | 3.37 | 1.18 | 5.56 | 5.34 | 21.28 | 19.52 | 554.00 | 565.00 | 2.16 | 2.15 |
| PL99FH2 117 | 2.95 | 39.40 | 3.40 | 1.18 | * | * | * | * | * | * | * | * |
| PL99FH3 219 | 2.89 | 36.60 | 3.45 | 1.20 | * | * | * | * | * | * | * | * |
| PL99FH4 350 | 3.22 | 37.40 | 3.50 | 1.21 | * | * | * | * | * | * | * | * |

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FURFURAL | 8.0% | 23°C | | | | | | |
| PL99FH5 485 | 2.90 | 36.80 | 3.41 | 1.19 | * | * | * | * | * | * | * | * |
| PL99FH6 617 | 3.66 | 39.50 | 3.64 | 1.27 | * | * | * | * | * | * | * | * |
| PL99FH7 715 | 3.68 | 39.40 | 3.66 | 1.28 | 6.80 | * | 21.60 | * | 517.17 | * | * | * |
| | | | | FURFURAL | 1.0% | 50°C | | | | | | |
| PH01FL1 1 | 1.96 | 31.80 | 2.98 | 1.02 | 32.82 | 30.26 | 74.74 | 71.58 | 466.80 | 494.70 | 10.48 | 8.96 |
| PH07FL1 7 | 1.97 | 32.00 | 2.97 | 1.02 | 24.60 | 24.10 | 69.90 | 65.50 | 570.50 | 578.00 | 8.53 | 8.02 |
| PH14FL1 14 | 1.96 | 31.70 | 3.00 | 1.02 | 32.40 | 30.40 | 76.00 | 68.50 | 490.40 | 484.00 | 8.86 | 8.07 |
| PH28FL1 28 | 1.96 | 31.70 | 2.99 | 1.02 | 31.90 | 30.50 | 70.38 | 70.92 | 475.00 | 543.00 | 9.24 | 9.02 |
| PH99FL1 28 | 2.01 | 32.60 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PH56FL1 56 | 1.97 | 31.80 | 3.00 | 1.02 | 33.20 | 31.06 | 75.58 | 71.32 | 530.00 | 545.00 | 9.97 | 8.78 |
| PH99FL2 123 | 2.01 | 32.50 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PH99FL3 241 | 2.06 | 32.70 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PH99FL4 355 | 2.06 | 32.40 | 3.04 | 1.03 | * | * | * | * | * | * | * | * |
| PH99FL5 488 | 2.05 | 32.80 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PH99FL6 621 | 2.06 | 31.80 | 3.04 | 1.03 | * | * | * | * | * | * | * | * |
| PH99FL7 718 | 2.05 | 32.90 | 3.04 | 1.03 | 39.74 | * | 79.18 | * | 578.00 | * | * | * |
| | | | | FURFURAL | 1.0% | 23°C | | | | | | |
| PL01FL2 1 | 1.91 | 31.30 | 3.01 | 1.01 | 35.64 | 39.05 | 73.05 | 78.75 | 454.00 | 434.00 | 10.37 | 12.84 |
| PL01FL3 1 | 1.91 | 31.20 | 3.01 | 1.00 | 34.46 | 37.85 | 72.02 | 77.90 | 454.40 | 418.50 | 10.57 | 12.52 |
| PL01FL1 1 | 1.92 | 31.20 | 3.01 | 1.00 | 37.58 | 33.90 | 76.74 | 75.22 | 434.00 | 495.30 | 11.75 | 12.92 |
| PL07FL2 7 | 1.97 | 31.70 | 3.01 | 1.02 | 24.20 | 21.70 | 74.40 | 70.22 | 570.00 | 601.00 | 8.73 | 8.24 |
| PL07FL3 7 | 1.95 | 31.70 | 3.01 | 1.01 | 21.60 | 20.60 | 67.94 | 64.10 | 560.00 | 577.00 | 8.31 | 6.91 |
| PL07FL1 7 | 1.93 | 31.20 | 3.02 | 1.01 | 23.30 | 20.00 | 71.10 | 64.56 | 559.00 | 585.00 | 8.44 | 7.54 |
| PL14FL3 14 | 1.95 | 31.60 | 3.01 | 1.01 | 28.40 | 27.60 | 76.20 | 72.90 | 520.00 | 557.50 | 9.57 | 8.64 |
| PL14FL2 14 | 1.96 | 31.60 | 3.01 | 1.01 | 27.20 | 26.90 | 76.66 | 74.50 | 600.00 | 637.00 | 9.21 | 8.45 |
| PL14FL1 14 | 1.96 | 31.60 | 3.01 | 1.02 | 28.30 | 27.60 | 76.10 | 73.16 | 512.80 | 536.00 | 9.34 | 8.10 |
| PL28FL2 28 | 1.97 | 31.80 | 3.01 | 1.01 | 31.63 | 30.60 | 79.33 | 76.26 | 541.30 | 560.00 | 9.60 | 9.14 |
| PL28FL3 28 | 1.96 | 31.70 | 3.01 | 1.01 | 30.70 | 28.20 | 75.06 | 71.98 | 507.00 | 541.00 | 9.54 | 8.54 |
| PL99FL1 28 | 1.95 | 31.70 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| PL28FL1 28 | 1.94 | 31.40 | 3.01 | 1.01 | 31.13 | 28.40 | 74.46 | 71.88 | 550.00 | 603.00 | 8.87 | 8.67 |
| PL56FL3 56 | 1.97 | 32.10 | 3.00 | 1.02 | 29.70 | 27.68 | 76.28 | 71.74 | 537.00 | 580.00 | 8.31 | 7.96 |
| PL56FL2 56 | 1.95 | 31.60 | 3.00 | 1.01 | 31.70 | 30.56 | 78.76 | 75.36 | 543.00 | 575.00 | 9.07 | 8.44 |
| PL56FL1 56 | 1.95 | 31.50 | 3.02 | 1.02 | 31.04 | 27.58 | 71.98 | 70.78 | 504.00 | 565.00 | 9.11 | 8.35 |
| PL99FL2 123 | 1.95 | 31.70 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99FL3 224 | 1.98 | 31.90 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PL99FL4 355 | 2.00 | 32.00 | 3.05 | 1.02 | * | * | * | * | * | * | * | * |
| PL99FL5 488 | 1.99 | 31.90 | 3.03 | 1.01 | * | * | * | * | * | * | * | * |
| PL99FL6 622 | 2.00 | 31.80 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PL99FL7 720 | 1.99 | 32.10 | 3.04 | 1.02 | 33.69 | * | 74.22 | * | 631.58 | * | * | * |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| PH01FM1 1 | 2.17 | 32.80 | 3.00 | 1.06 | 15.54 | 14.58 | 40.78 | 36.42 | 442.00 | 430.30 | 3.39 | 3.43 |
| PH07FM1 7 | 2.16 | 32.80 | 3.08 | 1.05 | 16.00 | 15.40 | 45.10 | 47.70 | 478.00 | 551.00 | 6.42 | 5.53 |
| PH14FM1 14 | 2.16 | 32.70 | 3.09 | 1.06 | 15.00 | 14.10 | 44.66 | 43.24 | 492.00 | 523.20 | 5.60 | 5.23 |
| PH28FM1 28 | 2.18 | 32.90 | 3.09 | 1.05 | 14.38 | 14.70 | 45.30 | 47.72 | 530.00 | 561.00 | 4.95 | 5.04 |
| PH99FM1 28 | 2.18 | 33.10 | 3.07 | 1.05 | * | * | * | * | * | * | * | * |
| PH56FM1 56 | 2.18 | 32.80 | 3.08 | 1.06 | 17.50 | 16.44 | 50.30 | 48.86 | 584.00 | 539.00 | 5.74 | 5.16 |
| PH99FM2 123 | 2.17 | 33.10 | 3.07 | 1.05 | * | * | * | * | * | * | * | * |
| PH99FM3 241 | 2.32 | 33.70 | 3.13 | 1.07 | * | * | * | * | * | * | * | * |
| PH99FM4 355 | 2.30 | 33.80 | 3.14 | 1.08 | * | * | * | * | * | * | * | * |
| PH99FM5 489 | 2.25 | 33.60 | 3.09 | 1.06 | * | * | * | * | * | * | * | * |
| PH99FM6 621 | 2.32 | 34.20 | 3.11 | 1.06 | * | * | * | * | * | * | * | * |
| PH99FM7 718 | 2.28 | 34.00 | 3.12 | 1.07 | 22.34 | * | 49.53 | * | 449.08 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| PL01FM1 1 | 2.14 | 32.50 | * | 1.04 | 14.58 | 13.34 | 41.62 | 37.82 | 444.10 | 457.80 | 6.50 | 7.77 |
| PL01FM3 1 | 1.99 | 32.00 | 3.08 | 1.04 | 14.33 | 13.37 | 48.47 | 43.74 | 531.30 | 528.50 | 6.94 | 7.01 |
| PL01FM2 1 | 2.00 | 32.20 | 3.09 | 1.04 | 13.27 | 12.70 | 46.79 | 44.06 | 542.70 | 548.20 | 6.96 | 5.96 |
| PL07FM1 7 | 2.15 | 32.70 | 3.09 | 1.05 | 14.30 | 14.40 | 46.30 | 47.50 | 538.00 | 597.00 | 6.32 | 5.48 |
| PL07FM2 7 | 2.15 | 32.60 | 3.09 | 1.05 | 17.30 | 16.26 | 49.34 | 46.56 | 464.80 | 505.60 | 5.79 | 5.40 |
| PL07FM3 7 | 2.14 | 32.50 | 3.08 | 1.05 | 18.94 | 17.60 | 56.70 | 48.86 | 502.40 | 476.80 | 6.84 | 6.13 |
| PL14FM1 14 | 2.19 | 33.10 | 3.11 | 1.06 | 14.88 | 13.30 | 45.96 | 41.36 | 508.00 | 514.40 | 5.26 | 5.32 |
| PL14FM2 14 | 2.13 | 32.30 | 3.09 | 1.05 | 15.70 | 14.80 | 48.84 | 45.08 | 525.00 | 539.00 | 5.15 | 4.66 |
| PL14FM3 14 | 2.15 | 33.00 | 3.09 | 1.04 | 16.20 | 14.60 | 48.65 | 45.64 | 512.50 | 525.00 | 5.23 | 4.70 |
| PL28FM1 28 | 2.19 | 33.10 | 3.07 | 1.05 | 15.08 | 13.26 | 44.86 | 42.46 | 541.00 | 569.00 | 4.61 | 4.55 |
| PL99FM1 28 | 2.17 | 33.00 | 3.08 | 1.04 | * | * | * | * | * | * | * | * |
| PL28FM3 28 | 2.14 | 32.50 | 3.06 | 1.04 | 14.80 | 13.60 | 45.18 | 45.38 | 532.00 | 607.00 | 4.78 | 4.50 |
| PL28FM2 28 | 2.15 | 32.50 | 3.07 | 1.05 | 13.10 | 13.20 | 45.90 | 45.52 | 588.00 | 654.00 | 4.74 | 4.42 |
| PL56FM2 56 | 2.16 | 32.60 | 3.09 | 1.05 | 15.68 | 14.80 | 46.46 | 43.56 | 562.00 | 556.00 | 5.03 | 4.62 |
| PL56FM3 56 | 2.15 | 32.60 | 3.08 | 1.05 | 15.96 | 15.46 | 47.10 | 49.76 | 535.00 | 603.00 | 5.06 | 4.72 |
| PL56FM1 56 | 2.17 | 32.70 | 3.08 | 1.05 | 16.20 | 12.84 | 46.20 | 44.20 | 528.00 | 659.00 | 4.85 | 4.54 |
| PL99FM2 123 | 2.12 | 32.80 | 3.07 | 1.04 | * | * | * | * | * | * | * | * |
| PL99FM3 227 | 2.23 | 33.30 | 3.13 | 1.07 | * | * | * | * | * | * | * | * |
| PL99FM4 355 | 2.28 | 33.50 | 3.15 | 1.07 | * | * | * | * | * | * | * | * |
| PL99FM5 489 | 2.27 | 33.40 | 3.12 | 1.06 | * | * | * | * | * | * | * | * |
| PL99FM6 622 | 2.27 | 33.60 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99FM7 720 | 2.26 | 33.60 | 3.13 | 1.06 | 17.30 | * | 43.99 | * | 551.67 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| PH01MH1 1 | 2.65 | 38.20 | 3.26 | 1.20 | 4.02 | 3.66 | 21.50 | 20.70 | 556.40 | 589.80 | 2.34 | 2.58 |
| PH07MH1 7 | 2.59 | 38.00 | 2.98 | 1.18 | 3.50 | 3.34 | 14.75 | 17.18 | 470.63 | 530.80 | 8.07 | 7.84 |
| PH14MH1 14 | 2.91 | 41.80 | 3.27 | 1.37 | 17.63 | 14.63 | 53.39 | 48.05 | 545.50 | 533.50 | 7.00 | 6.53 |
| PH28MH1 28 | 2.51 | 38.90 | 2.91 | 1.19 | 1.24 | 1.30 | 8.34 | 8.15 | 469.40 | 450.80 | 1.02 | 1.25 |
| PH99MH1 29 | 1.71 | 31.90 | 2.60 | 1.00 | * | * | * | * | * | * | * | * |
| PH56MH1 56 | 2.77 | 39.40 | 3.11 | 1.21 | 2.67 | 2.24 | 14.41 | 12.49 | 456.40 | 429.10 | 2.24 | 2.28 |

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| PH99MH2 122 | 1.67 | 31.30 | 2.54 | 0.98 | * | * | * | * | * | * | * | * |
| PH99MH3 240 | 1.92 | 31.40 | 2.52 | 0.97 | * | * | * | * | * | * | * | * |
| PH99MH4 358 | 1.92 | 33.60 | 2.67 | 1.04 | * | * | * | * | * | * | * | * |
| PH99MH5 494 | 1.52 | 30.70 | 2.43 | 0.94 | * | * | * | * | * | * | * | * |
| PH99MH6 626 | 1.78 | 32.00 | 2.51 | 0.98 | * | * | * | * | * | * | * | * |
| PH99MH7 722 | 1.71 | 31.90 | 2.49 | 0.96 | * | * | 115.30 | * | 35.60 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| PL01MH1 1 | 2.29 | 35.10 | 3.21 | 1.11 | 10.22 | 8.70 | 35.20 | 32.78 | 542.10 | 618.40 | 3.62 | 3.86 |
| PL01MH3 1 | 4.41 | 43.20 | 3.80 | 1.39 | 0.10 | 1.03 | 0.30 | 3.48 | 70.00 | 189.00 | 1.10 | 0.98 |
| PL01MH2 1 | 3.53 | 39.80 | 3.01 | 1.30 | 1.90 | 1.50 | 12.78 | 7.98 | 495.00 | 380.70 | 1.70 | 1.42 |
| PL07MH2 7 | 2.63 | 41.00 | 3.26 | 1.23 | 1.66 | 1.46 | 8.34 | 7.78 | 365.20 | 377.90 | 2.45 | 2.27 |
| PL07MH1 7 | 3.16 | 40.70 | 3.43 | 1.31 | 2.82 | 2.18 | 12.18 | 13.22 | 410.00 | 523.80 | 4.10 | 2.52 |
| PL07MH3 7 | 3.35 | 41.70 | 3.55 | 1.35 | 2.02 | 2.18 | 12.34 | 11.38 | 496.40 | 464.50 | 3.39 | 3.64 |
| PL14MH2 14 | 2.91 | 40.40 | 3.33 | 1.26 | 3.48 | 2.68 | 21.16 | 20.78 | 546.40 | 637.20 | 2.59 | 2.37 |
| PL14MH1 14 | 3.05 | 39.70 | 3.51 | 1.27 | 4.13 | 5.49 | 22.91 | 24.22 | 534.88 | 558.38 | 2.28 | 2.80 |
| PL14MH3 14 | 2.89 | 40.70 | 3.36 | 1.30 | 4.30 | 4.55 | 26.20 | 25.11 | 595.50 | 570.20 | 2.27 | 2.47 |
| PL28MH3 28 | 2.83 | 40.50 | 3.26 | 1.23 | 1.57 | 1.17 | 6.69 | 7.21 | 325.00 | 392.00 | 1.12 | 1.53 |
| PL99MH1 28 | 2.65 | 37.10 | 3.18 | 1.16 | * | * | * | * | * | * | * | * |
| PL28MH2 28 | 3.18 | 41.50 | 3.45 | 1.29 | 1.67 | 1.23 | 5.94 | 6.32 | 274.90 | 324.20 | 1.15 | 0.99 |
| PL28MH1 28 | 3.00 | 40.20 | 3.33 | 1.29 | 1.67 | 1.25 | 5.32 | 4.52 | 261.60 | 262.20 | 1.12 | 0.86 |
| PL56MH2 56 | 3.00 | 39.20 | 3.40 | 1.23 | 4.43 | 3.15 | 21.19 | 18.36 | 556.83 | 543.60 | 2.31 | 2.11 |
| PL56MH1 56 | 2.72 | 37.20 | 3.22 | 1.18 | 3.92 | 3.10 | 18.89 | 16.53 | 480.90 | 472.70 | 2.03 | 2.15 |
| PL56MH3 56 | 3.29 | 39.20 | 3.51 | 1.27 | 2.66 | 1.98 | 6.23 | 7.99 | 208.40 | 322.20 | 1.48 | 1.45 |
| PL99MH2 121 | 2.33 | 35.40 | 2.90 | 1.07 | * | * | * | * | * | * | * | * |
| PL99MH3 235 | 2.06 | 36.00 | 3.13 | 1.14 | * | * | * | * | * | * | * | * |
| PL99MH4 358 | 3.04 | 37.40 | 3.22 | 1.22 | * | * | * | * | * | * | * | * |
| PL99MH5 494 | 3.67 | 39.40 | 3.42 | 1.25 | * | * | * | * | * | * | * | * |
| PL99MH6 627 | 2.91 | 34.40 | 2.89 | 1.09 | * | * | * | * | * | * | * | * |
| PL99MH7 724 | 2.70 | 36.60 | 3.12 | 1.13 | 2.79 | * | 17.90 | * | 643.60 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| PH01ML1 1 | 1.97 | 32.50 | 2.98 | 1.02 | 26.86 | 24.38 | 68.22 | 65.66 | 486.80 | 539.00 | 8.38 | 8.74 |
| PH07ML1 7 | 2.03 | 32.40 | 3.01 | 1.05 | 21.00 | 20.01 | 55.13 | 51.12 | 490.90 | 487.70 | 7.88 | 6.97 |
| PH14ML1 14 | 1.99 | 32.40 | 3.00 | 1.02 | 28.01 | 26.21 | 60.06 | 58.72 | 438.80 | 477.20 | 9.72 | 8.79 |
| PH28ML1 28 | 2.01 | 32.80 | 2.99 | 1.03 | 31.99 | 28.15 | 65.08 | 60.18 | 429.80 | 457.70 | 10.39 | 9.45 |
| PH99ML1 28 | 2.02 | 32.60 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PH56ML1 56 | 1.96 | 32.20 | 2.98 | 1.02 | 33.48 | 31.93 | 70.96 | 66.63 | 471.80 | 475.40 | 10.16 | 9.73 |
| PH99ML2 120 | 2.13 | 33.70 | 2.97 | 1.05 | * | * | * | * | * | * | * | * |
| PH99ML3 240 | 2.15 | 33.80 | 2.98 | 1.06 | * | * | * | * | * | * | * | * |
| PH99ML4 358 | 2.17 | 33.90 | 2.99 | 1.06 | * | * | * | * | * | * | * | * |
| PH99ML5 493 | 2.12 | 33.80 | 2.97 | 1.05 | * | * | * | * | * | * | * | * |
| PH99ML6 626 | 2.13 | 33.80 | 2.97 | 1.05 | * | * | * | * | * | * | * | * |
| PH99ML7 722 | 2.14 | 34.00 | 2.98 | 1.06 | 28.58 | * | 74.55 | * | 678.92 | * | * | * |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| PL01ML3 1 | 1.93 | 31.40 | 3.03 | 1.01 | 24.54 | 21.62 | 71.22 | 61.26 | 575.40 | 518.60 | 10.86 | 9.70 |
| PL01ML2 1 | 1.98 | 31.80 | 3.04 | 1.02 | 25.40 | 24.90 | 70.70 | 66.90 | 567.13 | 577.70 | 9.70 | 10.18 |
| PL01ML1 1 | 1.96 | 31.60 | 3.04 | 1.02 | 23.34 | 20.82 | 66.66 | 63.42 | 536.80 | 580.60 | 7.90 | 8.14 |
| PL07ML3 7 | 1.99 | 32.10 | 3.03 | 1.02 | 29.22 | 27.43 | 71.58 | 65.66 | 462.58 | 510.50 | 10.89 | 9.47 |
| PL07ML1 7 | 1.99 | 32.00 | 3.03 | 1.02 | 24.65 | 21.75 | 63.50 | 59.15 | 466.50 | 502.60 | 9.47 | 8.24 |
| PL07ML2 7 | 2.00 | 32.10 | 3.03 | 1.02 | 29.90 | 26.26 | 69.60 | 67.67 | 458.80 | 602.50 | 10.42 | 9.61 |
| PL14ML1 14 | 1.98 | 32.30 | 3.02 | 1.02 | 19.83 | 18.35 | 53.23 | 52.75 | 483.80 | 552.70 | 7.76 | 7.33 |
| PL14ML2 14 | 1.94 | 31.70 | 3.03 | 1.02 | 16.64 | 13.38 | 49.29 | 41.87 | 515.00 | 538.10 | 5.36 | 4.30 |
| PL14ML3 14 | 1.96 | 31.90 | 3.03 | 1.02 | 18.64 | 17.11 | 54.99 | 49.55 | 547.10 | 553.90 | 7.86 | 7.45 |
| PL28ML3 28 | 1.97 | 32.30 | 3.02 | 1.01 | 38.16 | 34.79 | 79.27 | 73.70 | 473.60 | 514.70 | 9.67 | 9.53 |
| PL28ML2 28 | 1.96 | 32.00 | 3.00 | 1.01 | 33.96 | 32.67 | 73.22 | 72.77 | 478.90 | 497.70 | 10.55 | 10.12 |
| PL28ML1 28 | 1.98 | 32.20 | 3.02 | 1.02 | 29.16 | 28.84 | 68.57 | 66.49 | 476.90 | 512.70 | 9.29 | 8.48 |
| PL99ML1 28 | 2.00 | 32.50 | 3.03 | 1.01 | * | * | * | * | * | * | * | * |
| PL56ML1 56 | 1.97 | 32.20 | 3.00 | 1.02 | 32.45 | 29.16 | 72.41 | 70.10 | 476.60 | 552.30 | 9.49 | 9.19 |
| PL56ML2 56 | 1.93 | 31.80 | 3.03 | 1.02 | 29.50 | 27.70 | 68.88 | 64.91 | 491.70 | 509.70 | 9.74 | 8.55 |
| PL56ML3 56 | 1.94 | 32.30 | 3.04 | 1.03 | 27.86 | 24.89 | 65.79 | 64.01 | 470.00 | 528.30 | 9.37 | 8.26 |
| PL99ML2 120 | 2.02 | 32.40 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PL99ML3 235 | 2.02 | 32.60 | 3.05 | 1.03 | * | * | * | * | * | * | * | * |
| PL99ML4 358 | 2.04 | 32.60 | 3.05 | 1.02 | * | * | * | * | * | * | * | * |
| PL99ML5 494 | 1.99 | 32.30 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99ML6 627 | 2.02 | 32.40 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PL99ML7 724 | 2.03 | 32.70 | 3.04 | 1.02 | 30.93 | * | 77.10 | * | 636.92 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| PH01MM1 1 | 2.23 | 35.50 | 3.07 | 1.11 | 7.06 | 6.10 | 30.46 | 28.86 | 555.40 | 595.70 | 3.18 | 3.46 |
| PH07MM1 7 | 2.65 | 37.40 | 3.20 | 1.20 | 8.24 | 7.65 | 30.32 | 30.51 | 443.00 | 480.40 | 5.33 | 5.43 |
| PH14MM1 14 | 2.09 | 34.00 | 2.95 | 1.06 | 12.78 | 13.85 | 42.83 | 47.81 | 518.00 | 532.50 | 7.09 | 7.72 |
| PH99MM1 28 | 2.31 | 34.70 | 3.21 | 1.08 | * | * | * | * | * | * | * | * |
| PH28MM1 28 | 2.59 | 37.10 | 3.17 | 1.17 | 6.49 | 5.73 | 26.20 | 22.89 | 486.70 | 453.70 | 2.16 | 2.22 |
| PH56MM1 56 | 1.95 | 34.60 | 2.87 | 1.03 | 24.14 | 23.16 | 67.26 | 60.84 | 549.70 | 507.20 | 7.56 | 6.97 |
| PH99MM2 120 | 2.44 | 35.30 | 3.12 | 1.13 | * | * | * | * | * | * | * | * |
| PH99MM3 239 | 2.54 | 35.00 | 3.10 | 1.12 | * | * | * | * | * | * | * | * |
| PH99MM4 357 | 2.46 | 35.50 | 3.15 | 1.14 | * | * | * | * | * | * | * | * |
| PH99MM5 493 | 2.64 | 36.10 | 3.17 | 1.15 | * | * | * | * | * | * | * | * |
| PH99MM6 625 | 2.57 | 36.00 | 3.10 | 1.12 | * | * | * | * | * | * | * | * |
| PH99MM7 721 | 2.57 | 35.00 | 3.17 | 1.16 | 12.11 | * | 59.18 | * | 731.83 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| PL01MM2 1 | 2.31 | 34.30 | 3.16 | 1.19 | 8.58 | 8.10 | 32.82 | 30.62 | 590.10 | 624.90 | 5.78 | 5.30 |
| PL01MM3 1 | 2.29 | 34.20 | 3.17 | 1.09 | 8.06 | 8.06 | 31.54 | 33.18 | 632.80 | 635.30 | 4.78 | 5.10 |
| PL01MM1 1 | 2.21 | 34.10 | 3.16 | 1.07 | 10.30 | 10.06 | 34.26 | 35.02 | 528.40 | 587.00 | 3.98 | 3.54 |
| PL07MM2 7 | 2.25 | 34.70 | 3.08 | 1.11 | 18.69 | 18.13 | 56.87 | 54.45 | 504.90 | 499.80 | 7.55 | 7.35 |
| PL07MM3 7 | 2.34 | 34.80 | 3.20 | 1.11 | 8.78 | 11.34 | * | 36.02 | 559.60 | 521.90 | 6.11 | 5.82 |
| PL07MM1 7 | 2.30 | 34.60 | 3.17 | 1.10 | 11.18 | 10.18 | 39.74 | 36.66 | 558.60 | 582.60 | 6.97 | 6.49 |

| | | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | | |
| PL14MM1 | 14 | 2.27 | 34.40 | 3.16 | 1.09 | 11.08 | 11.41 | 34.17 | 37.53 | 508.10 | 582.70 | 5.50 | 5.07 |
| PL14MM2 | 14 | 2.19 | 34.10 | 3.14 | 1.08 | 11.61 | 12.19 | 37.77 | 40.07 | 541.80 | 578.10 | 5.22 | 5.89 |
| PL14MM3 | 14 | 2.21 | 34.30 | 3.13 | 1.08 | 13.94 | 13.80 | 44.90 | 42.91 | 551.60 | 562.70 | 5.77 | 5.72 |
| PL28MM2 | 28 | 2.08 | 34.20 | 2.98 | 1.05 | 13.19 | 11.70 | 38.06 | 34.34 | 465.50 | 490.60 | 4.07 | 3.80 |
| PL28MM3 | 28 | 2.19 | 34.30 | 3.09 | 1.08 | 13.66 | 12.75 | 39.49 | 34.35 | 472.40 | 443.60 | 4.23 | 3.67 |
| PL28MM1 | 28 | 2.20 | 34.50 | 3.10 | 1.08 | 13.64 | 11.61 | 39.28 | 37.24 | 469.42 | 532.25 | 3.99 | 3.70 |
| PL99MM1 | 28 | 2.21 | 33.60 | 3.13 | 1.07 | * | * | * | * | * | * | * | * |
| PL56MM2 | 56 | 2.04 | 32.50 | 3.02 | 1.03 | 28.73 | 24.67 | 65.47 | 58.23 | 461.20 | 471.00 | 6.07 | 5.89 |
| PL56MM3 | 56 | 2.07 | 33.20 | 3.04 | 1.05 | 22.15 | 19.49 | 58.45 | 49.70 | 481.50 | 474.10 | 5.95 | 5.41 |
| PL56MM1 | 56 | 2.15 | 33.40 | 3.07 | 1.05 | 17.25 | 16.05 | 47.24 | 43.60 | 467.10 | 485.30 | 5.13 | 5.33 |
| PL99MM2 | 120 | 2.29 | 33.60 | 3.15 | 1.08 | * | * | * | * | * | * | * | * |
| PL99MM3 | 234 | 2.15 | 34.10 | 3.19 | 1.09 | * | * | * | * | * | * | * | * |
| PL99MM4 | 357 | 2.27 | 33.80 | 3.18 | 1.08 | * | * | * | * | * | * | * | * |
| PL99MM5 | 493 | 2.34 | 34.10 | 3.18 | 1.09 | * | * | * | * | * | * | * | * |
| PL99MM6 | 626 | 2.30 | 32.40 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| PL99MM7 | 723 | 2.28 | 34.00 | 3.16 | 1.09 | 10.38 | * | 41.53 | * | 739.08 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | | |
| PH01OM1 | 1 | 1.90 | 31.50 | 2.98 | 1.01 | 42.18 | 39.66 | 85.22 | 77.26 | 538.00 | 537.00 | 13.34 | 12.90 |
| PH07OM1 | 7 | 1.92 | 31.90 | 2.95 | 1.01 | 43.70 | 39.98 | 76.22 | 76.46 | 416.50 | 540.60 | 11.66 | 10.82 |
| PH14OM1 | 14 | 1.97 | 32.40 | 3.00 | 1.01 | 43.40 | 42.02 | 81.58 | 77.86 | 499.70 | 522.90 | 14.42 | 14.02 |
| PH99OM1 | 28 | 2.02 | 33.00 | 3.05 | 1.03 | * | * | * | * | * | * | * | * |
| PH28OM1 | 28 | 1.94 | 31.90 | 2.98 | 1.01 | 42.70 | 40.10 | 81.78 | 79.50 | 503.00 | 556.70 | 10.80 | 10.30 |
| PH56OM1 | 56 | 1.92 | 31.70 | 2.98 | 1.02 | 41.58 | 41.50 | 83.90 | 79.34 | 564.80 | 538.40 | 11.58 | 11.14 |
| PH99OM2 | 128 | 2.19 | * | 3.28 | 1.10 | * | * | * | * | * | * | * | * |
| PH99OM3 | 251 | 2.40 | 33.50 | 3.29 | 1.11 | * | * | * | * | * | * | * | * |
| PH99OM4 | 364 | 2.45 | 36.60 | 3.34 | 1.13 | * | * | * | * | * | * | * | * |
| PH99OM5 | 503 | 2.44 | 35.60 | 3.32 | 1.12 | * | * | * | * | * | * | * | * |
| PH99OM6 | 626 | 2.40 | 31.80 | 3.33 | 1.12 | * | * | * | * | * | * | * | * |
| PH99OM7 | 728 | 2.41 | 36.20 | 3.31 | 1.14 | 63.00 | * | 77.50 | * | 363.00 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | | |
| PL01OM3 | 1 | 1.89 | 31.10 | 2.99 | 1.00 | 41.18 | 37.60 | 81.26 | 78.90 | 501.50 | 562.88 | 13.55 | 12.74 |
| PL01OM1 | 1 | 1.91 | 31.50 | 1.00 | 1.01 | 41.46 | 38.30 | 84.46 | 77.30 | 513.20 | 528.80 | 13.38 | 13.26 |
| PL01OM2 | 1 | 1.93 | 31.70 | 2.99 | 1.00 | 41.26 | 38.06 | 82.42 | 78.62 | 497.90 | 553.90 | 12.90 | 11.46 |
| PL07OM1 | 7 | 1.92 | 31.70 | 2.99 | 1.00 | 42.62 | 40.34 | 84.98 | 79.78 | 521.50 | 542.70 | 11.66 | 11.02 |
| PL07OM2 | 7 | 1.90 | 31.10 | 3.00 | 1.00 | 40.74 | 38.62 | 83.62 | 78.38 | 527.90 | 563.20 | 11.30 | 10.74 |
| PL07OM3 | 7 | 1.91 | 31.40 | 3.00 | 1.00 | 40.95 | 38.82 | 83.86 | 77.54 | 522.90 | 543.20 | 10.98 | 11.10 |
| PL14OM2 | 14 | 1.91 | 31.40 | 3.01 | 1.01 | 40.86 | 38.66 | 84.14 | 77.26 | 527.40 | 541.70 | 11.58 | 10.54 |
| PL14OM1 | 14 | 1.91 | 31.60 | 3.00 | 1.01 | 42.34 | 40.10 | 82.23 | 80.50 | 497.80 | 565.20 | 13.30 | 13.18 |
| PL14OM3 | 14 | 1.91 | 31.30 | 3.00 | 1.01 | 36.40 | 38.46 | 83.80 | 79.66 | 538.00 | 557.30 | 11.42 | 10.74 |
| PL28OM1 | 28 | 1.91 | 31.40 | 3.00 | 1.00 | 44.10 | 44.10 | 83.50 | 83.50 | 473.00 | 473.00 | 10.60 | 10.10 |
| PL28OM2 | 28 | 1.92 | 31.50 | 3.00 | 1.00 | 40.66 | 38.34 | 81.30 | 79.54 | 482.80 | 550.50 | 13.82 | 13.10 |
| PL28OM3 | 28 | 1.92 | 31.50 | 3.00 | 1.01 | 41.30 | 37.98 | 82.74 | 78.02 | 496.40 | 535.50 | 14.22 | 13.66 |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| PL990M1 28 | 1.89 | 32.30 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL560M2 56 | 1.90 | 31.20 | 3.00 | 1.01 | 39.38 | 37.18 | 82.45 | 77.78 | 513.00 | 587.50 | 11.98 | 11.50 |
| PL560M1 56 | 1.92 | 31.60 | 3.01 | 1.00 | 47.26 | 39.26 | 84.34 | 82.58 | 474.90 | 552.20 | 11.78 | 11.06 |
| PL560M3 56 | 1.93 | 31.80 | 3.00 | 1.00 | 39.26 | 38.58 | 80.74 | 80.46 | 528.00 | 532.30 | 11.66 | 11.98 |
| PL990M2 128 | 1.90 | 31.50 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL990M3 237 | 1.89 | 31.60 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL990M4 364 | 1.91 | 31.60 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL990M5 503 | 1.88 | 31.40 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PL990M6 626 | 1.85 | 31.50 | 2.97 | 0.99 | * | * | * | * | * | * | * | * |
| PL990M7 730 | 1.86 | 32.30 | 2.96 | 1.00 | 52.40 | * | 88.40 | * | 617.00 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| PH010P1 1 | 1.85 | 31.40 | 2.94 | 0.99 | 43.22 | 41.54 | 82.86 | 78.78 | 529.90 | 544.10 | 11.14 | 10.62 |
| PH070P1 7 | 1.77 | 30.90 | 2.88 | 0.98 | 59.10 | 57.13 | 84.34 | 85.20 | 393.10 | 452.20 | 13.64 | 12.86 |
| PH140P1 14 | 1.75 | 31.10 | 2.86 | 0.97 | 64.05 | 62.50 | 87.95 | 88.74 | 386.00 | 459.10 | 15.93 | 14.53 |
| PH280P1 28 | 1.68 | 30.20 | 2.82 | 0.95 | 70.76 | 72.82 | 87.66 | 91.82 | 410.60 | 383.30 | 18.98 | 18.18 |
| PH990P1 28 | 1.69 | 30.90 | 2.82 | 0.95 | * | * | * | * | * | * | * | * |
| PH560P1 56 | 1.68 | 31.10 | 2.93 | 0.98 | 84.86 | 80.50 | 94.98 | 92.30 | 390.50 | 424.20 | 22.30 | 21.82 |
| PH990P2 141 | 1.62 | 31.50 | 2.77 | 0.93 | * | * | * | * | * | * | * | * |
| PH990P3 257 | 1.61 | 30.30 | 2.75 | 0.93 | * | * | * | * | * | * | * | * |
| PH990P4 385 | 1.58 | 29.80 | 2.74 | 0.92 | * | * | * | * | * | * | * | * |
| PH990P5 509 | 1.58 | 30.10 | 2.74 | 0.92 | * | * | * | * | * | * | * | * |
| PH990P6 627 | 1.58 | 29.70 | 2.74 | 0.92 | * | * | * | * | * | * | * | * |
| PH990P7 734 | 1.57 | 29.80 | 2.91 | 0.92 | * | * | 165.50 | * | 60.75 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| PL010P1 1 | 1.88 | 31.30 | 2.98 | 1.00 | 40.42 | 37.90 | 86.22 | 79.50 | 566.50 | 574.40 | 10.18 | 9.62 |
| PL010P3 1 | 1.88 | 31.20 | 2.99 | 1.00 | 43.10 | 40.62 | 87.18 | 78.02 | 505.70 | 490.60 | 13.66 | 13.54 |
| PL010P2 1 | 1.90 | 31.40 | 2.98 | 1.00 | 44.58 | 41.18 | 85.98 | 81.46 | 490.00 | 543.50 | 16.78 | 15.50 |
| PL070P2 7 | 1.88 | 31.20 | 2.97 | 1.00 | 44.82 | 41.14 | 87.78 | 77.82 | 577.30 | 554.00 | 11.14 | 10.42 |
| PL070P3 7 | 1.85 | 30.90 | 2.97 | 1.00 | 42.14 | 40.14 | 78.54 | 78.22 | 528.30 | 544.50 | 10.30 | 10.10 |
| PL070P1 7 | 1.86 | 31.00 | 2.98 | 1.00 | 48.90 | 44.58 | 88.78 | 83.66 | 466.90 | 514.80 | 10.68 | 10.32 |
| PL140P2 14 | 1.86 | 31.20 | 2.96 | 0.99 | 47.54 | 44.34 | 87.18 | 82.06 | 499.80 | 547.90 | 12.62 | 11.50 |
| PL140P3 14 | 1.84 | 31.10 | 2.96 | 0.99 | 46.54 | 44.46 | 83.98 | 80.06 | 488.40 | 521.00 | 12.90 | 11.62 |
| PL140P1 14 | 1.87 | 31.30 | 2.97 | 0.99 | 52.98 | 49.42 | 89.06 | 86.54 | 461.80 | 518.50 | 11.00 | 10.48 |
| PL280P1 28 | 1.84 | 31.20 | 2.94 | 0.99 | 50.58 | 50.70 | 87.58 | 85.54 | 461.30 | 478.80 | 16.98 | 17.54 |
| PL280P3 28 | 1.85 | 31.20 | 2.95 | 0.99 | 54.22 | 50.98 | 88.50 | 84.94 | 445.60 | 489.00 | 13.30 | 12.82 |
| PL280P2 28 | 1.84 | 31.40 | 2.95 | 0.99 | 50.90 | 47.82 | 87.82 | 83.38 | 471.40 | 500.30 | 15.98 | 17.58 |
| PL990P1 28 | 1.83 | 31.40 | 2.94 | 0.98 | * | * | * | * | * | * | * | * |
| PL560P2 55 | 1.82 | 30.70 | 2.80 | 0.95 | 57.22 | 54.14 | 89.62 | 83.98 | 466.40 | 476.20 | 14.54 | 14.62 |
| PL560P3 55 | 1.83 | 31.10 | 2.94 | 0.99 | 54.86 | 50.94 | 83.94 | 83.86 | 410.00 | 502.50 | 13.74 | 13.82 |
| PL560P1 56 | 1.82 | 31.20 | 2.93 | 0.98 | 58.90 | 54.58 | 91.06 | 85.42 | 471.20 | 497.10 | 14.30 | 13.90 |
| PL990P2 141 | 1.77 | 31.00 | 2.90 | 0.97 | * | * | * | * | * | * | * | * |
| PL990P3 244 | 1.73 | 30.50 | 2.88 | 0.96 | * | * | * | * | * | * | * | * |

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| PL990P4 385 | 1.71 | 30.20 | 2.87 | 0.96 | * | * | * | * | * | * | * | * |
| PL990P5 509 | 1.70 | 30.50 | 2.85 | 0.95 | * | * | * | * | * | * | * | * |
| PL990P6 627 | 1.69 | 30.00 | 2.85 | 0.95 | * | * | * | * | * | * | * | * |
| PL990P7 736 | 1.68 | 30.90 | 2.84 | 0.95 | 75.00 | * | 87.00 | * | 463.00 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| PH01PH1 1 | 1.94 | 31.70 | 2.97 | 1.01 | 38.02 | 35.08 | 76.70 | 71.05 | 433.78 | 440.40 | 8.82 | 8.64 |
| PH07PH1 7 | 1.75 | 31.10 | 2.80 | 0.96 | 54.79 | 51.96 | 88.46 | 86.04 | 408.13 | 444.98 | 14.43 | 14.16 |
| PH14PH1 14 | 1.70 | 30.40 | 2.89 | 0.95 | 55.23 | 52.62 | 88.65 | 87.33 | 435.79 | 479.50 | 10.92 | 10.75 |
| PH28PH1 28 | 1.72 | 31.20 | 2.77 | 0.95 | 55.06 | 53.19 | 88.06 | 86.63 | 456.31 | 463.28 | 15.97 | 15.11 |
| PH99PH1 29 | 1.81 | 31.30 | 2.87 | 0.97 | * | * | * | * | * | * | * | * |
| PH56PH1 56 | 1.71 | 31.00 | 2.77 | 0.95 | 55.80 | 52.10 | 86.60 | 80.80 | 441.95 | 454.15 | 16.29 | 15.61 |
| PH99PH2 121 | 1.75 | 31.40 | 2.87 | 0.97 | * | * | * | * | * | * | * | * |
| PH99PH3 243 | 1.84 | 31.50 | 2.88 | 0.97 | * | * | * | * | * | * | * | * |
| PH99PH4 362 | 1.79 | 31.50 | 2.85 | 0.97 | * | * | * | * | * | * | * | * |
| PH99PH5 499 | 1.89 | 31.90 | 2.92 | 0.99 | * | * | * | * | * | * | * | * |
| PH99PH6 624 | 1.84 | 31.50 | 2.87 | 0.97 | * | * | * | * | * | * | * | * |
| PH99PH7 720 | 1.79 | 31.20 | 2.83 | 0.97 | 68.00 | * | 77.00 | * | 306.00 | * | * | * |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| PL01PH1 1 | 2.09 | 32.20 | 3.08 | 1.03 | 31.07 | 27.85 | 71.01 | 65.96 | 417.23 | 452.55 | 8.34 | 7.79 |
| PL01PH2 1 | 2.09 | 32.30 | 3.07 | 1.03 | 31.04 | 27.88 | 66.67 | 68.05 | 412.75 | 488.68 | 8.57 | 7.78 |
| PL01PH3 1 | 2.08 | 32.10 | 3.07 | 1.03 | 29.88 | 27.85 | 69.96 | 66.70 | 452.08 | 485.33 | 8.87 | 8.09 |
| PL07PH1 7 | 1.80 | 30.60 | 2.89 | 0.98 | 44.14 | 41.01 | 81.37 | 76.61 | 398.03 | 416.00 | 13.05 | 12.35 |
| PL07PH2 7 | 1.81 | 31.00 | 2.88 | 0.97 | 44.73 | 41.15 | 87.68 | 82.11 | 472.48 | 490.40 | 12.75 | 12.04 |
| PL07PH3 7 | 1.81 | 30.90 | 2.87 | 0.97 | 44.48 | 41.10 | 88.73 | 82.06 | 478.78 | 499.83 | 12.46 | 11.84 |
| PL14PH2 14 | 1.76 | 30.80 | 2.83 | 0.96 | 45.81 | 42.51 | 89.30 | 84.99 | 439.83 | 473.95 | 12.78 | 12.47 |
| PL14PH1 14 | 1.76 | 30.60 | 2.85 | 0.96 | 46.14 | 43.59 | 85.65 | 83.73 | 428.38 | 474.53 | 13.07 | 12.70 |
| PL14PH3 14 | 1.77 | 30.70 | 2.85 | 0.96 | 43.08 | 45.37 | 85.02 | 89.69 | 497.88 | 448.13 | 13.05 | 12.51 |
| PL28PH2 28 | 1.73 | 30.60 | 2.82 | 0.95 | 47.33 | 45.50 | 87.83 | 84.00 | 436.29 | 456.80 | 14.34 | 13.44 |
| PL28PH3 28 | 1.71 | 30.20 | 2.82 | 0.95 | 47.69 | 44.15 | 87.81 | 80.80 | 462.25 | 468.65 | 13.79 | 13.02 |
| PL28PH1 28 | 1.72 | 30.30 | 2.82 | 0.95 | 48.35 | 44.00 | 86.85 | 81.10 | 451.78 | 489.20 | 14.30 | 13.83 |
| PL99PH1 29 | 1.82 | 31.00 | 2.89 | 0.97 | * | * | * | * | * | * | * | * |
| PL56PH1 56 | 1.69 | 30.20 | 2.79 | 0.94 | 50.63 | 48.94 | 89.63 | 86.31 | 452.66 | 450.84 | 15.49 | 14.12 |
| PL56PH2 56 | 1.69 | 30.40 | 2.78 | 0.94 | 54.08 | 49.19 | 87.92 | 82.31 | 410.63 | 495.47 | 15.53 | 14.97 |
| PL56PH3 56 | 1.70 | 30.40 | 2.84 | 0.95 | 51.92 | 50.94 | 87.92 | 88.13 | 434.67 | 494.28 | 14.72 | 14.63 |
| PL99PH2 121 | 1.75 | 31.10 | 2.85 | 0.95 | * | * | * | * | * | * | * | * |
| PL99PH3 230 | 1.74 | 30.40 | 2.84 | 0.96 | * | * | * | * | * | * | * | * |
| PL99PH4 362 | 1.72 | 30.80 | 2.83 | 0.95 | * | * | * | * | * | * | * | * |
| PL99PH5 499 | 1.73 | 30.30 | 2.83 | 0.95 | * | * | * | * | * | * | * | * |
| PL99PH6 625 | 1.63 | 30.20 | 2.74 | 0.92 | * | * | * | * | * | * | * | * |
| PL99PH7 722 | 1.59 | 30.20 | 2.73 | 0.92 | 70.90 | * | 88.00 | * | 225.00 | * | * | * |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PHENOL 1.0% 50°C | | | | | | | | |
| PH01PL1 1 | 1.96 | 32.00 | 3.00 | 1.01 | 41.19 | 37.20 | 82.75 | 82.18 | 402.78 | 464.38 | 9.39 | 9.12 |
| PH07PL1 7 | 1.98 | 32.30 | 2.99 | 1.02 | 41.24 | 39.10 | 84.04 | 79.98 | 453.40 | 465.65 | 10.32 | 9.49 |
| PH14PL1 14 | 2.00 | 32.60 | 2.99 | 1.02 | 38.44 | 36.43 | 82.77 | 80.30 | 485.03 | 506.78 | 9.65 | 9.09 |
| PH99PL1 28 | 2.02 | 32.60 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PH28PL1 28 | 2.00 | 32.70 | 3.00 | 1.02 | 37.44 | 35.70 | 79.75 | 80.55 | 505.41 | 535.80 | 9.87 | 9.14 |
| PH56PL1 56 | 1.99 | 32.40 | 2.98 | 1.03 | 39.10 | 34.95 | 81.05 | 76.60 | 489.05 | 529.70 | 9.59 | 9.38 |
| PH99PL2 122 | 2.03 | 32.50 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PH99PL3 245 | 2.04 | 32.70 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| PH99PL4 363 | 2.04 | 33.20 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PH99PL5 499 | 2.05 | 32.60 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PH99PL6 625 | 2.08 | 32.90 | 3.02 | 1.03 | * | * | * | * | * | * | * | * |
| PH99PL7 721 | 2.08 | 32.80 | 3.06 | 1.03 | 38.00 | * | 80.68 | * | 614.33 | * | * | * |
| | | | | PHENOL 1.0% 23°C | | | | | | | | |
| PL01PL2 1 | 1.90 | 31.00 | 3.01 | 1.00 | 42.22 | 39.97 | 86.10 | 84.22 | 452.48 | 507.15 | 10.14 | 10,11 |
| PL01PL3 1 | 1.90 | 31.00 | 3.01 | 1.01 | 43.29 | 39.71 | 90.00 | 82.78 | 475.95 | 489.60 | 10.49 | 9.83 |
| PL01PL1 1 | 1.91 | 31.20 | 3.01 | 1.00 | 42.44 | * | 85.62 | 84.40 | 418.90 | 481.00 | 9.38 | 8.63 |
| PL07PL2 7 | 1.99 | 32.10 | 3.02 | 1.02 | 38.85 | 36.16 | 87.83 | 80.67 | 506.13 | 505.88 | 9.84 | 9.26 |
| PL07PL1 7 | 1.97 | 31.90 | 3.03 | 1.02 | 40.65 | 36.84 | 84.30 | 78.85 | 428.03 | 453.88 | 10.95 | 10.24 |
| PL07PL3 7 | 1.98 | 32.20 | * | * | 37.77 | 34.38 | 86.52 | 81.64 | 503.93 | 543.60 | 9.48 | 8.92 |
| PL14PL2 14 | 1.97 | 31.90 | 3.02 | 1.01 | 37.47 | 34.74 | 87.97 | 82.16 | 499.43 | 528.83 | 9.37 | 8.84 |
| PL14PL3 14 | 1.96 | 31.90 | 3.02 | 1.01 | 38.57 | 34.72 | 89.03 | 84.67 | 501.85 | 552.20 | 9.61 | 8.82 |
| PL14PL1 14 | 1.98 | 32.00 | 3.03 | 1.02 | 37.22 | 34.34 | 83.47 | 83.95 | 474.70 | 543.85 | 9.38 | 8.99 |
| PL28PL1 28 | 1.98 | 32.00 | 3.02 | 1.02 | 36.70 | 34.75 | 83.75 | 79.45 | 512.78 | 542.08 | 9.56 | 9.18 |
| PL28PL3 28 | 1.99 | 32.20 | 3.02 | 1.02 | 35.90 | 33.05 | 77.90 | 79.05 | 482.55 | 536.20 | 9.25 | 8.50 |
| PL28PL2 28 | 1.99 | 32.20 | 3.02 | 1.02 | 34.90 | 32.75 | 81.45 | 78.60 | 507.88 | 557.55 | 9.35 | 8.64 |
| PL99PL1 28 | 2.02 | 31.80 | 3.03 | 1.01 | * | * | * | * | * | * | * | * |
| PL56PL3 56 | 2.00 | 32.20 | 3.03 | 1.02 | 35.20 | 34.45 | 82.80 | 81.60 | 554.95 | 571.25 | 9.57 | 9.02 |
| PL56PL1 56 | 1.98 | 32.10 | 3.01 | 1.02 | 38.10 | 34.50 | 83.70 | 80.10 | 479.00 | 545.18 | 8.91 | 9.03 |
| PL56PL2 56 | 1.97 | 32.00 | 3.02 | 1.02 | 35.55 | 33.25 | 83.75 | 77.75 | 513.68 | 543.53 | 9.45 | 8.50 |
| PL99PL2 122 | 2.02 | 32.50 | 3.04 | 1.01 | * | * | * | * | * | * | * | * |
| PL99PL3 233 | 2.02 | 32.60 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PL99PL4 363 | 2.03 | 32.70 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PL99PL5 499 | 2.03 | 32.50 | 3.04 | 1.01 | * | * | * | * | * | * | * | * |
| PL99PL6 626 | 2.05 | 32.70 | 3.05 | 1.02 | * | * | * | * | * | * | * | * |
| PL99PL7 723 | 2.05 | 32.80 | 3.05 | 1.02 | 39.42 | * | 89.77 | * | 679.50 | * | * | * |
| | | | | PHENOL 4.0% 50°C | | | | | | | | |
| PH01PM1 1 | 2.03 | 32.40 | 3.02 | 1.03 | 34.77 | 32.55 | 75.28 | 69.73 | 427.38 | 433.80 | 7.91 | 7.17 |
| PH07PM1 7 | 1.91 | 32.10 | 2.92 | 1.00 | 44.41 | 42.03 | 83.10 | 79.07 | 430.40 | 449.45 | 11.01 | 10.65 |
| PH14PM1 14 | 1.89 | 31.70 | 2.92 | 1.00 | 43.44 | 40.78 | 82.99 | 80.74 | 466.03 | 495.85 | 15.45 | 14.99 |
| PH28PM1 28 | 1.87 | 31.50 | 2.91 | 0.99 | 44.75 | 42.80 | 85.55 | 82.25 | 467.50 | 486.88 | 12.48 | 11.10 |
| PH99PM1 29 | 2.04 | 32.50 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| PH56PM1 56 | 1.82 | 31.30 | 2.88 | 0.99 | 47.60 | 44.80 | 88.85 | 81.05 | 471.90 | 467.25 | 11.89 | 11.75 |

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PH99PM2 121 | 2.01 | 32.40 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| PH99PM3 244 | 1.97 | 32.20 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH99PM4 362 | 1.98 | 32.30 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| PH99PM5 499 | 1.98 | 32.50 | 2.98 | 1.01 | * | * | * | * | * | * | * | * |
| PH99PM6 624 | 1.96 | 32.10 | 2.98 | 1.01 | * | * | * | * | * | * | * | * |
| PH99PM7 720 | 1.93 | 32.10 | 2.96 | 1.01 | 56.30 | * | 90.30 | * | 668.00 | * | * | * |
| | | | | PHENOL 4.0% 23°C | | | | | | | | |
| PL01PM2 1 | 2.03 | 31.80 | 3.07 | 1.03 | 33.11 | 29.85 | 78.00 | 73.55 | 463.05 | 498.25 | 9.74 | 8.06 |
| PL01PM1 1 | 2.02 | 31.70 | 3.07 | 1.03 | 32.64 | 29.79 | 76.80 | 75.12 | 436.68 | 487.08 | 8.58 | 7.61 |
| PL01PM3 1 | 2.03 | 31.70 | 3.07 | 1.03 | 32.30 | 30.03 | 76.16 | 74.20 | 456.58 | 500.58 | 8.87 | 8.17 |
| PL07PM2 7 | 1.98 | 32.10 | 3.00 | 1.01 | 37.26 | 34.25 | 85.06 | 80.40 | 485.05 | 504.23 | 9.82 | 8.97 |
| PL07PM1 7 | 2.01 | 32.10 | 3.02 | 1.01 | 37.61 | 34.50 | 80.82 | 73.16 | 435.48 | 433.83 | 9.48 | 9.16 |
| PL07PM3 7 | 1.96 | 31.90 | 2.99 | 1.01 | 35.75 | 32.89 | 84.10 | 79.89 | 501.16 | 518.83 | 9.46 | 8.91 |
| PL14PM3 14 | 1.92 | 31.50 | 2.97 | 1.00 | 37.04 | 34.30 | 81.71 | 80.83 | 449.33 | 505.85 | 9.90 | 9.10 |
| PL14PM2 14 | 1.95 | 31.90 | 2.98 | 1.00 | 36.40 | 33.66 | 86.33 | 78.94 | 506.20 | 489.65 | 9.91 | 9.14 |
| PL14PM1 14 | 1.94 | 31.80 | 2.98 | 1.00 | 37.49 | 34.53 | 84.99 | 77.96 | 490.88 | 486.70 | 10.15 | 9.57 |
| PL28PM1 28 | 1.90 | 31.50 | 2.95 | 0.99 | 38.80 | 37.15 | 83.95 | 79.45 | 469.23 | 475.05 | 10.84 | 10.29 |
| PL28PM3 28 | 1.87 | 31.20 | 2.94 | 0.99 | 38.20 | 36.65 | 86.70 | 81.30 | 493.00 | 505.45 | 10.70 | 10.25 |
| PL28PM2 28 | 1.90 | 31.50 | 2.96 | 0.99 | 38.35 | 36.15 | 84.65 | 78.75 | 456.13 | 470.38 | 10.51 | 9.95 |
| PL99PM1 29 | 1.99 | 31.90 | 3.03 | 1.01 | * | * | * | * | * | * | * | * |
| PL56PM2 56 | 1.87 | 31.30 | 2.93 | 0.99 | 40.20 | 38.35 | 82.30 | 83.35 | 535.50 | 541.78 | 11.40 | 10.80 |
| PL56PM3 56 | 1.86 | 31.20 | 2.94 | 0.98 | 40.15 | 37.15 | 88.50 | 78.95 | 581.03 | 558.53 | 11.94 | 10.82 |
| PL56PM1 56 | 1.84 | 31.00 | 2.92 | 0.98 | 41.60 | 39.70 | 85.50 | 82.90 | 471.63 | 478.78 | 11.17 | 10.97 |
| PL99PM2 121 | 2.00 | 31.90 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| PL99PM3 231 | 2.03 | 32.10 | 3.07 | 1.03 | * | * | * | * | * | * | * | * |
| PL99PM4 362 | 1.99 | 32.00 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| PL99PM5 499 | 1.89 | 31.30 | 2.96 | 0.98 | * | * | * | * | * | * | * | * |
| PL99PM6 625 | 1.85 | 30.80 | 2.92 | 0.98 | * | * | * | * | * | * | * | * |
| PL99PM7 722 | 1.81 | 31.20 | 2.91 | 0.97 | 56.00 | * | 86.20 | * | 635.00 | * | * | * |
| | | | | SODIUM CHLORIDE 35.0% 50°C | | | | | | | | |
| PH01SH1 1 | 1.91 | 31.70 | 2.97 | 1.00 | 40.22 | 38.38 | 82.06 | 78.18 | 508.10 | 522.30 | 10.38 | 9.98 |
| PH07SH1 7 | 1.88 | * | 3.00 | 1.01 | 41.18 | 38.55 | 84.66 | 79.45 | 572.30 | 579.00 | 10.26 | 9.54 |
| PH14SH1 14 | 1.85 | 31.00 | 2.99 | 1.00 | * | * | * | * | * | * | 9.88 | 9.68 |
| PH99SH1 28 | 1.91 | 31.60 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH28SH1 28 | 1.88 | 31.60 | 3.00 | 1.00 | 46.22 | 41.46 | 91.38 | 84.26 | 551.10 | 588.30 | 9.88 | 10.00 |
| PH56SH1 56 | 1.88 | 31.40 | 3.00 | 1.00 | 44.38 | 41.62 | 83.98 | 80.46 | 494.40 | 523.60 | 10.92 | 10.44 |
| PH99SH2 131 | 1.91 | 31.60 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SH3 253 | 1.92 | 31.70 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SH4 379 | 1.91 | 31.90 | 2.98 | 1.01 | * | * | * | * | * | * | * | * |
| PH99SH5 510 | 1.90 | 31.50 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SH6 630 | 1.90 | 31.60 | 2.96 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SH7 734 | 1.90 | 31.70 | 2.97 | 1.01 | 49.23 | * | 84.53 | * | 632.83 | * | * | * |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| PL01SH1 1 | 1.88 | 31.40 | 2.96 | 1.00 | 45.22 | 41.66 | 85.66 | 81.46 | 495.80 | 532.10 | 10.90 | 9.94 |
| PL01SH2 1 | 1.90 | 31.60 | 2.99 | 1.00 | 47.14 | 43.94 | 86.54 | 80.98 | 482.50 | 505.80 | 10.42 | 9.46 |
| PL01SH3 1 | 1.91 | 31.80 | 2.99 | 1.00 | 44.10 | 40.74 | 87.46 | 81.62 | 503.30 | 545.30 | 10.14 | 9.52 |
| PL07SH2 7 | 1.89 | 31.20 | 2.99 | 1.00 | 41.94 | 38.58 | 85.10 | 77.06 | 519.70 | 515.40 | 10.06 | 9.86 |
| PL07SH1 7 | 1.90 | 31.50 | 2.99 | 1.00 | 41.50 | 38.86 | 82.42 | 79.98 | 502.80 | 553.70 | 9.90 | 9.54 |
| PL07SH3 7 | 1.90 | 31.40 | 2.99 | 1.00 | 38.30 | 36.54 | 88.70 | 80.90 | 683.20 | 632.10 | 9.70 | 9.20 |
| PL14SH3 14 | 1.90 | 31.50 | 2.98 | 1.00 | 45.90 | 39.90 | 87.66 | 82.70 | 505.60 | 585.70 | 10.70 | 10.12 |
| PL14SH1 14 | 1.91 | 31.90 | 3.00 | 1.00 | * | * | * | * | * | * | 9.92 | 9.48 |
| PL14SH2 14 | 1.91 | 31.60 | 2.98 | 1.00 | 45.10 | * | 94.82 | * | 569.00 | * | 10.77 | 10.40 |
| PL28SH2 28 | 1.89 | 31.20 | 3.00 | 1.00 | 42.74 | 45.50 | 85.30 | 95.86 | 519.30 | 583.00 | 10.24 | 10.40 |
| PL28SH3 28 | 1.82 | 31.20 | 2.90 | 1.00 | 42.82 | 42.74 | 84.02 | 92.62 | 493.50 | 578.50 | 10.20 | 10.79 |
| PL99SH1 28 | 1.90 | 31.50 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL28SH1 28 | 1.89 | 31.60 | 3.00 | 1.00 | 43.50 | 42.34 | 86.22 | 82.58 | 504.50 | 499.90 | 10.34 | 9.70 |
| PL56SH1 56 | 1.89 | 31.50 | 3.00 | 1.00 | 40.78 | 35.30 | 88.38 | 85.62 | 539.70 | 718.70 | 10.57 | 9.68 |
| PL56SH3 56 | 1.90 | 31.40 | 3.01 | 1.00 | 45.10 | 45.80 | 83.40 | 88.30 | 502.00 | 519.00 | 9.68 | 10.62 |
| PL56SH2 56 | 1.90 | 31.30 | 3.01 | 1.00 | 44.26 | 47.78 | 82.46 | 90.38 | 522.70 | 508.10 | 10.28 | * |
| PL99SH2 131 | 1.90 | 31.40 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SH3 246 | 1.90 | 31.70 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SH4 379 | 1.90 | 31.60 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SH5 510 | 1.90 | 31.40 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SH6 630 | 1.90 | 31.30 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SH7 736 | 1.89 | 31.60 | 2.99 | 1.00 | 46.50 | * | 92.30 | * | 662.20 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| PH01SM1 1 | 1.87 | 31.30 | 2.99 | 1.01 | 44.46 | 43.34 | 86.14 | 83.30 | 461.10 | 486.30 | 10.22 | 9.50 |
| PH07SM1 7 | 1.87 | 31.50 | 2.97 | 1.00 | 46.78 | 43.50 | 87.94 | 80.60 | 523.50 | 502.10 | 10.58 | 10.94 |
| PH14SM1 14 | 32.64 | 31.90 | 7.42 | 6.86 | 49.10 | 45.14 | 90.74 | 85.22 | 467.20 | 495.00 | 10.94 | 10.94 |
| PH28SM1 28 | 32.17 | 31.60 | 7.38 | 6.87 | 45.42 | 42.58 | 85.26 | 81.62 | 500.40 | 537.70 | 10.98 | 10.94 |
| PH99SM1 28 | 1.89 | 31.50 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH56SM1 61 | 32.59 | 31.90 | 7.43 | 6.87 | 46.62 | 48.14 | 85.90 | 80.54 | 470.20 | 456.00 | 11.82 | 11.66 |
| PH99SM2 132 | 1.89 | 31.40 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SM3 254 | 1.91 | 31.40 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SM4 370 | 1.90 | 31.60 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SM5 511 | 1.90 | 32.00 | 2.97 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SM6 624 | 1.89 | 31.30 | 2.96 | 1.00 | * | * | * | * | * | * | * | * |
| PH99SM7 735 | 1.88 | 31.50 | 2.97 | 1.00 | 50.20 | * | 91.60 | * | 633.00 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| PL01SM2 1 | 1.87 | 31.40 | 3.01 | 1.01 | 46.26 | 41.94 | 88.98 | 78.30 | 457.90 | 435.60 | 9.94 | 9.66 |
| PL01SM3 1 | 1.91 | 31.90 | 3.01 | 1.01 | 45.42 | 41.50 | 87.02 | 79.50 | 456.80 | 447.20 | 9.82 | 9.58 |
| PL01SM1 1 | 1.87 | 31.40 | 3.01 | 1.01 | 44.94 | 41.46 | 86.14 | 80.70 | 459.10 | 467.00 | 9.86 | 9.50 |
| PL07SM2 7 | 1.88 | 31.60 | 3.00 | 1.00 | 45.10 | 40.94 | 85.62 | 80.74 | 495.00 | 525.30 | 10.98 | 10.30 |
| PL07SM3 7 | 1.86 | 31.30 | 2.99 | 1.00 | 45.54 | 41.94 | 89.06 | 82.66 | 524.60 | 542.80 | 11.18 | 9.98 |
| PL07SM1 7 | 1.84 | 31.00 | 3.00 | 1.00 | 43.70 | 43.74 | 88.10 | 82.46 | 546.20 | 518.90 | 11.30 | 9.98 |

| | | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SODIUM CHLORIDE 10.0% 23°C | | | | | | | | |
| PL14SM1 | 14 | 32.39 | 31.50 | 7.42 | 6.92 | 47.00 | 44.40 | 88.90 | 84.70 | 449.70 | 475.80 | 11.10 | 10.90 |
| PL14SM3 | 15 | 1.90 | 31.80 | 3.00 | 1.00 | 50.78 | 49.38 | 85.42 | 86.10 | 399.90 | 467.90 | 12.06 | 11.66 |
| PL14SM2 | 15 | 1.90 | 31.90 | 3.00 | 1.00 | 50.50 | 47.30 | 87.26 | 83.18 | 437.60 | 468.00 | 11.78 | 11.38 |
| PL99SM1 | 28 | 1.90 | 31.40 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL28SM3 | 28 | 32.69 | 31.70 | 7.40 | 6.92 | 45.70 | 40.34 | 89.78 | 82.94 | 471.50 | 531.60 | 10.06 | 9.78 |
| PL28SM2 | 28 | 31.98 | 31.50 | 7.21 | 7.00 | 42.98 | 40.14 | 85.74 | 84.10 | 469.40 | 561.70 | 10.74 | 9.82 |
| PL28SM1 | 28 | 32.51 | 31.40 | 7.45 | 6.91 | 43.78 | 39.34 | 88.38 | 80.94 | 481.10 | 554.50 | 10.06 | 10.30 |
| PL56SM2 | 56 | 32.37 | 31.60 | 7.41 | 6.88 | 43.58 | 43.22 | 84.70 | 80.90 | 449.50 | 475.70 | 11.22 | 10.54 |
| PL56SM3 | 56 | 32.60 | 31.60 | 7.42 | 6.95 | 44.80 | 44.02 | 87.30 | 81.46 | 457.63 | 461.60 | 11.02 | 11.00 |
| PL56SM1 | 61 | 32.69 | 31.80 | 7.43 | 6.95 | 49.18 | 41.14 | 89.18 | 79.22 | 457.20 | 484.00 | 12.02 | 10.94 |
| PL99SM2 | 132 | 1.90 | 31.30 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SM3 | 246 | 1.89 | 31.40 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PL99SM4 | 370 | 1.90 | 31.50 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SM5 | 511 | 1.89 | 31.30 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SM6 | 624 | 1.88 | 31.30 | 2.98 | 1.00 | * | * | * | * | * | * | * | * |
| PL99SM7 | 737 | 1.88 | 31.70 | 2.99 | 1.00 | 46.00 | * | 89.00 | * | 604.00 | * | * | * |
| | | | | | WATER 100.0% 50°C | | | | | | | | |
| PH01WP1 | 1 | 1.92 | 32.00 | 3.00 | 1.00 | 46.94 | 44.70 | 85.46 | 82.10 | 415.70 | 451.30 | 10.66 | 10.30 |
| PH07WP1 | 7 | 1.92 | 31.90 | 2.98 | 1.02 | 42.82 | 40.90 | 87.58 | 81.66 | 539.60 | 542.70 | 10.62 | 10.50 |
| PH14WP1 | 14 | 33.78 | 32.20 | 7.49 | 6.99 | 54.97 | 50.97 | 89.50 | 85.60 | 403.20 | 445.75 | 11.18 | 10.38 |
| PH28WP1 | 28 | 1.96 | 32.30 | 2.98 | 1.01 | 44.58 | 44.22 | 80.54 | 81.90 | 445.80 | 487.90 | 11.18 | 10.74 |
| PH99WP1 | 28 | 1.94 | 32.00 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH56WP1 | 56 | 32.91 | 31.90 | 7.37 | 6.96 | 49.62 | 46.14 | 87.18 | 78.98 | 421.40 | 460.90 | 11.30 | 10.86 |
| PH99WP2 | 133 | 1.95 | 32.30 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH99WP3 | 254 | 1.96 | 32.00 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH99WP4 | 370 | 1.95 | 32.40 | 2.99 | 1.02 | * | * | * | * | * | * | * | * |
| PH99WP5 | 503 | 1.95 | 32.00 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH99WP6 | 622 | 1.95 | 31.90 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| PH99WP7 | 735 | 1.95 | 32.20 | 2.99 | 1.01 | 45.55 | * | 83.58 | * | 664.58 | * | * | * |
| | | | | | WATER 100.0% 23°C | | | | | | | | |
| PL01WP2 | 1 | 1.89 | 31.70 | 3.00 | 1.00 | 47.70 | 45.34 | 90.34 | 85.54 | 473.00 | 468.00 | 10.50 | 10.22 |
| PL01WP1 | 1 | 1.90 | 31.80 | 3.00 | 1.00 | 48.66 | 45.10 | 90.86 | 86.34 | 479.40 | 522.00 | 10.46 | 10.06 |
| PL01WP3 | 1 | 1.89 | 31.70 | 3.00 | 1.00 | 47.54 | 46.38 | 92.22 | 85.78 | 499.10 | 482.10 | 10.58 | 10.14 |
| PL07WP2 | 7 | 1.92 | 32.00 | 3.00 | 1.00 | 43.46 | 39.62 | 87.46 | 82.58 | 487.20 | 529.00 | 10.22 | 10.50 |
| PL07WP1 | 7 | 1.91 | 31.60 | 3.01 | 1.01 | 43.02 | 41.22 | 84.58 | 82.66 | 466.40 | 513.30 | 10.34 | 10.42 |
| PL07WP3 | 7 | 1.90 | 31.50 | 3.01 | 1.02 | 43.26 | 40.06 | 84.14 | 79.58 | 449.20 | 533.90 | 10.62 | 10.14 |
| PL14WP1 | 14 | 32.85 | 31.90 | 7 43 | 6.97 | 48.14 | 48.20 | 85.14 | 87.70 | 401.60 | 461.00 | 11.42 | 10.26 |
| PL14WP2 | 14 | 1.91 | 31.40 | 3.00 | 1.00 | 46.02 | 42.94 | 85.54 | 83.06 | 450.70 | 489.90 | 10.22 | 9.70 |
| PL14WP3 | 14 | 1.93 | 31.90 | 3.00 | 1.00 | 45.50 | 43.22 | 86.10 | 82.98 | 460.20 | 493.50 | 10.50 | 9.90 |
| PL28WP1 | 28 | 1.91 | 31.60 | 3.00 | 1.00 | 47.38 | 44.78 | 87.82 | 84.10 | 473.90 | 511.20 | 11.26 | 10.26 |
| PL99WP1 | 28 | 1.92 | 31.70 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL28WP2 | 28 | 1.89 | 31.50 | 3.00 | 1.00 | 47.30 | 39.90 | 87.30 | 81.50 | 462.60 | 538.80 | 10.10 | 10.00 |

POLYVINYL CHLORIDE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 23°C | | | | | | | | | | | | |
| PL28WP3 28 | 1.92 | 32.10 | 3.00 | 1.00 | 47.50 | 41.10 | 89.50 | 84.30 | 531.10 | 561.80 | 11.50 | 9.70 |
| PL56WP3 56 | 1.91 | 31.60 | 2.99 | 1.01 | 55.46 | 52.49 | 88.26 | 74.31 | 408.90 | 406.70 | 11.92 | 11.73 |
| PL56WP2 56 | 1.92 | 31.70 | 3.00 | 1.00 | 51.22 | 48.14 | 84.80 | 80.94 | 422.00 | 430.70 | 12.10 | 11.56 |
| PL56WP1 56 | 32.58 | 31.50 | 7.42 | 6.94 | 48.86 | 46.45 | 87.10 | 78.66 | 461.20 | 424.90 | 11.06 | 10.46 |
| PL99WP2 132 | 1.93 | 31.60 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99WP3 247 | 1.91 | 31.70 | 3.02 | 1.03 | * | * | * | * | * | * | * | * |
| PL99WP4 370 | 1.93 | 31.80 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| PL99WP5 503 | 1.93 | 31.70 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PL99WP6 622 | 1.92 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99WP7 737 | 1.91 | 31.80 | 3.00 | 1.00 | 47.75 | * | 93.00 | * | 637.00 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| PH01XM1 1 | 1.90 | 31.30 | 3.00 | 1.00 | 42.10 | 37.50 | 85.50 | 79.98 | 458.00 | 597.60 | 9.95 | 10.60 |
| PH07XM1 7 | 1.93 | 31.70 | 3.00 | 1.00 | 45.06 | 44.98 | 90.50 | 84.74 | 524.80 | 502.80 | 10.64 | 10.14 |
| PH14XM1 14 | 1.89 | 31.50 | 2.99 | 1.00 | 48.06 | 46.70 | 90.38 | 82.62 | 497.20 | 471.90 | 11.40 | 10.66 |
| PH99XM1 28 | 1.92 | 31.80 | 2.98 | 1.00 | * | * | * | * | * | * | * | * |
| PH28XM1 28 | 1.89 | 31.80 | 3.03 | 0.99 | 43.90 | 46.18 | 86.86 | 81.46 | 484.40 | 486.30 | 10.54 | 10.42 |
| PH56XM1 56 | 1.90 | 31.70 | 2.97 | 1.01 | 47.42 | 42.74 | 88.50 | 82.98 | 490.00 | 543.50 | 11.00 | 10.80 |
| PH99XM2 118 | 1.92 | 31.80 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PH99XM3 231 | 1.93 | 31.70 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PH99XM4 363 | 1.92 | 31.80 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PH99XM5 489 | 1.92 | 31.70 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| PH99XM6 609 | 1.92 | 31.70 | 2.98 | 1.00 | * | * | * | * | * | * | * | * |
| PH99XM7 712 | 1.91 | 31.70 | 2.99 | 1.00 | 49.80 | * | 88.20 | * | 569.00 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| PL01XM2 1 | 1.89 | 31.20 | 3.00 | 1.00 | 49.26 | 43.22 | 94.38 | 83.94 | 484.20 | 528.30 | 11.50 | 10.82 |
| PL01XM1 1 | 1.91 | 31.60 | 3.01 | 1.00 | 45.90 | 39.06 | 86.30 | 84.62 | 484.60 | 605.50 | 10.08 | 10.24 |
| PL01XM3 1 | 1.89 | 31.30 | 3.00 | 1.00 | 49.34 | 40.78 | 89.86 | 76.66 | 455.10 | 443.00 | 10.76 | 10.88 |
| PL07XM3 7 | 1.92 | 31.70 | 3.00 | 1.00 | 46.94 | 41.70 | 84.38 | 77.14 | 415.60 | 433.40 | 11.10 | 11.86 |
| PL07XM1 7 | 1.92 | 31.60 | 3.00 | 1.00 | 43.86 | 42.18 | 89.34 | 83.62 | 500.20 | 499.10 | 11.00 | 10.42 |
| PL07XM2 7 | 1.91 | 31.30 | 3.01 | 1.00 | 47.54 | 41.98 | 84.78 | 77.62 | 407.30 | 427.60 | 11.32 | 10.62 |
| PL14XM3 14 | 1.90 | 31.20 | 3.00 | 1.00 | 36.46 | 40.46 | 81.10 | 83.62 | 482.40 | 469.80 | 9.56 | 10.38 |
| PL14XM1 14 | 1.89 | 31.50 | 3.00 | 1.00 | 46.18 | 45.78 | 86.98 | 84.02 | 454.30 | 464.80 | 11.46 | 10.36 |
| PL14XM2 14 | 1.90 | 31.20 | 3.00 | 1.00 | 38.66 | 42.18 | 82.94 | 90.74 | 511.10 | 485.50 | 9.88 | 10.06 |
| PL28XM2 28 | 1.93 | 31.80 | 3.01 | 1.00 | 45.18 | 40.90 | 87.50 | 87.42 | 530.20 | 489.00 | 10.64 | 10.82 |
| PL28XM3 28 | 1.89 | 31.10 | 3.00 | 1.00 | 42.66 | 39.98 | 86.78 | 88.38 | 594.90 | 528.00 | 11.08 | 11.20 |
| PL99XM1 28 | 1.92 | 31.70 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL28XM1 28 | 1.89 | 31.60 | 3.01 | 1.00 | 43.58 | 40.06 | 85.90 | 81.26 | 451.60 | 487.30 | 10.58 | 10.50 |
| PL56XM3 56 | * | 31.50 | 3.01 | 1.00 | 43.30 | 38.74 | 89.94 | 81.82 | 503.90 | 518.50 | 10.44 | 9.70 |
| PL56XM2 56 | * | 31.30 | 3.01 | 1.00 | 42.70 | 39.50 | 85.34 | 80.74 | 474.00 | 506.70 | 10.62 | 10.24 |
| PL56XM1 56 | 1.90 | 31.50 | 3.01 | 1.01 | 42.98 | 39.06 | 89.82 | 82.58 | 522.40 | 574.10 | 9.85 | 10.30 |
| PL99XM2 118 | 1.92 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| PL99XM3 223 | 1.92 | 31.70 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99XM4 363 | 1.92 | 31.70 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99XM5 489 | 1.92 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99XM6 609 | 1.92 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| PL99XM7 714 | 1.91 | 31.80 | 3.00 | 1.00 | 47.30 | * | 90.20 | * | 604.50 | * | * | * |

# PVC : STATISTICS

POLYVINYL CHLORIDE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| PH01AM1 1 | 5 | 1.960 | 5 | 1.900 | 5 | 39.698 | 5 | 18.910 | 5 | 0.415 | 5 | 0.385 |
| PH07AM1 7 | 5 | 2.755 | 4 | 1.710 | 5 | 27.641 | 4 | 20.900 | 5 | 0.517 | 5 | 0.228 |
| PH14AM1 14 | 5 | 4.303 | 5 | 1.368 | 5 | 36.950 | 5 | 24.000 | 5 | 0.469 | 5 | 0.684 |
| PH28AM1 29 | 5 | 2.861 | 5 | 2.480 | 5 | 26.180 | 5 | 11.778 | 10 | 0.550 | 10 | 0.694 |
| PH56AM1 56 | 5 | 1.492 | 5 | 1.819 | 5 | 16.740 | 5 | 9.990 | 5 | 0.261 | 5 | 0.335 |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| PL01AM1 1 | 5 | 3.705 | 5 | 2.633 | 5 | 55.150 | 5 | 25.399 | 5 | 0.167 | 5 | 0.762 |
| PL01AM2 1 | 5 | 5.604 | 5 | 2.608 | 5 | 75.114 | 5 | 26.640 | 5 | 0.856 | 5 | 0.498 |
| PL01AM3 1 | 5 | 2.700 | 5 | 2.479 | 5 | 34.050 | 5 | 63.128 | 5 | 0.303 | 5 | 0.316 |
| PL07AM2 7 | 4 | 1.400 | 3 | 2.120 | 4 | 30.330 | 3 | 31.800 | 6 | 0.669 | 5 | 0.329 |
| PL07AM3 7 | 4 | 1.410 | 3 | 0.830 | 4 | 30.250 | 3 | 12.740 | 5 | 0.767 | 5 | 0.955 |
| PL07AM1 7 | 4 | 3.890 | 3 | 2.390 | 4 | 32.100 | 3 | 23.860 | 5 | 0.657 | 5 | 0.110 |
| PL14AM1 14 | 5 | 3.340 | 5 | 3.269 | 5 | 25.590 | 5 | 18.210 | 5 | 0.415 | 5 | 0.261 |
| PL14AM2 14 | 5 | 2.483 | 5 | 2.180 | 5 | 25.620 | 5 | 38.740 | 5 | 0.261 | 5 | 0.410 |
| PL14AM3 14 | 5 | 2.900 | 4 | 3.590 | 5 | 26.893 | 4 | 36.550 | 5 | 0.363 | 5 | 0.329 |
| PL28AM1 29 | 5 | 3.870 | 5 | 2.997 | 5 | 18.990 | 5 | 43.860 | 10 | 0.843 | 10 | 0.485 |
| PL28AM2 29 | 5 | 3.064 | 5 | 1.790 | 5 | 50.040 | 5 | 36.965 | 10 | 0.267 | 5 | 1.500 |
| PL28AM3 29 | 5 | 1.307 | 5 | 2.947 | 5 | 25.756 | 5 | 34.875 | 10 | 0.905 | 10 | 0.452 |
| PL56AM2 56 | 5 | 6.337 | 5 | 1.419 | 5 | 59.883 | 5 | 12.682 | 5 | 0.865 | 5 | 0.583 |
| PL56AM3 56 | 5 | 2.368 | 5 | 1.361 | 5 | 19.212 | 5 | 9.006 | 5 | 0.303 | 5 | 0.555 |
| PL56AM1 56 | 5 | 2.310 | 5 | 0.737 | 5 | 25.650 | 5 | 7.040 | 5 | 0.460 | 5 | 0.518 |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| PH01BM1 1 | 5 | 2.224 | 5 | 2.090 | 5 | 37.618 | 5 | 27.994 | 10 | 0.287 | 10 | 0.290 |
| PH07BM1 7 | 5 | 1.955 | 5 | 1.524 | 5 | 11.741 | 5 | 13.319 | 10 | 0.401 | 9 | 0.343 |
| PH14BM1 14 | 5 | 1.922 | 5 | 3.923 | 5 | 25.530 | 5 | 36.626 | 5 | 0.593 | 10 | 1.940 |
| PH28BM1 28 | 4 | * | 5 | 1.467 | 4 | * | 5 | 50.180 | 10 | 0.880 | 8 | 0.238 |
| PH56BM1 56 | 5 | 3.973 | 5 | 2.166 | 5 | 43.239 | 5 | 5.160 | 7 | 0.611 | 6 | 0.487 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| PL01BM2 1 | 5 | 1.243 | 5 | 0.779 | 5 | 8.306 | 5 | 16.481 | 10 | 0.366 | 10 | 0.422 |
| PL01BM3 1 | 5 | 1.124 | 5 | 1.108 | 5 | 22.480 | 5 | 15.617 | 10 | 0.302 | 10 | 0.661 |
| PL01BM1 1 | 5 | 2.540 | 5 | 2.508 | 5 | 37.930 | 5 | 22.613 | 9 | 0.609 | 10 | 0.435 |
| PL07BM2 7 | 5 | 1.452 | 5 | 1.459 | 5 | 26.451 | 5 | 7.840 | 10 | 0.378 | 10 | 0.175 |
| PL07BM1 7 | 5 | 1.668 | 5 | 2.559 | 5 | 21.204 | 5 | 29.650 | 10 | 0.301 | 10 | 0.227 |
| PL07BM3 7 | 5 | 2.560 | 5 | 1.674 | 5 | 39.510 | 5 | 32.280 | 10 | 0.169 | 10 | 0.434 |
| PL14BM1 14 | 5 | 2.982 | 4 | 0.680 | 5 | 36.493 | 4 | 8.990 | 10 | 0.893 | 10 | 0.394 |
| PL14BM2 14 | 5 | 2.085 | 5 | 1.665 | 5 | 31.107 | 5 | 21.249 | 10 | 0.193 | 10 | 0.567 |
| PL14BM3 14 | 5 | 0.923 | 5 | 5.081 | 5 | 17.962 | 5 | 61.303 | 10 | 0.283 | 10 | 0.199 |
| PL28BM1 28 | 5 | 2.230 | 5 | 2.855 | 5 | 15.186 | 5 | 31.952 | 9 | 0.794 | 9 | 0.346 |
| PL28BM2 28 | 5 | 3.245 | 5 | 0.783 | 5 | 40.436 | 5 | 15.724 | 10 | 0.234 | 10 | 0.216 |
| PL28BM3 32 | 5 | 2.050 | 5 | 2.421 | 5 | 23.922 | 5 | 29.588 | 10 | 1.081 | 10 | 0.476 |

POLYVINYL CHLORIDE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| PL56BM3 56 | 5 | 4.086 | 5 | 2.500 | 5 | 37.093 | 5 | 28.300 | 7 | 0.400 | 7 | 0.509 |
| PL56BM2 56 | 5 | 1.070 | 5 | 1.638 | 5 | 15.601 | 5 | 16.107 | 8 | 0.821 | 7 | 0.728 |
| PL56BM1 56 | 5 | 4.572 | 5 | 1.126 | 5 | 43.287 | 5 | 19.556 | 8 | 0.671 | 8 | 0.518 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| PH01DH1 1 | 5 | 3.166 | 5 | 1.161 | 5 | 26.200 | 5 | 15.952 | 5 | 0.378 | 5 | 0.202 |
| PH07DH1 7 | 5 | 5.720 | 5 | 3.530 | 5 | 72.460 | 5 | 16.920 | 5 | 0.280 | 5 | 0.180 |
| PH14DH1 14 | 4 | 3.600 | 5 | 2.510 | 4 | 12.900 | 5 | 42.600 | 5 | 0.102 | 5 | 0.150 |
| PH28DH1 29 | 5 | 2.477 | 5 | 1.922 | 5 | 13.513 | 5 | 23.276 | 5 | 0.376 | 5 | 0.295 |
| PH56DH1 56 | 5 | 3.204 | 5 | 1.516 | 5 | 30.998 | 5 | 11.175 | 5 | 0.155 | 5 | 0.331 |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| PL01DH2 1 | 5 | 4.378 | 5 | 1.358 | 5 | 43.549 | 5 | 9.493 | 5 | 0.517 | 5 | 0.338 |
| PL01DH3 1 | 5 | 5.826 | 5 | 0.977 | 5 | 27.609 | 5 | 40.878 | 5 | 0.293 | 5 | 0.161 |
| PL01DH1 1 | 5 | 3.771 | 5 | 3.131 | 5 | 15.540 | 5 | 24.703 | 5 | 0.324 | 5 | 0.093 |
| PL07DH1 7 | 5 | 2.800 | 4 | 1.640 | 5 | 19.040 | 4 | 18.040 | 5 | 0.230 | 5 | 0.580 |
| PL07DH3 7 | 5 | 6.200 | 5 | 1.700 | 5 | 49.600 | 5 | 14.900 | 5 | 0.611 | 5 | 0.630 |
| PL07DH2 7 | 5 | 4.980 | 4 | 6.030 | 5 | 71.470 | 4 | 51.800 | 4 | 0.150 | 5 | 0.920 |
| PL14DH1 14 | 4 | 5.580 | 5 | 1.980 | 4 | 21.560 | 5 | 22.950 | 5 | 0.223 | 5 | 0.072 |
| PL14DH3 14 | 5 | 3.220 | 5 | 1.700 | 5 | 25.880 | 5 | 14.360 | 5 | 0.530 | 5 | 0.340 |
| PL14DH2 14 | 5 | 5.190 | 5 | 6.090 | 5 | 12.280 | 5 | 18.220 | 5 | 0.150 | 4 | 0.430 |
| PL28DH2 28 | 5 | * | 5 | * | 5 | * | 5 | * | 5 | 0.840 | 5 | 0.361 |
| PL28DH3 28 | 5 | * | 5 | * | 5 | * | 5 | * | 5 | 0.160 | 5 | 0.161 |
| PL28DH1 29 | 5 | 3.093 | 5 | 3.210 | 5 | 18.576 | 5 | 20.777 | 5 | 0.174 | 5 | 0.108 |
| PL56DH1 56 | 5 | 1.671 | 5 | 1.150 | 5 | 21.268 | 5 | 11.162 | 5 | 0.310 | 5 | 0.323 |
| PL56DH2 56 | 5 | 0.954 | 5 | 2.152 | 5 | 5.003 | 5 | 17.227 | 5 | 0.857 | 4 | 0.197 |
| PL56DH3 56 | 5 | 1.889 | 5 | 4.773 | 5 | 4.896 | 5 | 47.200 | 5 | 0.427 | 5 | 0.091 |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| PH01DL1 1 | 5 | 0.920 | 5 | 1.129 | 5 | 13.600 | 5 | 12.371 | 5 | 0.325 | 5 | 0.198 |
| PH07DL1 7 | 4 | 1.850 | 4 | 0.760 | 4 | 20.420 | 4 | 11.960 | 5 | 0.340 | 5 | 0.260 |
| PH14DL1 14 | 5 | 1.820 | 5 | 2.470 | 5 | 20.010 | 5 | 18.720 | 5 | 0.220 | 5 | 0.120 |
| PH28DL1 29 | 5 | 1.243 | 5 | 0.839 | 5 | 8.076 | 5 | 8.055 | 5 | 0.380 | 5 | 0.360 |
| PH56DL1 56 | 5 | 0.547 | 5 | 1.330 | 5 | 11.768 | 5 | 12.576 | 5 | 0.323 | 5 | 0.651 |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| PL01DL3 1 | 5 | 1.346 | 5 | 2.146 | 5 | 9.522 | 5 | 22.368 | 5 | 0.226 | 5 | 0.274 |
| PL01DL2 1 | 5 | 1.475 | 5 | 1.678 | 5 | 6.565 | 5 | 17.994 | 5 | 0.352 | 5 | 0.448 |
| PL01DL1 1 | 5 | 1.733 | 5 | 1.543 | 5 | 5.306 | 5 | 14.158 | 5 | 0.381 | 5 | 0.207 |
| PL07DL2 7 | 5 | 4.220 | 5 | 1.600 | 4 | 30.800 | 4 | 17.000 | 5 | 0.400 | 5 | 0.171 |
| PL07DL1 7 | 4 | 1.240 | 4 | 1.000 | 4 | 12.090 | 4 | 7.290 | 5 | 0.464 | 5 | 0.337 |
| PL07DL3 7 | 5 | 1.110 | 5 | 1.770 | 5 | 7.110 | 5 | 16.500 | 5 | 0.438 | 5 | 0.180 |
| PL14DL2 14 | 5 | 1.500 | 5 | 4.950 | 5 | 11.980 | 5 | 44.600 | 5 | 0.590 | 5 | 0.200 |
| PL14DL1 14 | 5 | 5.750 | 5 | 1.970 | 5 | 54.280 | 5 | 16.360 | 5 | 0.100 | 5 | 0.150 |

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| PL14DL3 14 | 5 | 1.470 | 5 | 1.110 | 5 | 14.040 | 5 | 14.650 | 5 | 0.780 | 5 | 0.180 |
| PL28DL2 28 | 5 | * | 5 | * | 5 | * | 5 | * | 5 | 0.121 | 5 | 0.274 |
| PL28DL3 28 | 5 | * | 5 | * | 5 | * | 5 | * | 5 | 0.352 | 5 | 0.140 |
| PL28DL1 29 | 5 | 2.184 | 5 | 2.348 | 5 | 12.204 | 5 | 16.498 | 5 | 0.101 | 5 | 0.410 |
| PL56DL1 56 | 5 | 1.572 | 5 | 1.711 | 5 | 10.235 | 5 | 9.001 | 5 | 0.179 | 5 | 0.509 |
| PL56DL2 56 | 5 | 1.776 | 5 | 1.138 | 5 | 17.128 | 5 | 10.331 | 5 | 0.616 | 5 | 0.403 |
| PL56DL3 56 | 5 | 1.231 | 5 | 4.454 | 5 | 2.811 | 5 | 48.259 | 5 | 0.281 | 5 | 0.221 |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| PH01DM1 1 | 5 | 2.159 | 5 | 1.466 | 5 | 8.759 | 5 | 12.757 | 5 | 0.188 | 5 | 0.149 |
| PH07DM1 7 | 5 | 0.870 | 5 | 7.720 | 5 | 9.130 | 5 | 86.120 | 5 | 0.300 | 5 | 0.240 |
| PH14DM1 14 | 5 | 1.450 | 5 | 0.410 | 5 | 9.580 | 5 | 9.000 | 5 | 0.380 | 5 | 0.390 |
| PH28DM1 29 | 5 | 2.212 | 5 | 1.572 | 5 | 24.625 | 5 | 11.855 | 5 | 0.397 | 5 | 0.186 |
| PH56DM1 56 | 5 | 2.828 | 5 | 0.621 | 5 | 16.639 | 5 | 9.439 | 5 | 0.091 | 5 | 0.372 |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| PL01DM3 1 | 5 | 1.675 | 5 | 1.981 | 5 | 13.143 | 5 | 20.472 | 5 | 0.317 | 5 | 0.328 |
| PL01DM2 1 | 5 | 3.287 | 5 | 2.356 | 5 | 29.524 | 5 | 25.167 | 5 | 0.356 | 5 | 0.832 |
| PL01DM1 1 | 5 | 2.666 | 5 | 1.716 | 5 | 15.655 | 5 | 15.970 | 5 | 0.342 | 5 | 0.159 |
| PL07DM2 7 | 5 | 3.210 | 5 | 4.850 | 5 | 30.200 | 5 | 47.280 | 5 | 0.510 | 5 | 0.190 |
| PL07DM1 7 | 5 | 1.720 | 5 | 1.320 | 5 | 24.610 | 5 | 17.940 | 5 | 0.310 | 5 | 0.180 |
| PL07DM3 7 | 5 | 4.000 | 5 | 2.580 | 5 | 33.300 | 5 | 23.100 | 5 | 0.330 | 5 | 0.310 |
| PL14DM2 14 | 5 | 0.810 | 5 | 1.050 | 5 | 9.100 | 5 | 11.610 | 5 | 0.240 | 5 | 0.530 |
| PL14DM3 14 | 5 | 3.820 | 5 | 1.450 | 5 | 21.810 | 5 | 12.750 | 5 | 0.340 | 5 | 0.470 |
| PL14DM1 14 | 5 | 4.100 | 5 | 2.040 | 5 | 13.090 | 5 | 19.090 | 5 | 0.320 | 5 | 0.200 |
| PL28DM2 28 | 5 | * | 5 | * | 5 | * | 5 | * | 5 | 0.345 | 5 | 0.211 |
| PL28DM3 28 | 5 | * | 5 | * | 5 | * | 5 | * | 5 | 0.139 | 5 | 0.303 |
| PL28DM1 29 | 5 | 2.033 | 5 | 1.508 | 5 | 22.606 | 5 | 10.309 | 5 | 0.231 | 5 | 0.179 |
| PL56DM3 56 | 5 | 0.945 | 5 | 2.030 | 5 | 12.023 | 5 | 10.535 | 5 | 0.142 | 5 | 0.061 |
| PL56DM2 56 | 5 | 1.149 | 5 | 1.298 | 5 | 10.178 | 5 | 11.258 | 5 | 0.658 | 5 | 0.275 |
| PL56DM1 56 | 5 | 2.864 | 5 | 1.899 | 5 | 10.347 | 5 | 8.615 | 5 | 0.357 | 5 | 0.128 |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| PH01FH1 1 | 5 | 1.193 | 5 | 0.968 | 5 | 20.740 | 5 | 16.050 | 5 | 0.241 | 5 | 0.451 |
| PH07FH1 7 | 5 | 1.321 | 5 | 1.447 | 5 | 39.030 | 5 | 49.200 | 5 | 0.132 | 5 | 0.089 |
| PH14FH1 14 | 5 | 1.566 | 5 | 1.997 | 5 | 29.690 | 5 | 43.930 | 5 | 0.223 | 5 | 0.079 |
| PH28FH1 28 | 5 | 2.666 | 5 | 1.906 | 5 | * | 5 | 85.660 | 5 | 0.167 | 5 | 0.082 |
| PH56FH1 56 | 5 | 1.274 | 5 | 1.602 | 5 | 41.430 | 5 | 74.700 | 5 | 0.082 | 5 | 0.134 |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| PL01FH3 1 | 5 | 2.073 | 5 | 2.171 | 5 | 68.407 | 5 | 54.296 | 5 | 0.471 | 5 | 0.895 |
| PL01FH1 1 | 5 | 3.290 | 5 | 1.525 | 5 | 28.500 | 5 | 10.250 | 5 | 0.178 | 5 | 0.516 |
| PL01FH2 1 | 5 | 2.712 | 5 | 2.204 | 5 | 94.231 | 5 | 66.128 | 5 | 0.278 | 5 | 0.520 |
| PL07FH2 7 | 5 | 2.274 | 5 | 1.787 | 5 | 82.000 | 5 | 71.480 | 5 | 0.149 | 5 | 0.175 |

POLYVINYL CHLORIDE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| PL07FH3 7 | 5 | 2.040 | 5 | 1.070 | 5 | 46.040 | 5 | 29.200 | 5 | 0.255 | 5 | 0.233 |
| PL07FH1 7 | 5 | 1.903 | 5 | 1.778 | 5 | 51.350 | 5 | 29.530 | 5 | 0.162 | 5 | 0.235 |
| PL14FH2 14 | 5 | 2.007 | 5 | 1.218 | 5 | 62.050 | 5 | 56.860 | 5 | 0.057 | 5 | 0.148 |
| PL14FH1 14 | 5 | 2.660 | 5 | 2.407 | 5 | 83.190 | 5 | 75.960 | 5 | 0.113 | 5 | 0.082 |
| PL14FH3 14 | 5 | 1.403 | 5 | 2.255 | 5 | 22.080 | 5 | 68.870 | 5 | 0.182 | 5 | 0.182 |
| PL28FH3 28 | 5 | 1.394 | 5 | 1.977 | 5 | 27.930 | 5 | 65.060 | 5 | 0.110 | 5 | 0.297 |
| PL28FH1 28 | 5 | 1.950 | 5 | 2.104 | 5 | 18.170 | 5 | 69.070 | 5 | 0.269 | 5 | 0.103 |
| PL28FH2 28 | 5 | 1.683 | 5 | 1.462 | 5 | 88.490 | 5 | 58.250 | 5 | 0.152 | 5 | 0.187 |
| PL56FH2 56 | 5 | 0.929 | 5 | 2.025 | 5 | 40.990 | 5 | 59.350 | 5 | 0.157 | 5 | 0.050 |
| PL56FH1 56 | 5 | 0.800 | 5 | 2.508 | 5 | 61.700 | 5 | 86.500 | 5 | 0.179 | 5 | 0.122 |
| PL56FH3 56 | 5 | 1.681 | 5 | 1.132 | 5 | 47.750 | 5 | 25.980 | 5 | 0.185 | 5 | 0.122 |
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| PH01FL1 1 | 5 | 1.314 | 5 | 1.480 | 5 | 16.714 | 5 | 13.029 | 5 | 0.274 | 5 | 0.982 |
| PH07FL1 7 | 5 | 1.517 | 5 | 1.696 | 5 | 16.240 | 5 | 13.040 | 5 | 0.251 | 5 | 0.410 |
| PH14FL1 14 | 5 | 1.870 | 5 | 2.980 | 5 | 24.920 | 5 | 32.860 | 5 | 0.503 | 5 | 0.964 |
| PH28FL1 28 | 5 | 4.064 | 5 | 1.608 | 5 | 26.460 | 5 | 10.950 | 5 | 0.827 | 5 | 0.555 |
| PH56FL1 56 | 5 | 3.270 | 5 | 1.992 | 5 | 23.450 | 5 | 34.280 | 5 | 0.890 | 5 | 0.550 |
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| PL01FL3 1 | 5 | 3.780 | 4 | 5.300 | 5 | 33.770 | 4 | 44.600 | 5 | 0.414 | 5 | 0.931 |
| PL01FL2 1 | 5 | 3.770 | 4 | 3.260 | 5 | 32.713 | 4 | 33.400 | 5 | 0.400 | 5 | 0.854 |
| PL01FL1 1 | 5 | 1.705 | 5 | 1.646 | 5 | 10.216 | 5 | 16.579 | 5 | 0.242 | 5 | 1.011 |
| PL07FL2 7 | 5 | 2.902 | 5 | 1.457 | 5 | 20.920 | 5 | 24.089 | 5 | 0.295 | 5 | 0.327 |
| PL07FL1 7 | 5 | 1.851 | 5 | 3.800 | 5 | 10.250 | 5 | 37.910 | 5 | 0.569 | 5 | 0.422 |
| PL07FL3 7 | 5 | 3.165 | 5 | 3.305 | 5 | 13.690 | 5 | 38.990 | 5 | 0.579 | 5 | 0.301 |
| PL14FL2 14 | 5 | 2.721 | 5 | 1.173 | 5 | 25.000 | 5 | 37.520 | 5 | 0.485 | 5 | 0.100 |
| PL14FL3 14 | 5 | 1.595 | 5 | 1.808 | 5 | 41.080 | 5 | 39.130 | 5 | 0.527 | 5 | 0.184 |
| PL14FL1 14 | 5 | 2.040 | 5 | 4.290 | 5 | 8.200 | 5 | 16.730 | 5 | 0.055 | 5 | 0.308 |
| PL28FL2 28 | 5 | 1.972 | 5 | 2.424 | 5 | 42.500 | 5 | 23.450 | 5 | 0.406 | 5 | 0.167 |
| PL28FL1 28 | 5 | 7.029 | 5 | 0.581 | 5 | 4.080 | 5 | 30.330 | 5 | 0.208 | 5 | 0.407 |
| PL28FL3 28 | 5 | 1.292 | 5 | 2.575 | 5 | 6.710 | 5 | 14.320 | 5 | 0.971 | 5 | 0.241 |
| PL56FL3 56 | 5 | 1.303 | 5 | 0.527 | 5 | 24.390 | 5 | 20.000 | 5 | 0.167 | 5 | 0.270 |
| PL56FL2 56 | 5 | 3.838 | 5 | 1.613 | 5 | 27.750 | 5 | 20.620 | 5 | 0.458 | 5 | 0.288 |
| PL56FL1 56 | 5 | 4.245 | 5 | 2.263 | 5 | 59.310 | 5 | 37.750 | 5 | 0.532 | 5 | 0.200 |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| PH01FM1 1 | 5 | 5.249 | 5 | 2.266 | 5 | 65.196 | 5 | 30.997 | 5 | 0.249 | 5 | 0.118 |
| PH07FM1 7 | 5 | 2.300 | 5 | 2.729 | 5 | 23.080 | 5 | 31.900 | 5 | 0.158 | 5 | 0.514 |
| PH14FM1 14 | 5 | 2.430 | 5 | 0.439 | 5 | 27.420 | 5 | 14.800 | 5 | 0.235 | 5 | 0.250 |
| PH28FM1 28 | 5 | 2.992 | 5 | 3.281 | 5 | 20.400 | 5 | 60.660 | 5 | 0.665 | 5 | 1.120 |
| PH56FM1 56 | 5 | 3.986 | 5 | 4.621 | 5 | 91.060 | 5 | 45.880 | 5 | 0.207 | 5 | 0.498 |

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| PL01FM1 1 | 5 | 2.081 | 5 | 1.634 | 5 | 24.752 | 5 | 19.987 | 5 | 0.484 | 5 | 0.689 |
| PL01FM2 1 | 5 | 2.615 | 5 | 2.045 | 5 | 36.130 | 5 | 36.604 | 5 | 0.400 | 5 | 0.410 |
| PL01FM3 1 | 5 | 2.518 | 5 | 3.341 | 5 | 32.598 | 5 | 51.615 | 5 | 0.394 | 5 | 0.282 |
| PL07FM3 7 | 5 | 3.492 | 5 | 0.876 | 5 | 48.460 | 5 | 19.270 | 5 | 0.442 | 5 | 0.866 |
| PL07FM2 7 | 5 | 5.720 | 5 | 1.986 | 5 | 46.940 | 5 | 31.570 | 5 | 0.243 | 5 | 0.203 |
| PL07FM1 7 | 5 | 2.500 | 5 | 2.678 | 5 | 16.810 | 5 | 44.670 | 5 | 0.259 | 5 | 0.372 |
| PL14FM1 14 | 5 | 3.500 | 5 | 1.710 | 5 | 33.470 | 5 | 26.770 | 5 | 0.195 | 5 | 0.497 |
| PL14FM2 14 | 5 | 3.303 | 5 | 2.029 | 5 | 43.300 | 5 | 32.040 | 5 | 0.113 | 5 | 0.261 |
| PL14FM3 14 | 5 | 1.912 | 5 | 1.350 | 5 | 25.000 | 5 | 20.620 | 5 | 0.197 | 5 | 0.095 |
| PL28FM2 28 | 5 | 2.020 | 5 | 2.111 | 5 | 34.390 | 5 | 37.650 | 5 | 0.152 | 5 | 0.045 |
| PL28FM3 28 | 5 | 2.265 | 5 | 1.507 | 5 | 57.510 | 5 | 23.870 | 5 | 0.217 | 5 | 0.354 |
| PL28FM1 28 | 5 | 1.997 | 5 | 2.463 | 5 | 44.220 | 5 | 26.790 | 5 | 0.635 | 5 | 0.335 |
| PL56FM1 56 | 5 | 3.487 | 5 | 2.006 | 5 | 46.720 | 5 | 32.860 | 5 | 0.335 | 5 | 0.263 |
| PL56FM2 56 | 5 | 4.170 | 5 | 1.454 | 5 | 45.360 | 5 | 28.590 | 5 | 0.217 | 5 | 0.228 |
| PL56FM3 56 | 5 | 2.275 | 5 | 4.423 | 5 | 28.280 | 5 | 37.680 | 5 | 0.239 | 5 | 0.164 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| PH01MH1 1 | 5 | 2.604 | 5 | 3.010 | 5 | 68.102 | 5 | 50.422 | 5 | 0.219 | 5 | 0.335 |
| PH07MH1 7 | 4 | 1.370 | 5 | 1.889 | 4 | 89.250 | 5 | 51.480 | 5 | 0.712 | 5 | 1.030 |
| PH14MH1 14 | 1 | * | 1 | * | 1 | * | 1 | * | 3 | 1.320 | 3 | 0.242 |
| PH28MH1 28 | 5 | 0.706 | 5 | 1.555 | 5 | 35.106 | 5 | 67.413 | 5 | 0.005 | 5 | 0.178 |
| PH56MH1 56 | 5 | 2.934 | 5 | 1.209 | 5 | 71.090 | 5 | 31.970 | 5 | 0.231 | 5 | 0.324 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| PL01MH1 1 | 5 | 2.914 | 5 | 1.197 | 5 | 23.767 | 5 | 27.130 | 5 | 0.335 | 5 | 0.261 |
| PL01MH3 1 | 4 | 0.160 | 6 | 2.080 | 3 | 24.800 | 6 | 98.800 | 5 | 0.200 | 5 | 0.110 |
| PL01MH2 1 | 5 | 2.715 | 5 | 1.025 | 5 | * | 5 | * | 5 | 0.350 | 5 | 0.110 |
| PL07MH3 7 | 5 | 1.940 | 5 | 1.590 | 5 | 85.780 | 5 | 65.860 | 4 | 0.158 | 5 | 0.288 |
| PL07MH1 7 | 5 | 2.030 | 5 | 1.930 | 5 | 74.060 | 5 | 80.880 | 5 | 0.640 | 5 | 0.295 |
| PL07MH2 7 | 5 | 0.910 | 5 | 2.575 | 5 | 20.650 | 5 | * | 5 | 0.378 | 5 | 0.181 |
| PL14MH1 14 | 4 | 1.040 | 4 | 2.190 | 4 | 43.880 | 4 | 71.470 | 5 | 0.140 | 5 | 0.234 |
| PL14MH2 14 | 5 | 3.341 | 5 | 1.185 | 5 | 77.089 | 5 | 37.850 | 4 | 0.382 | 5 | 0.284 |
| PL14MH3 14 | 5 | 2.951 | 5 | 0.415 | 5 | 87.555 | 5 | 65.747 | 5 | 0.251 | 5 | 0.347 |
| PL28MH2 28 | 5 | 1.609 | 5 | 1 100 | 5 | 74.100 | 5 | 44.848 | 5 | 0.158 | 5 | 0.144 |
| PL28MH3 28 | 5 | 0.373 | 5 | 1.307 | 5 | 26.420 | 5 | 73.951 | 4 | 0.239 | 4 | 0.405 |
| PL28MH1 28 | 5 | 0.787 | 5 | 1.267 | 5 | 48.070 | 5 | 47.468 | 5 | 0.230 | 5 | 0.061 |
| PL56MH1 56 | 5 | 3.130 | 5 | 1.118 | 5 | 60.315 | 5 | 31.495 | 5 | 0.115 | 5 | 0.226 |
| PL56MH2 56 | 6 | 1.540 | 5 | 1.554 | 6 | 18.107 | 5 | 87.560 | 5 | 0.304 | 5 | 0.126 |
| PL56MH3 56 | 5 | 2.521 | 5 | 0.642 | 5 | 74.821 | 5 | 27 470 | 5 | 0.086 | 5 | 0.094 |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| PH01ML1 1 | 5 | 3.992 | 5 | 3.070 | 5 | 40.864 | 5 | 23.060 | 5 | 1.490 | 5 | 0.817 |
| PH07ML1 7 | 5 | 2.740 | 5 | 2.777 | 5 | 38.470 | 5 | 31.440 | 5 | 0.257 | 5 | 0.362 |
| PH14ML1 14 | 5 | 2.790 | 5 | 3.378 | 5 | 32.665 | 5 | 60.226 | 5 | 0.533 | 5 | 0.406 |
| PH28ML1 28 | 5 | 4.558 | 5 | 8.136 | 5 | 39.687 | 5 | 71.235 | 5 | 0.452 | 5 | 1.090 |
| PH56ML1 56 | 5 | 4.843 | 5 | 3.338 | 5 | 49.600 | 5 | 51.760 | 5 | 0.255 | 5 | 0.357 |

POLYVINYL CHLORIDE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| PL01ML2 1 | 4 | 2.200 | 5 | 3.320 | 4 | 33.140 | 5 | 42.100 | 5 | 0.620 | 5 | 0.303 |
| PL01ML3 1 | 5 | 3.570 | 5 | 5.670 | 5 | 26.570 | 5 | * | 5 | 1.030 | 5 | 0.710 |
| PL01ML1 1 | 5 | 1.337 | 5 | 2.479 | 5 | 11.164 | 5 | 25.681 | 5 | 0.200 | 5 | 0.456 |
| PL07ML1 7 | 5 | 6.724 | 5 | 5.234 | 5 | 61.995 | 5 | 27.395 | 5 | 0.382 | 5 | 0.168 |
| PL07ML3 7 | 6 | 2.252 | 5 | 3.935 | 6 | * | 5 | 56.118 | 5 | 0.322 | 5 | 0.316 |
| PL07ML2 7 | 5 | 4.040 | 5 | 3.502 | 5 | 37.743 | 5 | * | 5 | 0.569 | 5 | 0.377 |
| PL14ML2 14 | 5 | 3.547 | 5 | 5.365 | 5 | 26.619 | 5 | 35.290 | 5 | 1.107 | 5 | 0.562 |
| PL14ML3 14 | 5 | 1.827 | 5 | 2.887 | 5 | 25.590 | 5 | 35.657 | 5 | 0.156 | 5 | 0.374 |
| PL14ML1 14 | 5 | 2.470 | 5 | 2.390 | 5 | 30.730 | 5 | 28.400 | 5 | 0.377 | 5 | 0.454 |
| PL28ML3 28 | 5 | 2.210 | 5 | 1.503 | 5 | 26.124 | 5 | 14.296 | 5 | 0.222 | 5 | 0.271 |
| PL28ML2 28 | 5 | 4.310 | 5 | 2.893 | 5 | 29.440 | 5 | 16.916 | 5 | 0.340 | 5 | 0.552 |
| PL28ML1 28 | 5 | 4.461 | 5 | 1.269 | 5 | 43.899 | 5 | 22.176 | 5 | 0.349 | 5 | 0.407 |
| PL56ML1 56 | 5 | 3.423 | 5 | 0.945 | 5 | 17.849 | 5 | 21.600 | 5 | 0.220 | 5 | 0.433 |
| PL56ML3 56 | 5 | 2.973 | 5 | 2.602 | 5 | 17.200 | 5 | 12.846 | 5 | 0.270 | 5 | 0.658 |
| PL56ML2 56 | 5 | 1.540 | 5 | 2.054 | 5 | 29.166 | 5 | 24.503 | 5 | 0.198 | 5 | 0.230 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| PH01MM1 1 | 5 | 1.432 | 5 | 1.195 | 5 | 35.548 | 5 | 21.840 | 5 | 0.335 | 5 | 0.518 |
| PH07MM1 7 | 5 | 2.183 | 5 | 3.444 | 5 | 27.300 | 5 | 57.030 | 5 | 0.288 | 5 | 0.365 |
| PH14MM1 14 | 5 | 4.321 | 4 | 4.720 | 5 | 73.228 | 4 | 7.620 | 5 | 0.471 | 5 | 0.407 |
| PH28MM1 28 | 5 | 1.293 | 5 | 2.455 | 5 | 32.816 | 5 | 62.518 | 5 | 0.140 | 5 | 0.131 |
| PH56MM1 56 | 3 | 1.530 | 5 | 5.870 | 3 | 18.100 | 5 | 54.142 | 5 | 0.569 | 5 | 0.360 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| PL01MM3 1 | 5 | 2.472 | 5 | 1.376 | 5 | 43.134 | 5 | 66.880 | 5 | 0.303 | 4 | 0.283 |
| PL01MM2 1 | 5 | 1.137 | 5 | 1.683 | 5 | 24.094 | 5 | 32.617 | 5 | 0.438 | 5 | 0.245 |
| PL01MM1 1 | 5 | 2.193 | 5 | 1.354 | 5 | 42.147 | 5 | 25.772 | 5 | 0.228 | 5 | 0.456 |
| PL07MM1 7 | 5 | 1.700 | 5 | 3.005 | 5 | 48.430 | 5 | 67.490 | 5 | 0.472 | 5 | 0.447 |
| PL07MM2 7 | 5 | 1.932 | 5 | 5.579 | 5 | 16.520 | 5 | 14.728 | 5 | 0.442 | 5 | 0.356 |
| PL07MM3 7 | 5 | 4.330 | 5 | 2.230 | 5 | * | 5 | 42.282 | 5 | 0.718 | 5 | 0.409 |
| PL14MM3 14 | 5 | 2.450 | 5 | 2.080 | 5 | 49.883 | 5 | 25.859 | 5 | 0.217 | 5 | 0.220 |
| PL14MM1 14 | 5 | 4.194 | 5 | 0.846 | 5 | 69.346 | 5 | 27.430 | 5 | 0.642 | 5 | 0.567 |
| PL14MM2 14 | 5 | 4.115 | 5 | 3.460 | 5 | 56.092 | 5 | 74.009 | 5 | 0.227 | 5 | 0.359 |
| PL28MM2 28 | 5 | 5.670 | 5 | 3.963 | 5 | 74.850 | 5 | 65.022 | 5 | 0.310 | 5 | 0.160 |
| PL28MM1 28 | 6 | 4.430 | 4 | 3.750 | 6 | 54.907 | 4 | 69.450 | 5 | 0.132 | 5 | 0.462 |
| PL28MM3 28 | 5 | 1.812 | 5 | 2.456 | 5 | 28.598 | 5 | 46.880 | 5 | 0.214 | 5 | 0.302 |
| PL56MM1 56 | 5 | 4.516 | 5 | 2.516 | 5 | 66.910 | 5 | 52.912 | 5 | 0.247 | 5 | 0.143 |
| PL56MM2 56 | 5 | 3.456 | 5 | 3.353 | 5 | 36.370 | 5 | 12.452 | 5 | 0.228 | 5 | 0.341 |
| PL56MM3 56 | 5 | 3.033 | 5 | 2.027 | 5 | 32.329 | 5 | 12.434 | 5 | 0.298 | 5 | 0.216 |

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| PH010M1 1 | 5 | 2.712 | 5 | 2.500 | 5 | 26.272 | 5 | 35.222 | 5 | 0.434 | 5 | 0.735 |
| PH070M1 7 | 5 | 3.340 | 5 | 1.682 | 5 | 37.012 | 5 | 36.378 | 5 | 0.607 | 5 | 0.559 |
| PH140M1 14 | 5 | 1.712 | 5 | 2.696 | 5 | 20.221 | 5 | 29.548 | 5 | 1.418 | 5 | 1.221 |
| PH280M1 28 | 5 | 3.446 | 5 | 1.078 | 5 | 35.999 | 5 | 21.067 | 5 | 0.300 | 5 | 0.600 |
| PH560M1 56 | 5 | 1.727 | 5 | 2.971 | 5 | 15.360 | 5 | 14.577 | 5 | 0.110 | 5 | 0.623 |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| PL010M3 1 | 5 | 3.070 | 4 | 2.270 | 5 | 41.167 | 4 | 27.570 | 4 | 0.412 | 5 | 0.385 |
| PL010M1 1 | 5 | 2.104 | 5 | 2.021 | 5 | 24.551 | 5 | 25.343 | 5 | 0.522 | 5 | 1.396 |
| PL010M2 1 | 5 | 1.433 | 5 | 0.923 | 5 | 17.030 | 5 | 4.434 | 5 | 0.927 | 5 | 5.043 |
| PL070M2 7 | 5 | 2.568 | 5 | 2.032 | 5 | 32.044 | 5 | 24.152 | 5 | 0.283 | 5 | 0.590 |
| PL070M3 7 | 5 | 1.740 | 5 | 3.439 | 5 | 26.847 | 5 | 33.029 | 5 | 0.415 | 5 | 0.374 |
| PL070M1 7 | 5 | 1.507 | 5 | 2.741 | 5 | 25.577 | 5 | 42.349 | 5 | 0.654 | 5 | 0.390 |
| PL140M1 14 | 5 | 1.210 | 5 | 2.654 | 5 | 13.730 | 5 | 24.102 | 5 | 0.490 | 5 | 2.072 |
| PL140M2 14 | 5 | 1.194 | 5 | 3.232 | 5 | 14.899 | 5 | 25.727 | 5 | 0.716 | 5 | 0.434 |
| PL140M3 14 | 5 | 2.600 | 5 | 1.670 | 5 | 38.900 | 5 | 30.230 | 5 | 0.460 | 5 | 0.297 |
| PL280M2 28 | 5 | 2.960 | 5 | 2.819 | 5 | 28.016 | 5 | 36.034 | 5 | 0.716 | 5 | 0.787 |
| PL280M1 28 | 5 | 2.850 | 5 | 2.850 | 5 | 76.560 | 5 | 76.560 | 5 | 0.200 | 5 | 0.200 |
| PL280M3 28 | 5 | 3.232 | 5 | 2.641 | 5 | 34.025 | 5 | 50.732 | 5 | 0.986 | 5 | 0.792 |
| PL560M2 56 | 5 | 1.667 | 5 | 1.901 | 5 | 26.650 | 5 | 77.658 | 5 | 1.331 | 5 | 0.316 |
| PL560M3 56 | 5 | 7.257 | 5 | 0.984 | 5 | 45.010 | 5 | 50.141 | 5 | 0.518 | 5 | 1.119 |
| PL560M1 56 | 5 | 2.783 | 5 | 2.532 | 5 | 29.337 | 5 | 30.223 | 5 | 0.335 | 5 | 0.329 |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| PH010P1 1 | 5 | 3.260 | 5 | 0.867 | 5 | 39.499 | 5 | 9.367 | 5 | 0.357 | 5 | 0.303 |
| PH070P1 7 | 5 | 1.196 | 5 | 5.000 | 5 | 18.687 | 5 | 52.000 | 5 | 0.220 | 5 | 0.470 |
| PH140P1 14 | 4 | 9.540 | 5 | 3.293 | 4 | 76.500 | 5 | 41.007 | 4 | 0.430 | 4 | 0.210 |
| PH280P1 28 | 5 | 1.824 | 5 | 6.556 | 5 | 27.230 | 5 | 80.902 | 5 | 0.438 | 5 | 0.716 |
| PH560P1 56 | 5 | 6.925 | 5 | 0.776 | 5 | 51.700 | 5 | 12.029 | 5 | 0.648 | 5 | 1.060 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| PL010P1 1 | 5 | 1.585 | 5 | 1.218 | 5 | 21.634 | 5 | 15.599 | 5 | 0.179 | 5 | 0.303 |
| PL010P3 1 | 5 | 2.216 | 5 | 5.190 | 5 | 23.334 | 5 | 53.028 | 5 | 0.297 | 5 | 1.410 |
| PL010P2 1 | 5 | 2.003 | 5 | 2.696 | 5 | 28.962 | 5 | 43.191 | 5 | 1.747 | 5 | 2.173 |
| PL070P2 7 | 5 | 2.352 | 5 | 8.890 | 5 | 26.093 | 5 | * | 5 | 0.607 | 5 | 0.438 |
| PL070P3 7 | 5 | 15.284 | 5 | 1.254 | 5 | * | 5 | 22.190 | 5 | 0.200 | 5 | 1.010 |
| PL070P1 7 | 5 | 2.928 | 5 | 2.995 | 5 | 39.976 | 5 | 35.048 | 5 | 0.110 | 5 | 0.250 |
| PL140P1 14 | 5 | 3.327 | 5 | 4.683 | 5 | 38.280 | 5 | 54.587 | 5 | 0.310 | 5 | 0.110 |
| PL140P2 14 | 5 | 3.171 | 5 | 1.539 | 5 | 36.683 | 5 | 25.403 | 5 | 0.179 | 5 | 0.141 |
| PL140P3 14 | 5 | 3.297 | 5 | 1.925 | 5 | 42.237 | 5 | 23.883 | 5 | 0.616 | 5 | 0.228 |
| PL280P1 28 | 5 | 2.261 | 5 | 3.737 | 5 | 31.234 | 5 | 24.700 | 5 | 1.390 | 5 | 2.660 |
| PL280P2 28 | 5 | 3.357 | 5 | 2.120 | 5 | 26.753 | 5 | 39.810 | 5 | 0.482 | 5 | 2.318 |
| PL280P3 28 | 5 | 4.114 | 5 | 2.718 | 5 | 38.882 | 5 | 17.914 | 5 | 0.283 | 5 | 0.390 |
| PL560P3 55 | 5 | 4.815 | 5 | 2.118 | 5 | 57.897 | 5 | 22.680 | 5 | 0.623 | 5 | 0.522 |
| PL560P2 55 | 5 | 3.158 | 5 | 3.582 | 5 | 38.251 | 5 | 55.829 | 5 | 0.994 | 5 | 0.460 |
| PL560P1 56 | 5 | 2.066 | 5 | 0.912 | 5 | 21.274 | 5 | 6.576 | 5 | 0.469 | 5 | 0.632 |

POLYVINYL CHLORIDE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| PH01PH1 1 | 5 | 2.716 | 5 | 7.236 | 5 | 24.650 | 5 | 55.483 | 5 | 0.215 | 5 | 0.263 |
| PH07PH1 7 | 5 | 4.150 | 5 | 1.450 | 5 | 32.671 | 5 | 14.181 | 5 | 0.194 | 5 | 0.181 |
| PH14PH1 14 | 3 | 1.690 | 4 | 1.428 | 3 | 22.020 | 4 | 9.400 | 5 | 0.298 | 5 | 0.219 |
| PH28PH1 28 | 4 | 0.430 | 4 | 1.331 | 4 | 19.510 | 4 | 20.560 | 5 | 0.247 | 5 | 0.203 |
| PH56PH1 56 | 5 | 5.149 | 5 | 2.328 | 5 | 49.682 | 5 | 26.977 | 5 | 0.870 | 5 | 0.238 |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| PL01PH3 1 | 5 | 3.104 | 5 | 2.303 | 5 | 27.306 | 5 | 22.594 | 5 | 0.572 | 5 | 0.162 |
| PL01PH1 1 | 5 | 1.889 | 5 | 3.151 | 5 | 21.734 | 5 | 30.984 | 5 | 0.170 | 5 | 0.208 |
| PL01PH2 1 | 5 | 4.556 | 5 | 2.468 | 5 | 41.761 | 5 | 22.157 | 5 | 0.261 | 5 | 0.239 |
| PL07PH2 7 | 5 | 2.540 | 5 | 1.110 | 5 | 24.000 | 5 | 15.800 | 5 | 0.280 | 5 | 0.220 |
| PL07PH3 7 | 5 | 3.060 | 5 | 3.210 | 5 | 20.473 | 5 | 28.888 | 5 | 0.265 | 5 | 0.150 |
| PL07PH1 7 | 5 | 5.346 | 5 | 2.609 | 5 | 46.030 | 5 | 21.882 | 5 | 0.139 | 4 | 0.157 |
| PL14PH1 14 | 5 | 6.806 | 5 | 4.688 | 5 | 42.952 | 5 | 38.146 | 5 | 0.224 | 5 | 0.220 |
| PL14PH3 14 | 5 | 1.562 | 5 | 3.866 | 5 | 12.889 | 5 | 27.432 | 5 | 0.375 | 4 | 0.409 |
| PL14PH2 14 | 5 | 4.003 | 5 | 2.019 | 5 | 31.947 | 5 | 12.912 | 5 | 0.380 | 5 | 0.314 |
| PL28PH3 28 | 4 | 0.375 | 5 | 1.995 | 4 | 7.200 | 5 | 18.784 | 5 | 0.101 | 5 | 1.100 |
| PL28PH1 28 | 5 | 4.060 | 5 | 1.808 | 5 | 29.160 | 5 | 20.399 | 5 | 0.387 | 5 | 0.211 |
| PL28PH2 28 | 3 | 4.300 | 5 | 1.676 | 3 | 27.260 | 5 | 17.173 | 5 | 0.277 | 5 | 0.443 |
| PL56PH1 56 | 4 | 2.750 | 4 | 1.230 | 4 | 24.160 | 4 | 20.890 | 5 | 0.407 | 5 | 0.522 |
| PL56PH2 56 | 3 | 4.880 | 4 | 2.330 | 3 | 37.120 | 4 | 26.280 | 5 | 0.304 | 5 | 0.421 |
| PL56PH3 56 | 3 | 2.470 | 4 | 1.930 | 3 | 30.390 | 4 | 21.370 | 5 | 0.476 | 5 | 0.446 |
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| PH01PL1 1 | 5 | 10.052 | 5 | 1.504 | 5 | 75.648 | 5 | 10.754 | 5 | 0.109 | 5 | 0.171 |
| PH07PL1 7 | 5 | 2.720 | 5 | 2.980 | 5 | 20.760 | 5 | 25.050 | 5 | 0.251 | 5 | 0.380 |
| PH14PL1 14 | 5 | 1.889 | 5 | 0.804 | 5 | 18.998 | 5 | 10.232 | 5 | 0.329 | 5 | 0.249 |
| PH28PL1 28 | 4 | 3.090 | 5 | 1.374 | 4 | 33.630 | 5 | 14.733 | 5 | 0.293 | 5 | 0.254 |
| PH56PL1 56 | 5 | 0.331 | 5 | 1.664 | 5 | 23.209 | 5 | 13.386 | 5 | 0.256 | 5 | 0.478 |
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| PL01PL1 1 | 5 | 2.670 | 5 | 2.400 | 5 | 18.744 | 5 | 11.350 | 5 | 0.699 | 5 | 0.213 |
| PL01PL3 1 | 5 | 2.607 | 5 | 3.246 | 5 | 14.094 | 5 | 30.813 | 5 | 0.471 | 5 | 0.234 |
| PL01PL2 1 | 5 | 6.229 | 5 | 0.608 | 5 | 54.547 | 5 | 7.087 | 5 | 0.490 | 5 | 0.866 |
| PL07PL2 7 | 5 | 2.220 | 5 | 9.860 | 5 | 18.916 | 5 | 85.673 | 5 | 0.225 | 5 | 0.373 |
| PL07PL1 7 | 5 | 3.520 | 5 | 3.720 | 5 | 27.370 | 5 | 31.410 | 5 | 1.581 | 5 | 0.741 |
| PL07PL3 7 | 5 | 2.500 | 5 | 0.660 | 5 | 23.760 | 5 | 6.886 | 5 | 0.250 | 4 | 0.420 |
| PL14PL2 14 | 5 | 0.978 | 5 | 1.870 | 5 | 7.540 | 5 | 12.650 | 5 | 0.145 | 5 | 0.486 |
| PL14PL1 14 | 5 | 3.045 | 5 | 1.954 | 5 | 27.099 | 5 | 17.775 | 5 | 0.203 | 5 | 0.504 |
| PL14PL3 14 | 5 | 1.537 | 5 | 1.662 | 5 | 11.508 | 5 | 13.877 | 5 | 0.160 | 5 | 0.350 |
| PL28PL2 28 | 5 | 1.823 | 5 | 1.588 | 5 | 17.259 | 5 | 23.933 | 5 | 0.247 | 5 | 0.188 |
| PL28PL3 28 | 5 | 5.422 | 5 | 2.870 | 5 | 50.074 | 5 | 33.907 | 5 | 0.247 | 5 | 0.185 |
| PL28PL1 28 | 5 | 4.603 | 5 | 0.779 | 5 | 34.976 | 5 | 40.688 | 5 | 0.269 | 5 | 0.348 |

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| PL56PL3 56 | 5 | 2.858 | 5 | 3.065 | 5 | 20.848 | 5 | 23.440 | 5 | 0.155 | 5 | 0.276 |
| PL56PL1 56 | 5 | 3.370 | 5 | 0.995 | 5 | 33.360 | 5 | 21.673 | 5 | 0.293 | 5 | 0.537 |
| PL56PL2 56 | 5 | 2.777 | 5 | 2.195 | 5 | 16.045 | 5 | 19.014 | 5 | 0.411 | 5 | 0.177 |
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| PH01PM1 1 | 5 | 5.065 | 5 | 2.366 | 5 | 40.501 | 5 | 21.708 | 5 | 0.319 | 5 | 0.149 |
| PH07PM1 7 | 5 | 1.590 | 5 | 1.210 | 5 | 12.330 | 5 | 10.140 | 5 | 0.144 | 5 | 0.159 |
| PH14PM1 14 | 5 | 4.364 | 5 | 2.125 | 5 | 31.599 | 5 | 16.598 | 5 | 0.211 | 5 | 0.273 |
| PH28PM1 28 | 5 | 5.737 | 5 | 1.722 | 5 | 49.173 | 5 | 20.954 | 5 | 0.444 | 5 | 0.268 |
| PH56PM1 56 | 5 | 1.053 | 5 | 2.864 | 5 | 19.041 | 5 | 17.736 | 5 | 0.363 | 5 | 0.290 |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| PL01PM1 1 | 5 | 1.849 | 5 | 2.377 | 5 | 14.654 | 5 | 21.607 | 5 | 0.261 | 5 | 0.207 |
| PL01PM2 1 | 5 | 1.846 | 5 | 1.579 | 5 | 18.390 | 5 | 12.572 | 5 | 1.580 | 5 | 0.221 |
| PL01PM3 1 | 5 | 2.396 | 5 | 1.580 | 5 | 15.196 | 5 | 13.664 | 5 | 0.170 | 5 | 0.338 |
| PL07PM1 7 | 5 | 2.320 | 5 | 3.320 | 5 | 18.286 | 5 | 29.350 | 5 | 0.522 | 5 | 0.429 |
| PL07PM3 7 | 5 | 4.525 | 5 | 2.030 | 5 | 35.159 | 5 | 22.120 | 5 | 0.466 | 5 | 0.115 |
| PL07PM2 7 | 5 | 3.493 | 5 | 2.030 | 5 | 33.480 | 5 | 15.500 | 5 | 0.144 | 5 | 0.256 |
| PL14PM2 14 | 5 | 3.242 | 5 | 2.406 | 5 | 26.233 | 5 | 23.584 | 5 | 0.295 | 5 | 0.201 |
| PL14PM1 14 | 5 | 1.180 | 5 | 3.733 | 5 | 16.502 | 5 | 31.265 | 5 | 0.483 | 5 | 0.449 |
| PL14PM3 14 | 5 | 5.053 | 5 | 3.624 | 5 | 42.383 | 5 | 25.363 | 5 | 0.210 | 5 | 0.153 |
| PL28PM2 28 | 5 | 1.771 | 5 | 2.366 | 5 | 18.862 | 5 | 16.250 | 5 | 0.129 | 5 | 0.346 |
| PL28PM3 28 | 5 | 5.215 | 5 | 3.785 | 5 | 48.837 | 5 | 28.025 | 5 | 0.443 | 5 | 0.264 |
| PL28PM1 28 | 5 | 3.858 | 5 | 2.420 | 5 | 31.723 | 5 | 21.966 | 5 | 0.189 | 5 | 0.159 |
| PL56PM3 56 | 5 | 9.352 | 5 | 1.933 | 5 | 54.920 | 5 | 36.052 | 5 | 0.571 | 5 | 0.295 |
| PL56PM2 56 | 5 | 5.988 | 5 | 3.556 | 5 | 59.672 | 5 | 18.292 | 5 | 0.335 | 5 | 0.326 |
| PL56PM1 56 | 5 | 2.456 | 5 | 2.613 | 5 | 33.156 | 5 | 17.556 | 5 | 0.268 | 5 | 0.335 |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| PH01SH1 1 | 5 | 4.175 | 5 | 5.383 | 5 | 39.659 | 5 | 39.329 | 5 | 0.228 | 5 | 0.303 |
| PH07SH1 7 | 5 | 5.391 | 4 | 2.160 | 5 | 78.490 | 4 | 23.450 | 5 | 0.475 | 5 | 0.187 |
| PH14SH1 14 | * | * | * | * | * | * | * | * | 10 | 0.358 | 9 | 0.524 |
| PH28SH1 28 | 5 | 3.189 | 5 | 1.808 | 5 | 31.391 | 5 | 13.399 | 10 | 0.274 | 10 | 0.403 |
| PH56SH1 56 | 5 | 4.091 | 5 | 1.808 | 5 | 52.450 | 5 | 15.251 | 10 | 0.457 | 10 | 0.267 |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| PL01SH1 1 | 5 | 1.851 | 5 | 1.367 | 5 | 21.590 | 5 | 17 482 | 5 | 0.245 | 5 | 0.261 |
| PL01SH2 1 | 5 | 2.308 | 5 | 1.702 | 5 | 47.527 | 5 | 20.899 | 5 | 0.280 | 5 | 0.170 |
| PL01SH3 1 | 5 | 3.051 | 5 | 1.591 | 5 | 22.608 | 5 | 22.358 | 5 | 0.350 | 5 | 0.040 |
| PL07SH1 7 | 5 | 2.629 | 5 | 3.472 | 5 | 26.120 | 5 | 18.300 | 5 | 0.200 | 5 | 0.260 |
| PL07SH3 7 | 5 | 4.308 | 5 | 2.223 | 5 | 90.277 | 5 | 24.797 | 5 | 0.340 | 5 | 0.340 |
| PL07SH2 7 | 5 | 1.226 | 5 | 3.267 | 5 | 24.500 | 5 | 40.611 | 5 | 0.299 | 5 | 0.498 |
| PL14SH3 14 | 5 | 4.942 | 5 | 0.971 | 5 | 66.915 | 5 | 13.573 | 8 | 0.370 | 9 | 0.273 |
| PL14SH2 14 | 5 | 2.048 | * | * | 5 | 25.993 | * | * | 10 | 0.346 | 8 | 0.466 |

POLYVINYL CHLORIDE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| PL14SH1 14 | * | * | * | * | * | * | * | * | 10 | 0.820 | 10 | 0.545 |
| PL28SH2 28 | 5 | 1.704 | 5 | 1.883 | 5 | 20.267 | 5 | 1.930 | 10 | 0.327 | 10 | 0.302 |
| PL28SH3 28 | 5 | 2.216 | 5 | 2.792 | 5 | 17.252 | 5 | 29.143 | 10 | 0.271 | 10 | 0.437 |
| PL28SH1 28 | 5 | 5.606 | 5 | 1.191 | 5 | 58.720 | 5 | 13.252 | 10 | 0.523 | 10 | 0.298 |
| PL56SH3 56 | 5 | 4.470 | 4 | 6.780 | 5 | 20.300 | 4 | 34.560 | 5 | 0.400 | 5 | 0.360 |
| PL56SH2 56 | 5 | 1.785 | 5 | 1.706 | 5 | 25.419 | 5 | 19.026 | 5 | 0.440 | 5 | 0.580 |
| PL56SH1 56 | 5 | 2.003 | 5 | 0.658 | 5 | 19.903 | 5 | 13.627 | 9 | 0.316 | 10 | 0.405 |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| PH01SM1 1 | 5 | 4.740 | 5 | 1.643 | 5 | 45.334 | 5 | 22.514 | 5 | 0.460 | 5 | 0.316 |
| PH07SM1 7 | 5 | 1.819 | 5 | 1.710 | 5 | 33.585 | 5 | 19.540 | 5 | 0.415 | 5 | 0.219 |
| PH14SM1 14 | 5 | 1.630 | 5 | 1.250 | 5 | 20.810 | 5 | 13.560 | 5 | 0.300 | 5 | 0.430 |
| PH28SM1 28 | 5 | 1.931 | 5 | 1.530 | 5 | 17.370 | 5 | 25.110 | 5 | 0.390 | 5 | 0.261 |
| PH56SM1 61 | 5 | 3.260 | 5 | 1.940 | 5 | 21.240 | 5 | 25.900 | 5 | 0.360 | 5 | 0.261 |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| PL01SM1 1 | 5 | 1.370 | 5 | 2.360 | 5 | 13.360 | 5 | 41.530 | 5 | 0.360 | 5 | 0.350 |
| PL01SM3 1 | 5 | 1.990 | 5 | 2.400 | 5 | 23.870 | 5 | 16.590 | 5 | 0.230 | 5 | 0.180 |
| PL01SM2 1 | 5 | 2.280 | 5 | 3.040 | 5 | 23.470 | 5 | 38.770 | 5 | 0.385 | 5 | 0.261 |
| PL07SM1 7 | 5 | 1.680 | 5 | 0.480 | 5 | 30.820 | 5 | 16.150 | 5 | 1.510 | 5 | 0.180 |
| PL07SM3 7 | 5 | 3.030 | 5 | 1.730 | 5 | 46.290 | 5 | 36.810 | 5 | 0.440 | 5 | 0.360 |
| PL07SM2 7 | 5 | 5.910 | 5 | 0.865 | 5 | 61.880 | 5 | 10.920 | 5 | 0.701 | 5 | 0.400 |
| PL14SM1 14 | 5 | 1.950 | 5 | 1.960 | 5 | 20.500 | 5 | 22.300 | 5 | 0.370 | 5 | 0.490 |
| PL14SM3 15 | 5 | 3.940 | 5 | 1.352 | 5 | 48.550 | 5 | 13.409 | 10 | 0.470 | 10 | 0.440 |
| PL14SM2 15 | 5 | 2.870 | 5 | 1.213 | 5 | 25.900 | 5 | 5.561 | 10 | 0.620 | 10 | 0.501 |
| PL28SM3 28 | 5 | 2.780 | 5 | 1.460 | 5 | 33.700 | 5 | 14.380 | 5 | 0.297 | 5 | 0.360 |
| PL28SM2 28 | 5 | 1.770 | 5 | 2.892 | 5 | 18.960 | 5 | 18.322 | 5 | 0.385 | 5 | 0.460 |
| PL28SM1 28 | 5 | 1.510 | 5 | 0.433 | 5 | 29.080 | 5 | 35.190 | 5 | 0.167 | 5 | 0.283 |
| PL56SM3 56 | 4 | 3.340 | 5 | 1.126 | 4 | 31.100 | 5 | 14.670 | 5 | 0.228 | 5 | 0.416 |
| PL56SM2 56 | 5 | 4.060 | 5 | 1.820 | 5 | 30.770 | 5 | 12.480 | 5 | 0.230 | 5 | 0.360 |
| PL56SM1 61 | 5 | 3.337 | 5 | 5.626 | 5 | 49.930 | 5 | 55.850 | 5 | 0.540 | 5 | 0.790 |
| WATER 100.0% 50°C | | | | | | | | | | | | |
| PH01WP1 1 | 5 | 3.683 | 5 | 1.440 | 5 | 30.329 | 5 | 15.971 | 5 | 0.329 | 5 | 0.316 |
| PH07WP1 7 | 5 | 1.798 | 5 | 1.990 | 5 | 10.465 | 5 | 16.750 | 5 | 0.460 | 5 | 0.240 |
| PH14WP1 14 | 5 | 7.100 | 5 | 1.730 | 5 | 97.600 | 5 | 14.700 | 5 | 0.540 | 5 | 0.335 |
| PH28WP1 28 | 5 | 7.394 | 5 | 2.182 | 5 | 72.510 | 5 | 19.990 | 5 | 0.228 | 5 | 0.167 |
| PH56WP1 56 | 5 | 2.403 | 5 | 4.360 | 5 | * | 5 | 43.180 | 5 | 0.735 | 5 | 0.358 |
| WATER 100.0% 23°C | | | | | | | | | | | | |
| PL01WP1 1 | 5 | 3.380 | 5 | 0.817 | 5 | 5.370 | 5 | 5.840 | 5 | 0.261 | 5 | 0.555 |
| PL01WP2 1 | 5 | 1.660 | 5 | 3.140 | 5 | 5.290 | 5 | 5.240 | 5 | 0.424 | 5 | 0.415 |
| PL01WP3 1 | 5 | 2.013 | 5 | 3.060 | 5 | 5.583 | 5 | 5.410 | 5 | 0.110 | 5 | 0.167 |
| PL07WP1 7 | 5 | 2.010 | 5 | 0.520 | 5 | 24.000 | 5 | 2.320 | 5 | 0.089 | 5 | 0.415 |

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 23°C | | | | | | | | | | | | |
| PL07WP3 7 | 5 | 2.360 | 5 | 2.480 | 5 | 17.890 | 5 | 98.120 | 5 | 0.660 | 5 | 0.385 |
| PL07WP2 7 | 5 | 4.060 | 5 | 1.280 | 5 | 41.620 | 5 | 6.450 | 5 | 0.415 | 5 | 0.140 |
| PL14WP3 14 | 5 | 1.750 | 5 | 3.350 | 5 | 18.550 | 5 | 41.510 | 5 | 0.245 | 5 | 0.245 |
| PL14WP1 14 | 5 | 3.769 | 5 | 2.650 | 5 | 24.977 | 5 | 29.500 | 5 | 0.522 | 5 | 0.385 |
| PL14WP2 14 | 5 | 1.630 | 5 | 1.350 | 5 | 17.330 | 5 | 18.360 | 5 | 0.415 | 5 | 0.200 |
| PL28WP2 28 | 5 | 4.980 | 5 | 1.500 | 5 | 50.100 | 5 | 39.960 | 5 | 0.550 | 5 | 0.450 |
| PL28WP3 28 | 5 | 3.500 | 5 | 0.450 | 5 | 88.280 | 5 | 23.780 | 5 | 1.500 | 5 | 0.450 |
| PL28WP1 28 | 5 | 2.774 | 5 | 1.929 | 5 | 26.728 | 5 | 25.727 | 5 | 0.792 | 5 | 0.498 |
| PL56WP1 56 | 5 | 2.900 | 5 | 3.110 | 5 | 44.200 | 5 | 25.160 | 5 | 0.573 | 5 | 0.170 |
| PL56WP2 56 | 5 | 1.570 | 5 | 3.860 | 5 | 13.710 | 5 | 25.020 | 10 | 0.283 | 10 | 0.300 |
| PL56WP3 56 | 5 | 4.090 | 5 | 0.720 | 5 | 30.910 | 5 | 39.700 | 10 | 0.440 | 9 | 0.430 |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| PH01XM1 1 | 2 | 0.280 | 5 | 2.230 | 2 | 18.500 | 5 | 22.070 | 4 | 0.570 | 8 | 0.380 |
| PH07XM1 7 | 5 | 2.440 | 5 | 0.740 | 5 | 23.490 | 5 | 20.940 | 10 | 0.401 | 10 | 0.310 |
| PH14XM1 14 | 5 | 3.730 | 5 | 3.080 | 5 | 26.180 | 5 | 33.000 | 10 | 0.650 | 10 | 0.430 |
| PH28XM1 28 | 5 | 1.210 | 5 | 1.920 | 5 | 10.940 | 5 | 29.210 | 10 | 0.793 | 10 | 0.501 |
| PH56XM1 56 | 5 | 2.800 | 5 | 1.460 | 5 | 20.720 | 5 | 22.800 | 8 | 0.614 | 6 | 0.303 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| PL01XM3 1 | 5 | 2.910 | 5 | 3.240 | 5 | 38.920 | 5 | 48.390 | 10 | 0.710 | 10 | 0.721 |
| PL01XM2 1 | 5 | 1.770 | 5 | 3.120 | 5 | 8.250 | 5 | 33.510 | 10 | 0.530 | 10 | 0.464 |
| PL01XM1 1 | 5 | 2.960 | 5 | 2.101 | 5 | 48.360 | 5 | 33.390 | 9 | 0.561 | 10 | 0.690 |
| PL07XM3 7 | 5 | 1.433 | 5 | 0.841 | 5 | 13.614 | 5 | 11.992 | 10 | 0.518 | 10 | 2.670 |
| PL07XM1 7 | 5 | 2.455 | 5 | 1.671 | 5 | 42.518 | 5 | 24.328 | 10 | 0.519 | 10 | 0.415 |
| PL07XM2 7 | 5 | 3.565 | 5 | 1.895 | 5 | 37.153 | 5 | 16.122 | 10 | 0.358 | 10 | 0.583 |
| PL14XM1 14 | 5 | 1.942 | 5 | 2.904 | 5 | 8.442 | 5 | 25.527 | 10 | 0.479 | 10 | 0.755 |
| PL14XM3 14 | 5 | 0.585 | 5 | 5.430 | 5 | 96.200 | 5 | 34.920 | 10 | 0.341 | 10 | 0.379 |
| PL14XM2 14 | 5 | 0.887 | 5 | 3.030 | 5 | 11.270 | 5 | 32.130 | 10 | 0.358 | 9 | 0.350 |
| PL28XM2 28 | 5 | 1.760 | 5 | 2.840 | 5 | 29.500 | 5 | 33.680 | 10 | 0.300 | 10 | 0.420 |
| PL28XM1 28 | 5 | 3.600 | 5 | 2.150 | 5 | 35.600 | 5 | 29.960 | 10 | 0.330 | 10 | 0.340 |
| PL28XM3 28 | 5 | 2.530 | 5 | 1.501 | 5 | 40.380 | 5 | 25.560 | 10 | 0.405 | 10 | 0.780 |
| PL56XM3 56 | 5 | 2.780 | 5 | 2.320 | 5 | 30.570 | 5 | 20.000 | 10 | 0.220 | 10 | 0.231 |
| PL56XM2 56 | 5 | 2.590 | 5 | 3.110 | 5 | 28.899 | 5 | 52.310 | 10 | 0.391 | 10 | 0.366 |
| PL56XM1 56 | 5 | 1.580 | 5 | 2.580 | 5 | 30.820 | 5 | 25.840 | 8 | 0.141 | 10 | 0.481 |

# PVC : RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | |
| PH01AM1 1 | 1.0 | 2.3 | 2.4 | 99 | 93 | 100 | 92 | 95 | 94 | 98 | 90 |
| PH07AM1 7 | 2.4 | 1.6 | 3.3 | 86 | 87 | 96 | 89 | 107 | 101 | 101 | 99 |
| PH14AM1 14 | 5.1 | 2.9 | 7.3 | 99 | 102 | 101 | 99 | 101 | 101 | 107 | 104 |
| PH99AM1 28 | 5.1 | 3.8 | 7.2 | * | * | * | * | * | * | * | * |
| PH28AM1 29 | 5.9 | 3.4 | 9.2 | 109 | 116 | 101 | 97 | 82 | 74 | 114 | 116 |
| PH56AM1 56 | 8.5 | 7.0 | 15.7 | 101 | 105 | 100 | 95 | 91 | 83 | 101 | 101 |
| PH99AM2 144 | 15.0 | 8.2 | 20.6 | * | * | * | * | * | * | * | * |
| PH99AM3 252 | 22.9 | 11.7 | 31.9 | * | * | * | * | * | * | * | * |
| PH99AM4 368 | 25.9 | 12.3 | 33.7 | * | * | * | * | * | * | * | * |
| PH99AM5 511 | 30.7 | 13.0 | 36.3 | * | * | * | * | * | * | * | * |
| PH99AM6 621 | 32.3 | 13.6 | 39.5 | * | * | * | * | * | * | * | * |
| PH99AM7 733 | 34.0 | 14.9 | 43.5 | 122 | * | 101 | * | 88 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | |
| PL01AM2 1 | .3 | 1.3 | 1.9 | 93 | 89 | 96 | 95 | 94 | 102 | 96 | 94 |
| PL01AM1 1 | .3 | .3 | .2 | 90 | 92 | 89 | 92 | 83 | 93 | 95 | 92 |
| PL01AM3 1 | .4 | .3 | * | 92 | 95 | 95 | 95 | 93 | 99 | 94 | 94 |
| PL07AM1 7 | .5 | .6 | .6 | 83 | 83 | 90 | 91 | 96 | 101 | 104 | 94 |
| PL07AM3 7 | .6 | .3 | * | 84 | 83 | 94 | 92 | 102 | 105 | 108 | 99 |
| PL07AM2 7 | .6 | * | .6 | 84 | 89 | 94 | 90 | 98 | 95 | 99 | 104 |
| PL14AM3 14 | 1.4 | .6 | .9 | 95 | 101 | 99 | 100 | 95 | 104 | 106 | 103 |
| PL14AM1 14 | 1.1 | 1.3 | 1.8 | 98 | 97 | 104 | 96 | 108 | 98 | 110 | 102 |
| PL14AM2 14 | 1.1 | .9 | 1.1 | 97 | 96 | 103 | 100 | 107 | 105 | 107 | 109 |
| PL99AM1 28 | .4 | * | .2 | * | * | * | * | * | * | * | * |
| PL28AM1 29 | .7 | .6 | 1.0 | 102 | 102 | 106 | 98 | 96 | 94 | 105 | 94 |
| PL28AM2 29 | 1.1 | 1.0 | 1.9 | 99 | 103 | 105 | 98 | 103 | 89 | 98 | 102 |
| PL28AM3 29 | .9 | 1.3 | 2.0 | 102 | 102 | 103 | 97 | 95 | 91 | 102 | 94 |
| PL56AM1 56 | .9 | 1.9 | 3.1 | 97 | 94 | 103 | 97 | 96 | 95 | 106 | 107 |
| PL56AM3 56 | .4 | 2.2 | 3.0 | 102 | 98 | 105 | 97 | 96 | 91 | 107 | 103 |
| PL56AM2 56 | 1.0 | 2.2 | 3.2 | 104 | 95 | 101 | 97 | 87 | 96 | 107 | 102 |
| PL99AM2 144 | 1.4 | .6 | 1.3 | * | * | * | * | * | * | * | * |
| PL99AM3 238 | 1.8 | .9 | 3.2 | * | * | * | * | * | * | * | * |
| PL99AM4 368 | 2.3 | 1.9 | 3.8 | * | * | * | * | * | * | * | * |
| PL99AM5 538 | 3.2 | .9 | 3.0 | * | * | * | * | * | * | * | * |
| PL99AM6 621 | 3.5 | 1.6 | 4.5 | * | * | * | * | * | * | * | * |
| PL99AM7 735 | 4.0 | 2.5 | 5.7 | 100 | * | 102 | * | 98 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | |
| PH01BM1 1 | .6 | * | .1 | 79 | 100 | 92 | 107 | 114 | 109 | 102 | 109 |
| PH07BM1 7 | 9.4 | .6 | 8.4 | 117 | 137 | 107 | 106 | 107 | 108 | 135 | 140 |
| PH14BM1 14 | 11.0 | 2.2 | 11.3 | 141 | 151 | 105 | 105 | 89 | 84 | 217 | 205 |
| PH28BM1 28 | 15.0 | 3.8 | 16.8 | 158 | 169 | 110 | 120 | 63 | 64 | 215 | 225 |
| PH99BM1 29 | 100.0 | 1.9 | 12.5 | * | * | * | * | * | * | * | * |
| PH56BM1 56 | 16.8 | 1.6 | 16.0 | 167 | 170 | 125 | 126 | 93 | 87 | 292 | 282 |
| PH99BM2 144 | 19.5 | 4.8 | 12.5 | * | * | * | * | * | * | * | * |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | |
| PH99BM3 252 | 20.1 | 6.7 | 23.3 | * | * | * | * | * | * | * | * |
| PH99BM4 368 | 20.7 | 6.1 | 23.6 | * | * | * | * | * | * | * | * |
| PH99BM5 510 | 20.4 | 7.3 | 25.3 | * | * | * | * | * | * | * | * |
| PH99BM6 622 | 22.2 | 13.4 | 9.0 | * | * | * | * | * | * | * | * |
| PH99BM7 733 | 22.7 | 5.1 | 24.2 | * | * | 139 | * | 2 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | |
| PL01BM3 1 | .2 | * | .3 | 83 | 85 | 101 | 97 | 113 | 117 | 106 | 107 |
| PL01BM1 1 | * | .3 | .3 | 87 | 97 | 94 | 102 | 111 | 100 | 96 | 101 |
| PL01BM2 1 | .1 | .3 | .1 | 83 | 85 | 102 | 95 | 117 | 109 | 108 | 108 |
| PL07BM3 7 | .4 | * | .1 | 94 | 98 | 103 | 100 | 109 | 112 | 104 | 101 |
| PL07BM2 7 | .4 | * | .2 | 97 | 97 | 104 | 101 | 111 | 115 | 104 | 100 |
| PL07BM1 7 | .4 | .3 | * | 89 | 87 | 107 | 98 | 129 | 123 | 100 | 97 |
| PL14BM2 14 | .8 | * | .7 | 78 | 79 | 99 | 93 | 119 | 118 | 96 | 95 |
| PL14BM1 14 | .6 | .6 | 1.1 | 100 | 95 | 101 | 98 | 95 | 102 | 110 | 100 |
| PL14BM3 14 | .9 | .3 | 1.5 | 81 | 77 | 98 | 91 | 112 | 113 | 99 | 92 |
| PL28BM2 28 | 2.4 | * | 1.5 | 79 | 105 | 90 | 108 | 107 | 106 | 104 | 110 |
| PL99BM1 28 | 1.3 | .3 | 1.1 | * | * | * | * | * | * | * | * |
| PL28BM1 28 | 2.2 | * | 1.9 | 93 | 95 | 100 | 96 | 104 | 107 | 108 | 102 |
| PL28BM3 32 | 2.6 | * | 1.5 | 82 | 109 | 91 | 108 | 108 | 103 | 107 | 111 |
| PL56BM3 56 | 8.4 | 1.0 | 8.1 | 133 | 136 | 110 | 105 | 107 | 101 | 156 | 159 |
| PL56BM1 56 | 7.7 | 1.3 | 8.0 | 120 | 128 | 105 | 104 | 97 | 105 | 143 | 157 |
| PL56BM2 56 | 9.0 | 1.3 | 8.2 | 120 | 139 | 102 | 105 | 106 | 96 | 150 | 147 |
| PL99BM2 144 | 13.4 | 1.6 | 12.1 | * | * | * | * | * | * | * | * |
| PL99BM3 238 | 16.6 | 3.5 | 9.6 | * | * | * | * | * | * | * | * |
| PL99BM4 368 | 17.6 | 4.1 | 16.7 | * | * | * | * | * | * | * | * |
| PL99BM5 510 | 18.0 | 7.6 | 21.1 | * | * | * | * | * | * | * | * |
| PL99BM6 622 | 18.9 | .9 | 15.8 | * | * | * | * | * | * | * | * |
| PL99BM7 735 | 19.1 | 2.5 | 17.5 | 172 | * | 155 | * | 29 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | |
| PH01DH1 1 | 18.8 | 5.4 | 13.1 | 41 | 43 | 71 | 72 | 111 | 116 | 63 | 58 |
| PH07DH1 7 | 14.6 | 5.8 | 16.6 | 44 | 50 | 64 | 72 | 102 | 115 | 83 | 77 |
| PH14DH1 14 | 11.9 | 5.4 | 11.1 | 57 | 66 | 79 | 80 | 112 | 104 | 61 | 57 |
| PH99DH1 28 | 16.8 | 2.5 | 5.5 | * | * | * | * | * | * | * | * |
| PH28DH1 29 | 17.0 | 5.1 | 11.8 | 45 | 48 | 71 | 69 | 112 | 110 | 69 | 60 |
| PH56DH1 56 | 6.8 | 4.2 | 5.8 | 62 | 64 | 81 | 81 | 104 | 107 | 85 | 85 |
| PH99DH2 133 | 3.1 | 1.6 | 2.7 | * | * | * | * | * | * | * | * |
| PH99DH3 244 | 20.5 | 3.2 | 6.5 | * | * | * | * | * | * | * | * |
| PH99DH4 364 | 6.6 | 3.5 | 6.4 | * | * | * | * | * | * | * | * |
| PH99DH5 495 | 8.2 | 3.8 | 8.0 | * | * | * | * | * | * | * | * |
| PH99DH6 629 | .5 | * | .3 | * | * | * | * | * | * | * | * |
| PH99DH7 726 | 14.3 | 5.0 | 11.6 | 69 | * | 74 | * | 83 | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | |
| PL01DH3 1 | 13.3 | 4.1 | 10.5 | 52 | 54 | 77 | 78 | 114 | 110 | 61 | 56 |
| PL01DH2 1 | 14.0 | 3.8 | 9.8 | 38 | 42 | 67 | 72 | 113 | 118 | 63 | 57 |
| PL01DH1 1 | 12.7 | 3.2 | 9.0 | 51 | 50 | 80 | 78 | 113 | 114 | 69 | 64 |
| PL07DH1 7 | 10.5 | 4.1 | 9.7 | 38 | 41 | 69 | 70 | 119 | 120 | 88 | 83 |
| PL07DH2 7 | 7.1 | 2.5 | 7.0 | 52 | 54 | 71 | 77 | 106 | 114 | 69 | 63 |
| PL07DH3 7 | 13.9 | 3.2 | 8.5 | 41 | 43 | 66 | 70 | 113 | 120 | 75 | 69 |
| PL14DH2 14 | 13.1 | 4.1 | 9.0 | 67 | 74 | 86 | 90 | 112 | 107 | 65 | 66 |
| PL14DH1 14 | 15.9 | 4.5 | 12.8 | 56 | 50 | 79 | 74 | 109 | 114 | 61 | 55 |
| PL14DH3 14 | 11.7 | 2.9 | 6.1 | 62 | 64 | 84 | 82 | 109 | 111 | 67 | 75 |
| PL28DH2 28 | 18.2 | 4.2 | 12.6 | * | * | * | * | * | * | 72 | 71 |
| PL28DH3 28 | 10.7 | 3.5 | 8.3 | * | * | * | * | * | * | 69 | 61 |
| PL99DH1 28 | 5.7 | 1.6 | 5.2 | * | * | * | * | * | * | * | * |
| PL28DH1 29 | 15.0 | 4.8 | 13.4 | 51 | 47 | 73 | 70 | 110 | 114 | 58 | 54 |
| PL56DH1 56 | 8.5 | 3.5 | 6.7 | 43 | 44 | 69 | 67 | 108 | 105 | 66 | 63 |
| PL56DH2 56 | 11.6 | 3.5 | 7.9 | 63 | 66 | 77 | 75 | 103 | 101 | 86 | 80 |
| PL56DH3 56 | 13.1 | 4.1 | 9.5 | 66 | 63 | 81 | 75 | 107 | 104 | 94 | 87 |
| PL99DH2 134 | 10.9 | 1.6 | 5.7 | * | * | * | * | * | * | * | * |
| PL99DH3 231 | 8.7 | 2.9 | 12.0 | * | * | * | * | * | * | * | * |
| PL99DH4 364 | 9.6 | 2.6 | 8.5 | * | * | * | * | * | * | * | * |
| PL99DH5 495 | 5.5 | 1.3 | 3.5 | * | * | * | * | * | * | * | * |
| PL99DH6 630 | 13.1 | 5.8 | 11.9 | * | * | * | * | * | * | * | * |
| PL99DH7 728 | 13.7 | 3.5 | 9.5 | 53 | * | 78 | * | 120 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | |
| PH01DL1 1 | 2.0 | 1.9 | 1.8 | 71 | 72 | 90 | 89 | 106 | 109 | 91 | 88 |
| PH07DL1 7 | 2.1 | 1.9 | 2.9 | 74 | 78 | 92 | 90 | 111 | 109 | 95 | 89 |
| PH14DL1 14 | 3.1 | 1.9 | 2.1 | 70 | 73 | 89 | 88 | 110 | 111 | 87 | 80 |
| PH99DL1 28 | 2.4 | 2.5 | 3.0 | * | * | * | * | * | * | * | * |
| PH28DL1 29 | 2.9 | 2.3 | 2.3 | 68 | 69 | 87 | 86 | 112 | 114 | 86 | 88 |
| PH56DL1 56 | 4.1 | 2.5 | 4.2 | 60 | 64 | 78 | 79 | 105 | 106 | 82 | 82 |
| PH99DL2 139 | 2.5 | 1.6 | 2.3 | * | * | * | * | * | * | * | * |
| PH99DL3 246 | 3.7 | 1.9 | 3.5 | * | * | * | * | * | * | * | * |
| PH99DL4 366 | 2.9 | 2.2 | 3.7 | * | * | * | * | * | * | * | * |
| PH99DL5 496 | 2.9 | 1.6 | 2.8 | * | * | * | * | * | * | * | * |
| PH99DL6 631 | 2.9 | 1.9 | 3.1 | * | * | * | * | * | * | * | * |
| PH99DL7 728 | 3.0 | 2.2 | 3.9 | 101 | * | 99 | * | 108 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | |
| PL01DL3 1 | 1.8 | .3 | 1.0 | 76 | 76 | 97 | 93 | 115 | 117 | 93 | 87 |
| PL01DL2 1 | 1.6 | .6 | 1.4 | 65 | 65 | 92 | 89 | 115 | 120 | 90 | 77 |
| PL01DL1 1 | 1.8 | .3 | 1.0 | 70 | 70 | 92 | 89 | 109 | 111 | 96 | 83 |
| PL07DL1 7 | 2.6 | 1.3 | 2.4 | 70 | 68 | 91 | 88 | 110 | 116 | 89 | 83 |
| PL07DL2 7 | 3.0 | 1.0 | 2.4 | 64 | 62 | 87 | 86 | 116 | 122 | 85 | 83 |
| PL07DL3 7 | 3.3 | .9 | 2.6 | 65 | 65 | 91 | 87 | 118 | 120 | 88 | 82 |
| PL14DL1 14 | 2.9 | 1.0 | 2.6 | 66 | 65 | 86 | 87 | 105 | 114 | 84 | 74 |
| PL14DL2 14 | 3.4 | 1.0 | 2.1 | 65 | 65 | 91 | 87 | 115 | 115 | 92 | 88 |
| PL14DL3 14 | 3.4 | 1.3 | 2.7 | 64 | 62 | 89 | 84 | 109 | 112 | 79 | 82 |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | |
| PL28DL3 28 | 2.0 | 1.0 | 1.7 | * | * | * | * | * | * | 99 | 91 |
| PL99DL1 28 | 1.1 | .6 | 1.0 | * | * | * | * | * | * | * | * |
| PL28DL2 28 | 2.0 | 1.0 | 1.6 | * | * | * | * | * | * | 91 | 90 |
| PL28DL1 29 | 2.3 | .9 | 1.8 | 65 | 67 | 89 | 89 | 112 | 116 | 91 | 84 |
| PL56DL2 56 | 1.0 | .6 | .8 | 67 | 68 | 84 | 84 | 104 | 110 | 95 | 90 |
| PL56DL3 56 | 1.4 | 1.3 | 1.8 | 62 | 68 | 86 | 84 | 117 | 117 | 93 | 84 |
| PL56DL1 56 | 3.6 | .3 | 2.5 | 75 | 75 | 92 | 90 | 102 | 101 | 90 | 86 |
| PL99DL2 136 | 2.0 | .6 | 1.2 | * | * | * | * | * | * | * | * |
| PL99DL3 233 | 1.9 | 1.0 | 2.5 | * | * | * | * | * | * | * | * |
| PL99DL4 366 | 2.0 | 1.3 | 1.8 | * | * | * | * | * | * | * | * |
| PL99DL5 496 | 1.2 | .6 | 1.2 | * | * | * | * | * | * | * | * |
| PL99DL6 632 | 1.7 | 1.0 | 1.7 | * | * | * | * | * | * | * | * |
| PL99DL7 730 | 1.0 | 1.6 | 2.6 | 95 | * | 98 | * | 99 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | |
| PH01DM1 1 | 9.2 | 2.5 | 6.9 | 53 | 56 | 78 | 79 | 108 | 111 | 73 | 73 |
| PH07DM1 7 | 6.6 | 2.6 | 5.1 | 49 | 52 | 75 | 71 | 115 | 107 | 80 | 76 |
| PH14DM1 14 | 8.0 | 3.5 | 6.6 | 54 | 58 | 76 | 77 | 106 | 107 | 83 | 69 |
| PH99DM1 28 | 6.1 | 1.9 | 4.9 | * | * | * | * | * | * | * | * |
| PH28DM1 29 | 7.2 | 3.2 | 5.1 | 55 | 58 | 75 | 74 | 107 | 107 | 75 | 71 |
| PH56DM1 56 | 6.2 | 3.5 | 5.2 | 63 | 65 | 81 | 82 | 107 | 110 | 89 | 87 |
| PH99DM3 245 | 6.6 | 1.9 | 5.1 | * | * | * | * | * | * | * | * |
| PH99DM4 365 | 3.4 | 1.9 | 4.0 | * | * | * | * | * | * | * | * |
| PH99DM5 496 | 4.0 | 1.9 | 4.4 | * | * | * | * | * | * | * | * |
| PH99DM6 630 | 3.9 | 2.2 | 4.6 | * | * | * | * | * | * | * | * |
| PH99DM7 727 | 4.6 | 2.2 | 5.2 | 88 | * | 91 | * | 107 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | |
| PL01DM3 1 | 9.2 | 2.2 | 5.8 | 53 | 51 | 83 | 78 | 116 | 117 | 60 | 57 |
| PL01DM2 1 | 8.3 | 2.2 | 6.3 | 55 | 54 | 83 | 81 | 115 | 120 | 67 | 70 |
| PL01DM1 1 | 9.5 | 2.2 | 7.7 | 58 | 53 | 83 | 81 | 105 | 111 | 69 | 62 |
| PL07DM2 7 | 7.1 | 1.9 | 5.7 | 53 | 54 | 81 | 73 | 112 | 107 | 75 | 72 |
| PL07DM3 7 | 4.7 | 1.6 | 4.1 | 59 | 60 | 82 | 82 | 112 | 119 | 84 | 77 |
| PL07DM1 7 | 9.3 | 2.9 | 6.9 | 44 | 47 | 71 | 73 | 111 | 117 | 82 | 76 |
| PL14DM3 14 | 5.7 | 1.9 | 5.7 | 52 | 58 | 81 | 85 | 113 | 120 | 86 | 83 |
| PL14DM2 14 | 8.0 | 2.6 | 6.6 | 48 | 47 | 79 | 75 | 118 | 118 | 75 | 74 |
| PL14DM1 14 | 8.3 | 3.2 | 9.3 | 56 | 52 | 81 | 77 | 112 | 112 | 66 | 60 |
| PL99DM1 28 | 7.5 | 1.9 | 6.1 | * | * | * | * | * | * | * | * |
| PL28DM2 28 | 8.8 | 3.5 | 7.5 | * | * | * | * | * | * | 78 | 72 |
| PL28DM3 28 | 9.1 | 3.2 | 7.1 | * | * | * | * | * | * | 69 | 68 |
| PL28DM1 29 | 9.5 | 3.2 | 8.3 | 48 | 50 | 72 | 74 | 110 | 115 | 70 | 64 |
| PL56DM1 56 | 2.6 | 1.9 | 2.3 | 58 | 57 | 80 | 80 | 101 | 108 | 80 | 74 |
| PL56DM3 56 | 8.4 | 2.8 | 5.8 | 63 | 64 | 82 | 80 | 108 | 109 | 86 | 79 |
| PL56DM2 56 | 5.8 | 2.5 | 4.7 | 63 | 67 | 81 | 81 | 108 | 109 | 92 | 84 |
| PL99DM2 135 | 3.8 | .9 | 3.2 | * | * | * | * | * | * | * | * |
| PL99DM3 233 | 6.9 | 2.5 | 7.9 | * | * | * | * | * | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FURFURAL 8.0% 50°C | | | | | | | |
| PL99DM4 365 | 2.6 | 1.6 | 3.1 | * | * | * | * | * | * | * | * |
| PL99DM5 496 | 5.9 | 1.9 | 5.2 | * | * | * | * | * | * | * | * |
| PL99DM6 631 | 6.5 | 2.2 | 5.6 | * | * | * | * | * | * | * | * |
| PL99DM7 729 | 10.6 | 3.8 | 10.0 | 61 | * | 83 | * | 114 | * | * | * |
| PH01FH1 1 | 3.6 | 1.9 | 3.2 | 35 | 34 | 44 | 44 | 107 | 113 | 53 | 59 |
| PH07FH1 7 | 61.0 | 18.4 | 59.9 | 8 | 10 | 22 | 21 | 114 | 106 | 22 | 18 |
| PH14FH1 14 | 41.0 | 12.9 | 40.3 | 12 | 12 | 28 | 27 | 126 | 122 | 25 | 24 |
| PH28FH1 28 | 46.1 | 15.8 | 45.2 | 10 | 10 | 27 | 24 | 141 | 133 | 23 | 20 |
| PH99FH1 28 | 48.7 | 14.2 | 44.5 | * | * | * | * | * | * | * | * |
| PH56FH1 56 | 48.5 | 15.8 | 48.2 | 13 | 11 | 27 | 25 | 124 | 106 | 20 | 20 |
| PH99FH2 117 | 43.4 | 14.8 | 44.4 | * | * | * | * | * | * | * | * |
| PH99FH3 236 | 74.0 | 17.9 | 62.8 | * | * | * | * | * | * | * | * |
| PH99FH4 350 | 72.8 | 21.4 | 73.9 | * | * | * | * | * | * | * | * |
| PH99FH5 485 | 58.9 | 19.8 | 64.9 | * | * | * | * | * | * | * | * |
| PH99FH6 616 | 77.6 | 24.8 | 81.5 | * | * | * | * | * | * | * | * |
| PH99FH7 713 | 86.0 | 25.2 | 90.3 | 25 | * | 34 | * | 79 | * | * | * |
| | | | | FURFURAL 8.0% 23°C | | | | | | | |
| PL01FH3 1 | 25.2 | 12.2 | 39.3 | 11 | 12 | 26 | 22 | 124 | 115 | 32 | 30 |
| PL01FH2 1 | 29.3 | 13.5 | 42.2 | 11 | 11 | 22 | 22 | 117 | 121 | 28 | 29 |
| PL01FH1 1 | 1.6 | .6 | 1.9 | 75 | 78 | 91 | 91 | 103 | 110 | 61 | 66 |
| PL07FH2 7 | 42.5 | 13.2 | 42.7 | 13 | 14 | 23 | 23 | 102 | 172 | 24 | 23 |
| PL07FH3 7 | 42.9 | 13.1 | 43.1 | 13 | 15 | 26 | 27 | 117 | 121 | 26 | 24 |
| PL07FH1 7 | 44.1 | 13.9 | 48.9 | 12 | 14 | 24 | 25 | 110 | 121 | 25 | 23 |
| PL14FH1 14 | 39.8 | 11.8 | 37.0 | 14 | 10 | 24 | 22 | 110 | 116 | 22 | 22 |
| PL14FH3 14 | 40.5 | 13.5 | 41 1 | 12 | 14 | 24 | 25 | 112 | 123 | 21 | 22 |
| PL14FH2 14 | 43.3 | 14.6 | 43.6 | 12 | 14 | 24 | 21 | 114 | 105 | 22 | 20 |
| PL28FH1 28 | 50.7 | 14.9 | 47.0 | 12 | 11 | 25 | 23 | 138 | 129 | 23 | 23 |
| PL28FH3 28 | 53.6 | 15.7 | 38.0 | 11 | 11 | 24 | 23 | 115 | 123 | 20 | 23 |
| PL99FH1 28 | 49.7 | 14.0 | 45.3 | * | * | * | * | * | * | * | * |
| PL28FH2 28 | 6.3 | 15.3 | 49.6 | 10 | 11 | 24 | 24 | 110 | 130 | 22 | 23 |
| PL56FH1 56 | 47.5 | 15.4 | 45.9 | 10 | 12 | 22 | 22 | 140 | 130 | 22 | 23 |
| PL56FH2 56 | 58.0 | 17.5 | 55.5 | 11 | 11 | 24 | 22 | 119 | 114 | 21 | 20 |
| PL56FH3 56 | 56.1 | 16.8 | 54.4 | 11 | 11 | 24 | 23 | 123 | 122 | 20 | 20 |
| PL99FH2 117 | 53.4 | 25.5 | 67 7 | * | * | * | * | * | * | * | * |
| PL99FH3 219 | 50.3 | 16.6 | 61.1 | * | * | * | * | * | * | * | * |
| PL99FH4 350 | 67.8 | 19.1 | 67.6 | * | * | * | * | * | * | * | * |
| PL99FH5 485 | 51.1 | 17.2 | 58.8 | * | * | * | * | * | * | * | * |
| PL99FH6 617 | 90.8 | 25.8 | 94.5 | * | * | * | * | * | * | * | * |
| PL99FH7 715 | 91.8 | 25.5 | 96.3 | 14 | * | 25 | * | 87 | * | * | * |
| | | | | FURFURAL 1.0% 50°C | | | | | | | |
| PH01FL1 1 | 3.2 | 1.9 | 3.0 | 64 | 64 | 85 | 84 | 104 | 107 | 99 | 85 |
| PH07FL1 7 | 3.8 | 2.2 | 2.9 | 48 | 51 | 79 | 77 | 127 | 125 | 80 | 76 |
| PH14FL1 14 | 4.2 | 1.9 | 3.8 | 64 | 65 | 86 | 81 | 109 | 105 | 84 | 77 |
| PH28FL1 28 | 4.6 | 1.9 | 3.3 | 63 | 65 | 80 | 83 | 106 | 117 | 87 | 86 |
| PH99FL1 28 | 4.1 | 1.6 | 3.4 | * | * | * | * | * | * | * | * |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FURFURAL 1.0% 50°C | | | | | | | |
| PH56FL1 56 | 4.7 | 2.6 | 4.5 | 65 | 66 | 86 | 84 | 118 | 118 | 94 | 84 |
| PH99FL2 123 | 4.2 | 1.2 | 3.9 | * | * | * | * | * | * | * | * |
| PH99FL3 241 | 6.8 | 1.9 | 5.4 | * | * | * | * | * | * | * | * |
| PH99FL4 355 | 6.4 | .9 | 5.0 | * | * | * | * | * | * | * | * |
| PH99FL5 488 | 6.0 | 2.2 | 5.7 | * | * | * | * | * | * | * | * |
| PH99FL6 621 | 6.7 | .9 | 2.9 | * | * | * | * | * | * | * | * |
| PH99FL7 718 | 6.4 | 2.5 | 6.4 | 84 | * | 90 | * | 97 | * | * | * |
| | | | | FURFURAL 1.0% 23°C | | | | | | | |
| PL01FL2 1 | 1.5 | .3 | 1.2 | 70 | 83 | 83 | 93 | 101 | 94 | 98 | 122 |
| PL01FL3 1 | 1.6 | .6 | 1.3 | 68 | 81 | 82 | 92 | 101 | 90 | 100 | 119 |
| PL01FL1 1 | 1.8 | * | .4 | 74 | 72 | 87 | 88 | 96 | 107 | 111 | 123 |
| PL07FL2 7 | 3.0 | .3 | 1.6 | 47 | 46 | 85 | 83 | 127 | 130 | 82 | 78 |
| PL07FL3 7 | 3.3 | 1.6 | 2.8 | 42 | 44 | 77 | 75 | 124 | 125 | 78 | 66 |
| PL07FL1 7 | 3.0 | 1.0 | 2.2 | 46 | 43 | 81 | 76 | 124 | 126 | 80 | 72 |
| PL14FL3 14 | 2.9 | 1.0 | 2.2 | 56 | 59 | 87 | 86 | 116 | 120 | 90 | 82 |
| PL14FL2 14 | 3.3 | 1.0 | 2.3 | 53 | 57 | 87 | 88 | 133 | 138 | 87 | 80 |
| PL14FL1 14 | 3.2 | 1.3 | 2.8 | 55 | 59 | 86 | 86 | 114 | 116 | 88 | 77 |
| PL28FL2 28 | 3.4 | 1.3 | 2.9 | 62 | 65 | 90 | 90 | 120 | 121 | 91 | 87 |
| PL28FL3 28 | 3.7 | 1.9 | 3.4 | 60 | 60 | 85 | 85 | 113 | 117 | 90 | 81 |
| PL99FL1 28 | 2.5 | .3 | 1.1 | * | * | * | * | * | * | * | * |
| PL28FL1 28 | 3.3 | 1.0 | 2.5 | 61 | 60 | 85 | 85 | 122 | 130 | 84 | 83 |
| PL56FL3 56 | 3.7 | 2.6 | 4.2 | 58 | 59 | 87 | 84 | 119 | 125 | 78 | 76 |
| PL56FL2 56 | 3.8 | 2.3 | 3.7 | 62 | 65 | 90 | 89 | 121 | 124 | 86 | 80 |
| PL56FL1 56 | 4.1 | 1.6 | 3.7 | 61 | 59 | 82 | 83 | 112 | 122 | 86 | 80 |
| PL99FL2 123 | 2.7 | .3 | 2.2 | * | * | * | * | * | * | * | * |
| PL99FL3 224 | 4.3 | .9 | 4.1 | * | * | * | * | * | * | * | * |
| PL99FL4 355 | 5.2 | 1.3 | 4.7 | * | * | * | * | * | * | * | * |
| PL99FL5 488 | 4.5 | .9 | 2.8 | * | * | * | * | * | * | * | * |
| PL99FL6 622 | 5.0 | .6 | 3.1 | * | * | * | * | * | * | * | * |
| PL99FL7 720 | 4.9 | 1.6 | 4.8 | 71 | * | 84 | * | 106 | * | * | * |
| | | | | FURFURAL 4.0% 50°C | | | | | | | |
| PH01FM1 1 | 13.9 | 4.1 | 10.3 | 30 | 31 | 46 | 43 | 98 | 93 | 32 | 33 |
| PH07FM1 7 | 14.3 | 4.8 | 12.9 | 31 | 33 | 51 | 56 | 106 | 119 | 61 | 53 |
| PH14FM1 14 | 14.8 | 5.1 | 14.7 | 29 | 30 | 51 | 51 | 109 | 113 | 53 | 50 |
| PH28FM1 28 | 14.8 | 4.8 | 13.1 | 28 | 31 | 51 | 56 | 118 | 121 | 47 | 48 |
| PH99FM1 28 | 14.1 | 4.1 | 12.1 | * | * | * | * | * | * | * | * |
| PH56FM1 56 | 15.9 | 6.1 | 15.5 | 34 | 35 | 57 | 57 | 130 | 116 | 54 | 49 |
| PH99FM2 123 | 13.3 | 4.1 | 12.1 | * | * | * | * | * | * | * | * |
| PH99FM3 241 | 21.3 | 6.0 | 18.3 | * | * | * | * | * | * | * | * |
| PH99FM4 355 | 19.9 | 6.3 | 19.7 | * | * | * | * | * | * | * | * |
| PH99FM5 489 | 17.6 | 5.7 | 15.5 | * | * | * | * | * | * | * | * |
| PH99FM6 621 | 21.1 | 7.5 | 18.2 | * | * | * | * | * | * | * | * |
| PH99FM7 718 | 18.9 | 6.9 | 19.1 | 47 | * | 56 | * | 76 | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FURFURAL 4.0% 23°C | | | | | | | |
| PL01FM1 1 | 12.5 | 3.5 | 100.0 | 29 | 28 | 47 | 44 | 99 | 99 | 61 | 74 |
| PL01FM3 1 | 5.8 | 3.2 | 10.1 | 28 | 28 | 55 | 51 | 118 | 114 | 65 | 67 |
| PL01FM2 1 | 6.1 | 3.5 | 11.0 | 26 | 27 | 53 | 52 | 121 | 118 | 66 | 57 |
| PL07FM1 7 | 13.5 | 4.5 | 13.4 | 28 | 31 | 53 | 56 | 120 | 129 | 60 | 52 |
| PL07FM2 7 | 14.1 | 4.2 | 12.9 | 34 | 35 | 56 | 55 | 103 | 109 | 55 | 51 |
| PL07FM3 7 | 13.3 | 4.5 | 12.6 | 37 | 37 | 64 | 57 | 112 | 103 | 65 | 58 |
| PL14FM1 14 | 14.8 | 4.7 | 14.7 | 29 | 28 | 52 | 49 | 113 | 111 | 50 | 51 |
| PL14FM2 14 | 13.0 | 3.9 | 12.0 | 31 | 31 | 56 | 53 | 117 | 116 | 49 | 44 |
| PL14FM3 14 | 11.9 | 4.1 | 12.0 | 32 | 31 | 55 | 54 | 114 | 113 | 49 | 45 |
| PL28FM1 28 | 14.4 | 4.7 | 13.0 | 30 | 28 | 51 | 50 | 120 | 123 | 43 | 43 |
| PL99FM1 28 | 13.3 | 3.4 | 10.2 | * | * | * | * | * | * | * | * |
| PL28FM3 28 | 13.8 | 4.2 | 10.9 | 29 | 29 | 51 | 53 | 118 | 131 | 45 | 43 |
| PL28FM2 28 | 14.3 | 4.8 | 12.4 | 26 | 28 | 52 | 54 | 131 | 141 | 45 | 42 |
| PL56FM2 56 | 14.6 | 5.2 | 13.6 | 31 | 31 | 53 | 51 | 125 | 120 | 47 | 44 |
| PL56FM3 56 | 14.5 | 5.5 | 13.9 | 31 | 33 | 54 | 59 | 119 | 130 | 48 | 45 |
| PL56FM1 56 | 15.3 | 5.5 | 14.1 | 32 | 27 | 53 | 52 | 117 | 142 | 46 | 43 |
| PL99FM2 123 | 10.7 | 2.8 | 9.0 | * | * | * | * | * | * | * | * |
| PL99FM3 227 | 16.1 | 4.4 | 16.3 | * | * | * | * | * | * | * | * |
| PL99FM4 355 | 19.1 | 5.0 | 17.7 | * | * | * | * | * | * | * | * |
| PL99FM5 489 | 18.2 | 4.7 | 15.7 | * | * | * | * | * | * | * | * |
| PL99FM6 622 | 18.3 | 5.3 | 6.6 | * | * | * | * | * | * | * | * |
| PL99FM7 720 | 17.7 | 5.3 | 17.0 | 36 | * | 50 | * | 93 | * | * | * |
| | | | | METHYL ETHYL KETONE 26.0% 50°C | | | | | | | |
| PH01MH1 1 | 38.6 | 21.3 | 57.7 | 8 | 8 | 24 | 24 | 124 | 127 | 22 | 25 |
| PH07MH1 7 | 36.8 | 21.0 | 42.5 | 7 | 7 | 17 | 20 | 105 | 115 | 76 | 75 |
| PH14MH1 14 | 52.3 | 32.3 | 97.7 | 35 | 31 | 61 | 57 | 121 | 115 | 66 | 62 |
| PH28MH1 28 | 32.6 | 23.1 | 42.4 | 2 | 3 | 9 | 10 | 104 | 97 | 10 | 12 |
| PH99MH1 29 | 10.4 | .9 | 12.7 | * | * | * | * | * | * | * | * |
| PH56MH1 56 | 45.8 | 25.5 | 57.0 | 5 | 5 | 16 | 15 | 101 | 93 | 21 | 22 |
| PH99MH2 122 | 12.6 | .9 | 17.3 | * | * | * | * | * | * | * | * |
| PH99MH3 240 | .7 | .6 | 18.5 | * | * | * | * | * | * | * | * |
| PH99MH4 358 | .6 | 6.3 | 1.6 | * | * | * | * | * | * | * | * |
| PH99MH5 494 | 20.3 | 2.8 | 26.1 | * | * | * | * | * | * | * | * |
| PH99MH6 626 | 6.8 | 1.3 | 16.9 | * | * | * | * | * | * | * | * |
| PH99MH7 722 | 10.3 | .9 | 19.2 | * | * | 131 | * | 6 | * | * | * |
| | | | | METHYL ETHYL KETONE 26.0% 23°C | | | | | | | |
| PL01MH1 1 | 22.1 | 12.9 | 33.7 | 20 | 19 | 40 | 39 | 120 | 134 | 34 | 37 |
| PL01MH3 1 | 134.4 | 38.9 | 144.6 | * | 2 | * | 4 | 16 | 41 | 10 | 9 |
| PL01MH2 1 | 86.1 | 26.8 | 65.8 | 4 | 3 | 15 | 9 | 110 | 82 | 16 | 14 |
| PL07MH2 7 | 37.7 | 29.7 | 73.1 | 3 | 3 | 9 | 9 | 81 | 82 | 23 | 22 |
| PL07MH1 7 | 66.8 | 29.6 | 94.9 | 6 | 5 | 14 | 16 | 91 | 113 | 39 | 24 |
| PL07MH3 7 | 76.7 | 32.8 | 112.4 | 4 | 5 | 14 | 13 | 110 | 100 | 32 | 35 |
| PL14MH2 14 | 53.4 | 28.7 | 79.9 | 7 | 6 | 24 | 24 | 121 | 138 | 24 | 23 |
| PL14MH1 14 | 61.1 | 26.8 | 88.5 | 8 | 12 | 26 | 28 | 119 | 121 | 21 | 27 |
| PL14MH3 14 | 51.0 | 28.0 | 86.5 | 8 | 10 | 30 | 30 | 132 | 123 | 21 | 24 |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | |
| PL28MH3 28 | 49.2 | 28.6 | 72.0 | 3 | 2 | 8 | 8 | 72 | 85 | 11 | 15 |
| PL99MH1 28 | 39.6 | 17.8 | 45.2 | * | * | * | * | * | * | * | * |
| PL28MH2 28 | 66.4 | 30.9 | 94.8 | 3 | 3 | 7 | 7 | 61 | 70 | 11 | 9 |
| PL28MH1 28 | 57.4 | 26.4 | 81.4 | 3 | 3 | 6 | 5 | 58 | 57 | 11 | 8 |
| PL56MH2 56 | 62.0 | 25.6 | 76.0 | 9 | 7 | 24 | 22 | 124 | 117 | 22 | 20 |
| PL56MH1 56 | 43.3 | 17.7 | 49.8 | 8 | 7 | 21 | 19 | 107 | 102 | 19 | 20 |
| PL56MH3 56 | 77.7 | 25.6 | 87.5 | 5 | 4 | 7 | 9 | 46 | 70 | 14 | 14 |
| PL99MH2 121 | 22.8 | 12.4 | 15.5 | * | * | * | * | * | * | * | * |
| PL99MH3 235 | 8.6 | 14.3 | 35.7 | * | * | * | * | * | * | * | * |
| PL99MH4 358 | 59.9 | 18.7 | 55.0 | * | * | * | * | * | * | * | * |
| PL99MH5 494 | 93.3 | 25.1 | 78.3 | * | * | * | * | * | * | * | * |
| PL99MH6 627 | 53.4 | 9.2 | 14.0 | * | * | * | * | * | * | * | * |
| PL99MH7 724 | 42.0 | 16.2 | 36.0 | 6 | * | 20 | * | 108 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | |
| PH01ML1 1 | 3.9 | 3.5 | 4.6 | 53 | 52 | 78 | 77 | 108 | 116 | 79 | 83 |
| PH07ML1 7 | 7.0 | 2.9 | 8.2 | 41 | 43 | 63 | 60 | 109 | 105 | 74 | 66 |
| PH14ML1 14 | 4.9 | 2.9 | 5.3 | 55 | 56 | 68 | 69 | 98 | 103 | 92 | 84 |
| PH28ML1 28 | 5.0 | 3.1 | 5.6 | 63 | 60 | 74 | 71 | 96 | 99 | 98 | 90 |
| PH99ML1 28 | 4.4 | 1.9 | 4.1 | * | * | * | * | * | * | * | * |
| PH56ML1 56 | 4.1 | 2.2 | 4.1 | 66 | 68 | 81 | 78 | 105 | 103 | 96 | 93 |
| PH99ML2 120 | 9.8 | 5.3 | 10.0 | * | * | * | * | * | * | * | * |
| PH99ML3 240 | 11.2 | 5.6 | 11.1 | * | * | * | * | * | * | * | * |
| PH99ML4 358 | 11.9 | 5.9 | 12.0 | * | * | * | * | * | * | * | * |
| PH99ML5 493 | 9.7 | 5.6 | 9.9 | * | * | * | * | * | * | * | * |
| PH99ML6 626 | 9.9 | 5.6 | 9.9 | * | * | * | * | * | * | * | * |
| PH99ML7 722 | 10.4 | 6.3 | 11.4 | 60 | * | 85 | * | 114 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | |
| PL01ML3 1 | 3.1 | 1.0 | 3.7 | 48 | 46 | 81 | 72 | 128 | 112 | 102 | 92 |
| PL01ML2 1 | 3.4 | .6 | 3.5 | 50 | 53 | 80 | 79 | 126 | 125 | 92 | 97 |
| PL01ML1 1 | 3.2 | 1.0 | 4.2 | 46 | 44 | 76 | 75 | 119 | 125 | 75 | 78 |
| PL07ML3 7 | 4.8 | 1.9 | 5.1 | 57 | 58 | 81 | 77 | 103 | 110 | 103 | 90 |
| PL07ML1 7 | 5.0 | 1.9 | 5.5 | 48 | 46 | 72 | 70 | 104 | 109 | 89 | 78 |
| PL07ML2 7 | 4.6 | 1.3 | 4.5 | 59 | 56 | 79 | 80 | 102 | 130 | 98 | 91 |
| PL14ML1 14 | 3.6 | 1.6 | 4.3 | 39 | 39 | 60 | 62 | 108 | 119 | 73 | 70 |
| PL14ML2 14 | 3.6 | 1.9 | 5.0 | 33 | 28 | 56 | 49 | 114 | 116 | 51 | 41 |
| PL14ML3 14 | 3.6 | 1.6 | 4.5 | 37 | 36 | 62 | 58 | 122 | 120 | 74 | 71 |
| PL28ML3 28 | 2.9 | 1.6 | 3.3 | 75 | 74 | 90 | 87 | 105 | 111 | 91 | 91 |
| PL28ML2 28 | 2.6 | 1.3 | 3.1 | 67 | 70 | 83 | 86 | 106 | 107 | 99 | 96 |
| PL28ML1 28 | 3.8 | 1.6 | 3.2 | 57 | 61 | 78 | 78 | 106 | 111 | 88 | 81 |
| PL99ML1 28 | 3.2 | 1.6 | 3.6 | * | * | * | * | * | * | * | * |
| PL56ML1 56 | 3.5 | 1.3 | 3.4 | 64 | 62 | 82 | 82 | 106 | 119 | 89 | 88 |
| PL56ML2 56 | 3.9 | 1.9 | 4.7 | 58 | 59 | 78 | 76 | 109 | 110 | 92 | 81 |
| PL56ML3 56 | 4.1 | 2.5 | 6.8 | 55 | 53 | 75 | 75 | 104 | 114 | 88 | 79 |
| PL99ML2 120 | 4.3 | 1.3 | 4.4 | * | * | * | * | * | * | * | * |
| PL99ML3 235 | 3.9 | 1.9 | 6.1 | * | * | * | * | * | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | |
| PL99ML4 358 | 5.0 | 1.9 | 5.9 | * | * | * | * | * | * | * | * |
| PL99ML5 494 | 2.7 | .9 | 2.5 | * | * | * | * | * | * | * | * |
| PL99ML6 627 | 4.0 | 1.3 | 4.0 | * | * | * | * | * | * | * | * |
| PL99ML7 724 | 4.5 | 2.2 | 5.6 | 65 | * | 88 | * | 107 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | |
| PH01MM1 1 | 18.4 | 13.1 | 27.9 | 14 | 13 | 35 | 34 | 123 | 129 | 30 | 33 |
| PH07MM1 7 | 39.8 | 19.1 | 51.9 | 16 | 16 | 34 | 36 | 98 | 104 | 50 | 52 |
| PH14MM1 14 | 10.2 | 8.3 | 13.0 | 25 | 29 | 49 | 56 | 115 | 115 | 67 | 74 |
| PH99MM1 28 | 22.1 | 10.5 | 28.7 | * | * | * | * | * | * | * | * |
| PH28MM1 28 | 36.9 | 18.2 | 46.5 | 13 | 12 | 30 | 27 | 108 | 98 | 20 | 21 |
| PH56MM1 56 | 2.9 | 9.8 | 8.5 | 47 | 49 | 76 | 72 | 122 | 110 | 71 | 66 |
| PH99MM2 120 | 28.8 | 12.4 | 32.2 | * | * | * | * | * | * | * | * |
| PH99MM3 239 | 34.1 | 11.5 | 29.4 | * | * | * | * | * | * | * | * |
| PH99MM4 357 | 29.8 | 13.1 | 35.3 | * | * | * | * | * | * | * | * |
| PH99MM5 493 | 39.7 | 15.0 | 40.2 | * | * | * | * | * | * | * | * |
| PH99MM6 625 | 36.1 | 14.6 | 33.3 | * | * | * | * | * | * | * | * |
| PH99MM7 721 | 35.6 | 11.5 | 36.8 | 25 | * | 67 | * | 123 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | |
| PL01MM2 1 | 21.4 | 9.2 | 37.0 | 17 | 17 | 37 | 36 | 131 | 135 | 55 | 50 |
| PL01MM3 1 | 21.2 | 9.3 | 26.4 | 16 | 17 | 36 | 39 | 141 | 137 | 45 | 49 |
| PL01MM1 1 | 16.2 | 8.6 | 22.9 | 20 | 21 | 39 | 41 | 117 | 127 | 38 | 34 |
| PL07MM2 7 | 18.8 | 10.9 | 26.2 | 37 | 39 | 65 | 64 | 112 | 108 | 71 | 70 |
| PL07MM3 7 | 22.4 | 10.5 | 30.8 | 17 | 24 | * | 42 | 124 | 113 | 58 | 55 |
| PL07MM1 7 | 21.3 | 9.8 | 28.0 | 22 | 22 | 45 | 43 | 124 | 126 | 66 | 62 |
| PL14MM1 14 | 19.9 | 9.6 | 26.0 | 22 | 24 | 39 | 44 | 113 | 126 | 52 | 48 |
| PL14MM2 14 | 16.7 | 9.3 | 23.3 | 23 | 26 | 43 | 47 | 120 | 125 | 49 | 56 |
| PL14MM3 14 | 16.9 | 9.6 | 23.7 | 27 | 29 | 51 | 50 | 123 | 122 | 54 | 54 |
| PL28MM2 28 | 10.1 | 9.6 | 14.2 | 26 | 25 | 43 | 40 | 103 | 106 | 38 | 36 |
| PL28MM3 28 | 15.5 | 9.6 | 22.3 | 27 | 27 | 45 | 40 | 105 | 96 | 40 | 35 |
| PL28MM1 28 | 16.5 | 9.9 | 22.7 | 27 | 25 | 45 | 44 | 104 | 115 | 38 | 35 |
| PL99MM1 28 | 17.1 | 7.0 | 20.1 | * | * | * | * | * | * | * | * |
| PL56MM2 56 | 10.1 | 4.5 | 8.8 | 56 | 52 | 74 | 69 | 102 | 102 | 57 | 56 |
| PL56MM3 56 | 10.7 | 5.7 | 12.3 | 43 | 41 | 66 | 58 | 107 | 102 | 56 | 52 |
| PL56MM1 56 | 13.6 | 5.4 | 14.1 | 34 | 34 | 54 | 51 | 104 | 105 | 48 | 51 |
| PL99MM2 120 | 21.3 | 7.0 | 21.5 | * | * | * | * | * | * | * | * |
| PL99MM3 234 | 14.1 | 8.6 | 26.1 | * | * | * | * | * | * | * | * |
| PL99MM4 357 | 20.2 | 7.6 | 23.9 | * | * | * | * | * | * | * | * |
| PL99MM5 493 | 23.8 | 8.6 | 25.4 | * | * | * | * | * | * | * | * |
| PL99MM6 626 | 21.7 | 3.2 | 7.3 | * | * | * | * | * | * | * | * |
| PL99MM7 723 | 21.0 | 8.3 | 24.4 | 22 | * | 47 | * | 124 | * | * | * |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ASTM #2 OIL SATURATED 50°C | | | | | | | |
| PH010M1 1 | .6 | 1.0 | 1.3 | 83 | 84 | 97 | 91 | 120 | 116 | 126 | 123 |
| PH070M1 7 | .6 | .9 | .6 | 86 | 85 | 87 | 90 | 93 | 117 | 110 | 103 |
| PH140M1 14 | 3.3 | 3.2 | 4.4 | 85 | 89 | 93 | 92 | 111 | 113 | 136 | 134 |
| PH990M1 28 | 7.2 | 5.8 | 10.9 | * | * | * | * | * | * | * | * |
| PH280M1 28 | 2.0 | 1.6 | 1.9 | 84 | 85 | 93 | 94 | 112 | 120 | 102 | 98 |
| PH560M1 56 | 1.9 | 1.9 | 2.5 | 82 | 88 | 95 | 93 | 126 | 116 | 109 | 106 |
| PH990M2 128 | 16.3 | 100.0 | 100.0 | * | * | * | * | * | * | * | * |
| PH990M3 251 | 27.1 | 7.4 | 30.3 | * | * | * | * | * | * | * | * |
| PH990M4 364 | 30.1 | 17.3 | 48.2 | * | * | * | * | * | * | * | * |
| PH990M5 503 | 29.4 | 14.1 | 40.9 | * | * | * | * | * | * | * | * |
| PH990M6 626 | 27.4 | 1.9 | 27.6 | * | * | * | * | * | * | * | * |
| PH990M7 728 | 27.9 | 16.0 | 46.6 | 133 | * | 88 | * | 61 | * | * | * |
| | | | | ASTM #2 OIL SATURATED 23°C | | | | | | | |
| PL010M3 1 | .2 | * | .3 | 81 | 80 | 92 | 93 | 111 | 122 | 128 | 121 |
| PL010M1 1 | .1 | .3 | .5 | 81 | 81 | 96 | 91 | 114 | 114 | 126 | 126 |
| PL010M2 1 | .3 | .3 | .1 | 81 | 81 | 94 | 92 | 111 | 120 | 122 | 109 |
| PL070M1 7 | .4 | * | .2 | 84 | 86 | 97 | 94 | 116 | 117 | 110 | 105 |
| PL070M2 7 | .5 | * | .2 | 80 | 82 | 95 | 92 | 117 | 122 | 107 | 102 |
| PL070M3 7 | .2 | * | .1 | 80 | 83 | 95 | 91 | 116 | 117 | 104 | 106 |
| PL140M2 14 | .7 | .3 | .8 | 80 | 82 | 96 | 91 | 117 | 117 | 109 | 100 |
| PL140M1 14 | .6 | .6 | 1.1 | 83 | 85 | 93 | 95 | 111 | 122 | 125 | 126 |
| PL140M3 14 | .6 | * | .7 | 71 | 82 | 95 | 94 | 120 | 120 | 108 | 102 |
| PL280M1 28 | 1.1 | .6 | .4 | 86 | 94 | 95 | 98 | 105 | 102 | 100 | 96 |
| PL280M2 28 | .4 | * | .2 | 80 | 82 | 92 | 94 | 107 | 119 | 130 | 125 |
| PL280M3 28 | 1.3 | .6 | .8 | 81 | 81 | 94 | 92 | 110 | 116 | 134 | 130 |
| PL990M1 28 | .2 | 3.5 | 2.8 | * | * | * | * | * | * | * | * |
| PL560M2 56 | .9 | .3 | .7 | 77 | 79 | 94 | 92 | 114 | 127 | 113 | 110 |
| PL560M1 56 | .8 | .6 | .9 | 93 | 84 | 96 | 97 | 106 | 119 | 111 | 105 |
| PL560M3 56 | 1.0 | 1.3 | 1.3 | 77 | 82 | 92 | 95 | 117 | 115 | 110 | 114 |
| PL990M2 128 | .9 | 1.0 | 1.1 | * | * | * | * | * | * | * | * |
| PL990M3 237 | .1 | 1.3 | 1.6 | * | * | * | * | * | * | * | * |
| PL990M4 364 | 1.1 | 1.3 | 1.4 | * | * | * | * | * | * | * | * |
| PL990M5 503 | .3 | .6 | .6 | * | * | * | * | * | * | * | * |
| PL990M6 626 | 1.6 | 1.0 | 1.5 | * | * | * | * | * | * | * | * |
| PL990M7 730 | 1.2 | 3.5 | 2.2 | 110 | * | 100 | * | 104 | * | * | * |
| | | | | ASTM #2 OIL 100.0% 50°C | | | | | | | |
| PH010P1 1 | 2.6 | .9 | 4.0 | 85 | 88 | 94 | 93 | 118 | 118 | 105 | 101 |
| PH070P1 7 | 6.1 | 1.0 | 7.4 | 116 | 122 | 96 | 100 | 87 | 98 | 129 | 122 |
| PH140P1 14 | 8.3 | 1.3 | 9.4 | 126 | 133 | 100 | 104 | 86 | 99 | 150 | 138 |
| PH280P1 28 | 11.2 | 3.5 | 13.5 | 139 | 155 | 100 | 108 | 91 | 83 | 179 | 173 |
| PH990P1 28 | 11.4 | 1.9 | 12.3 | * | * | * | * | * | * | * | * |
| PH560P1 56 | 12.2 | 1.3 | 5.4 | 166 | 171 | 108 | 109 | 87 | 92 | 210 | 208 |
| PH990P2 141 | 14.9 | * | 13.8 | * | * | * | * | * | * | * | * |
| PH990P3 257 | 15.7 | 3.8 | 18.2 | * | * | * | * | * | * | * | * |
| PH990P4 385 | 16.9 | 5.4 | 20.2 | * | * | * | * | * | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ASTM #2 OIL 100.0% 50°C | | | | | | | |
| PH990P5 509 | 16.9 | 4.4 | 19.5 | * | * | * | * | * | * | * | * |
| PH990P6 627 | 17.1 | 5.7 | 20.6 | * | * | * | * | * | * | * | * |
| PH990P7 734 | 17.5 | 5.4 | 15.5 | * | * | 188 | * | 10 | * | * | * |
| | | | | ASTM #2 OIL 100.0% 23°C | | | | | | | |
| PL010P1 1 | .8 | .3 | 1.2 | 79 | 81 | 98 | 94 | 126 | 124 | 96 | 92 |
| PL010P3 1 | .6 | * | .3 | 85 | 86 | 99 | 92 | 112 | 106 | 129 | 129 |
| PL010P2 1 | .6 | .3 | .4 | 87 | 88 | 98 | 96 | 109 | 117 | 158 | 148 |
| PL070P2 7 | 1.9 | 1.6 | 3.1 | 88 | 88 | 100 | 92 | 128 | 120 | 105 | 99 |
| PL070P3 7 | 1.6 | 1.0 | 2.2 | 83 | 85 | 89 | 92 | 117 | 118 | 97 | 96 |
| PL070P1 7 | 1.8 | .6 | 2.3 | 96 | 95 | 101 | 98 | 104 | 111 | 101 | 98 |
| PL140P2 14 | 2.6 | 1.0 | 3.0 | 93 | 94 | 99 | 97 | 111 | 118 | 119 | 110 |
| PL140P3 14 | 2.6 | * | 2.0 | 91 | 95 | 95 | 94 | 109 | 113 | 122 | 111 |
| PL140P1 14 | 2.2 | .6 | 3.0 | 104 | 105 | 101 | 102 | 103 | 112 | 104 | 100 |
| PL280P1 28 | 3.6 | 1.3 | 4.4 | 99 | 108 | 100 | 101 | 103 | 103 | 160 | 167 |
| PL280P3 28 | 3.6 | 1.0 | 3.9 | 106 | 108 | 101 | 100 | 99 | 106 | 125 | 122 |
| PL280P2 28 | 3.6 | .6 | 4.1 | 100 | 102 | 100 | 98 | 105 | 108 | 151 | 167 |
| PL990P1 28 | 3.7 | .3 | 3.9 | * | * | * | * | * | * | * | * |
| PL560P2 55 | 4.9 | 2.5 | 14.0 | 112 | 115 | 102 | 99 | 104 | 103 | 137 | 139 |
| PL560P3 55 | 3.8 | 1.0 | 4.2 | 108 | 108 | 95 | 99 | 91 | 109 | 130 | 132 |
| PL560P1 56 | 4.7 | .3 | 4.4 | 115 | 116 | 103 | 100 | 105 | 107 | 135 | 132 |
| PL990P2 141 | 7.0 | 1.6 | 7.7 | * | * | * | * | * | * | * | * |
| PL990P3 244 | 8.8 | 3.2 | 10.2 | * | * | * | * | * | * | * | * |
| PL990P4 385 | 9.9 | 4.1 | 12.3 | * | * | * | * | * | * | * | * |
| PL990P5 509 | 10.4 | 3.2 | 12.1 | * | * | * | * | * | * | * | * |
| PL990P6 627 | 11.2 | 4.8 | 13.9 | * | * | * | * | * | * | * | * |
| PL990P7 736 | 11.6 | 1.9 | 11.4 | 158 | * | 99 | * | 78 | * | * | * |
| | | | | PHENOL 8.0% 50°C | | | | | | | |
| PH01PH1 1 | 4.2 | 2.9 | 2.7 | 75 | 75 | 87 | 84 | 96 | 95 | 83 | 82 |
| PH07PH1 7 | 7.8 | 1.6 | 11.6 | 107 | 111 | 101 | 101 | 91 | 96 | 136 | 135 |
| PH14PH1 14 | 9.3 | 2.9 | 10.3 | 108 | 112 | 101 | 103 | 97 | 104 | 103 | 102 |
| PH28PH1 28 | 9.6 | .6 | 13.1 | 108 | 113 | 100 | 102 | 101 | 100 | 151 | 144 |
| PH99PH1 29 | 5.6 | 1.6 | 9.0 | * | * | * | * | * | * | * | * |
| PH56PH1 56 | 9.9 | 1.3 | 13.4 | 109 | 111 | 98 | 95 | 98 | 98 | 154 | 149 |
| PH99PH2 121 | 8.4 | 1.3 | 9.0 | * | * | * | * | * | * | * | * |
| PH99PH3 243 | 4.1 | .9 | 7.5 | * | * | * | * | * | * | * | * |
| PH99PH4 362 | 6.4 | .9 | 8.7 | * | * | * | * | * | * | * | * |
| PH99PH5 499 | 1.1 | .3 | 3.8 | * | * | * | * | * | * | * | * |
| PH99PH6 624 | 4.0 | .9 | 7.9 | * | * | * | * | * | * | * | * |
| PH99PH7 720 | 6.5 | 1.9 | 10.6 | 143 | * | 88 | * | 51 | * | * | * |
| | | | | PHENOL 8.0% 23°C | | | | | | | |
| PL01PH1 1 | 12.1 | 3.9 | 10.0 | 61 | 59 | 81 | 78 | 93 | 98 | 79 | 74 |
| PL01PH2 1 | 11.4 | 3.9 | 9.5 | 61 | 59 | 76 | 80 | 92 | 106 | 81 | 74 |
| PL01PH3 1 | 11.2 | 3.9 | 9.5 | 59 | 59 | 79 | 78 | 100 | 105 | 84 | 77 |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PHENOL 8.0% 23°C | | | | | | | |
| PL07PH1 7 | 3.5 | 1.0 | 6.2 | 87 | 87 | 92 | 90 | 88 | 90 | 123 | 118 |
| PL07PH2 7 | 4.7 | 1.0 | 7.8 | 88 | 88 | 100 | 97 | 105 | 106 | 120 | 115 |
| PL07PH3 7 | 5.0 | 1.6 | 9.0 | 87 | 87 | 101 | 97 | 106 | 108 | 118 | 113 |
| PL14PH2 14 | 7.2 | 1.9 | 11.0 | 90 | 90 | 101 | 100 | 98 | 102 | 121 | 119 |
| PL14PH1 14 | 6.7 | 1.9 | 10.3 | 90 | 93 | 97 | 99 | 95 | 102 | 123 | 121 |
| PL14PH3 14 | 7.2 | 1.9 | 10.8 | 84 | 97 | 97 | 106 | 111 | 97 | 123 | 119 |
| PL28PH2 28 | 9.2 | 2.9 | 13.4 | 93 | 97 | 100 | 99 | 97 | 99 | 135 | 128 |
| PL28PH3 28 | 9.3 | 2.9 | 13.3 | 94 | 94 | 100 | 95 | 103 | 101 | 130 | 124 |
| PL28PH1 28 | 8.9 | 2.9 | 13.3 | 95 | 94 | 99 | 95 | 100 | 106 | 135 | 132 |
| PL99PH1 29 | 4.5 | 1.6 | 8.2 | * | * | * | * | * | * | * | * |
| PL56PH1 56 | 11.2 | 3.5 | 15.6 | 99 | 104 | 102 | 102 | 101 | 97 | 146 | 134 |
| PL56PH2 56 | 11.2 | 3.5 | 15.8 | 106 | 105 | 100 | 97 | 91 | 107 | 147 | 143 |
| PL56PH3 56 | 10.8 | 3.8 | 13.8 | 102 | 108 | 100 | 104 | 97 | 107 | 139 | 139 |
| PL99PH2 121 | 7.8 | 1.3 | 10.6 | * | * | * | * | * | * | * | * |
| PL99PH3 230 | 8.8 | 3.5 | 12.8 | * | * | * | * | * | * | * | * |
| PL99PH4 362 | 9.4 | 2.2 | 12.3 | * | * | * | * | * | * | * | * |
| PL99PH5 499 | 8.9 | 3.8 | 14.0 | * | * | * | * | * | * | * | * |
| PL99PH6 625 | 14.4 | 4.1 | 19.6 | * | * | * | * | * | * | * | * |
| PL99PH7 722 | 16.1 | 4.1 | 19.8 | 149 | * | 100 | * | 38 | * | * | * |
| | | | | PHENOL 1.0% 50°C | | | | | | | |
| PH01PL1 1 | 3.2 | 2.2 | 3.4 | 81 | 79 | 94 | 97 | 90 | 100 | 89 | 87 |
| PH07PL1 7 | 4.6 | 2.5 | 4.8 | 81 | 83 | 95 | 94 | 101 | 101 | 97 | 90 |
| PH14PL1 14 | 4.9 | 3.2 | 5.2 | 75 | 78 | 94 | 94 | 108 | 109 | 91 | 87 |
| PH99PL1 28 | 4.7 | 2.2 | 5.4 | * | * | * | * | * | * | * | * |
| PH28PL1 28 | 4.9 | 3.5 | 5.6 | 73 | 76 | 91 | 95 | 112 | 116 | 93 | 87 |
| PH56PL1 56 | 5.2 | 3.8 | 5.8 | 77 | 74 | 92 | 90 | 109 | 114 | 90 | 89 |
| PH99PL2 122 | 5.0 | 1.9 | 5.6 | * | * | * | * | * | * | * | * |
| PH99PL3 245 | 5.7 | 2.5 | 6.7 | * | * | * | * | * | * | * | * |
| PH99PL4 363 | 5.8 | 4.1 | 8.8 | * | * | * | * | * | * | * | * |
| PH99PL5 499 | 6.0 | 2.2 | 6.4 | * | * | * | * | * | * | * | * |
| PH99PL6 625 | 8.0 | 3.1 | 8.1 | * | * | * | * | * | * | * | * |
| PH99PL7 721 | 7.5 | 2.8 | 9.0 | 80 | * | 92 | * | 103 | * | * | * |
| | | | | PHENOL 1.0% 23°C | | | | | | | |
| PL01PL2 1 | 2.1 | .6 | 1.2 | 83 | 85 | 98 | 99 | 101 | 110 | 96 | 96 |
| PL01PL3 1 | 2.4 | 1.0 | 2.0 | 85 | 84 | 102 | 97 | 106 | 106 | 99 | 94 |
| PL01PL1 1 | 1.7 | .3 | 1.3 | 83 | * | 97 | 99 | 93 | 104 | 88 | 82 |
| PL07PL2 7 | 3.9 | 1.6 | 4.1 | 76 | 77 | 100 | 95 | 112 | 109 | 93 | 88 |
| PL07PL1 7 | 4.1 | 1.3 | 4.1 | 80 | 78 | 96 | 93 | 95 | 98 | 103 | 97 |
| PL07PL3 7 | 3.6 | 2.2 | 100.0 | 74 | 73 | 98 | 96 | 112 | 117 | 89 | 85 |
| PL14PL2 14 | 3.9 | 1.6 | 3.7 | 73 | 74 | 100 | 97 | 111 | 114 | 88 | 84 |
| PL14PL3 14 | 3.6 | 1.6 | 3.7 | 76 | 74 | 101 | 100 | 112 | 119 | 91 | 84 |
| PL14PL1 14 | 4.1 | 1.9 | 4.7 | 73 | 73 | 95 | 99 | 105 | 117 | 88 | 86 |
| PL28PL1 28 | 4.4 | 2.2 | 4.5 | 72 | 74 | 95 | 93 | 114 | 117 | 90 | 87 |
| PL28PL3 28 | 4.6 | 1.9 | 4.9 | 70 | 70 | 89 | 93 | 107 | 116 | 87 | 81 |
| PL28PL2 28 | 4.7 | 2.2 | 4.7 | 68 | 70 | 93 | 92 | 113 | 120 | 88 | 82 |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PHENOL 1.0% 23°C | | | | | | | |
| PL99PL1 28 | 4.1 | .9 | 1.8 | * | * | * | * | * | * | * | * |
| PL56PL3 56 | 4.5 | 1.9 | 4.7 | 69 | 73 | 94 | 96 | 123 | 123 | 90 | 86 |
| PL56PL1 56 | 4.5 | 2.2 | 4.5 | 75 | 73 | 95 | 94 | 106 | 118 | 84 | 86 |
| PL56PL2 56 | 4.5 | 2.2 | 5.3 | 70 | 71 | 95 | 91 | 114 | 117 | 89 | 81 |
| PL99PL2 122 | 4.4 | 1.2 | 4.8 | * | * | * | * | * | * | * | * |
| PL99PL3 233 | 4.2 | 1.6 | 5.9 | * | * | * | * | * | * | * | * |
| PL99PL4 363 | 4.7 | 1.9 | 6.0 | * | * | * | * | * | * | * | * |
| PL99PL5 499 | 4.5 | 1.2 | 4.9 | * | * | * | * | * | * | * | * |
| PL99PL6 626 | 5.8 | 1.9 | 6.8 | * | * | * | * | * | * | * | * |
| PL99PL7 723 | 5.5 | 2.2 | 7.1 | 83 | * | 102 | * | 114 | * | * | * |
| | | | | PHENOL 4.0% 50°C | | | | | | | |
| PH01PM1 1 | 7.4 | 3.8 | 7.4 | 68 | 69 | 86 | 82 | 95 | 94 | 75 | 68 |
| PH07PM1 7 | .2 | 1.3 | 1.0 | 87 | 89 | 94 | 93 | 96 | 97 | 104 | 101 |
| PH14PM1 14 | .6 | .6 | 2.5 | 85 | 87 | 94 | 95 | 104 | 107 | 146 | 143 |
| PH28PM1 28 | 1.2 | 1.0 | 2.7 | 88 | 91 | 97 | 97 | 104 | 105 | 118 | 106 |
| PH99PM1 29 | 6.4 | 1.9 | 4.8 | * | * | * | * | * | * | * | * |
| PH56PM1 56 | 3.1 | .3 | 5.2 | 93 | 95 | 101 | 95 | 105 | 101 | 112 | 112 |
| PH99PM2 121 | 4.9 | 1.6 | 3.7 | * | * | * | * | * | * | * | * |
| PH99PM3 244 | 3.0 | .9 | 1.5 | * | * | * | * | * | * | * | * |
| PH99PM4 362 | 3.5 | 1.3 | 2.9 | * | * | * | * | * | * | * | * |
| PH99PM5 499 | 3.5 | 1.9 | 2.5 | * | * | * | * | * | * | * | * |
| PH99PM6 624 | 2.3 | .6 | .7 | * | * | * | * | * | * | * | * |
| PH99PM7 720 | 1.0 | .6 | .1 | 118 | * | 103 | * | 112 | * | * | * |
| | | | | PHENOL 4.0% 23°C | | | | | | | |
| PL01PM2 1 | 8.0 | 2.6 | 7.8 | 65 | 64 | 89 | 87 | 103 | 108 | 92 | 77 |
| PL01PM1 1 | 8.4 | 2.6 | 7.9 | 64 | 63 | 87 | 88 | 97 | 105 | 81 | 72 |
| PL01PM3 1 | 8.5 | 2.6 | 7.7 | 63 | 64 | 87 | 87 | 101 | 108 | 84 | 78 |
| PL07PM2 7 | 3.5 | 1.6 | 2.4 | 73 | 73 | 97 | 95 | 108 | 109 | 93 | 85 |
| PL07PM1 7 | 5.3 | 1.6 | 3.9 | 74 | 73 | 92 | 86 | 97 | 94 | 89 | 87 |
| PL07PM3 7 | 3.7 | 1.9 | 2.7 | 70 | 70 | 96 | 94 | 111 | 112 | 89 | 85 |
| PL14PM3 14 | 1.6 | 1.0 | .2 | 73 | 73 | 93 | 95 | 100 | 109 | 93 | 87 |
| PL14PM2 14 | 2.3 | 1.3 | .6 | 71 | 72 | 98 | 93 | 112 | 106 | 93 | 87 |
| PL14PM1 14 | 2.0 | 1.0 | .6 | 74 | 73 | 97 | 92 | 109 | 105 | 96 | 91 |
| PL28PM1 28 | .1 | .3 | 2.1 | 76 | 79 | 95 | 93 | 104 | 103 | 102 | 98 |
| PL28PM3 28 | .7 | .3 | 2.3 | 75 | 78 | 99 | 96 | 110 | 109 | 101 | 98 |
| PL28PM2 28 | .3 | * | 2.2 | 75 | 77 | 96 | 93 | 101 | 102 | 99 | 95 |
| PL99PM1 29 | 4.9 | 1.3 | 3.8 | * | * | * | * | * | * | * | * |
| PL56PM2 56 | 1.9 | .9 | 4.4 | 79 | 82 | 94 | 98 | 119 | 117 | 108 | 103 |
| PL56PM3 56 | 2.0 | .6 | 4.2 | 79 | 79 | 101 | 93 | 129 | 121 | 113 | 103 |
| PL56PM1 56 | 2.8 | .6 | 5.1 | 82 | 84 | 97 | 98 | 105 | 103 | 105 | 104 |
| PL99PM2 121 | 5.6 | 1.3 | 4.3 | * | * | * | * | * | * | * | * |
| PL99PM3 231 | 7.0 | 1.9 | 7.0 | * | * | * | * | * | * | * | * |
| PL99PM4 362 | 5.0 | 1.6 | 3.5 | * | * | * | * | * | * | * | * |
| PL99PM5 499 | .2 | .6 | 3.4 | * | * | * | * | * | * | * | * |
| PL99PM6 625 | 2.6 | 2.2 | 6.9 | * | * | * | * | * | * | * | * |
| PL99PM7 722 | 4.5 | 1.0 | 6.3 | 118 | * | 98 | * | 107 | * | * | * |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | |
| PH01SH1 1 | .1 | .3 | .7 | 79 | 82 | 93 | 92 | 113 | 113 | 98 | 95 |
| PH07SH1 7 | .1 | 100.0 | 100.0 | 81 | 82 | 96 | 93 | 127 | 125 | 97 | 91 |
| PH14SH1 14 | * | .3 | .7 | * | * | * | * | * | * | 93 | 92 |
| PH99SH1 28 | .4 | .3 | .4 | * | * | * | * | * | * | * | * |
| PH28SH1 28 | .1 | .3 | .3 | 91 | 88 | 104 | 99 | 122 | 127 | 93 | 95 |
| PH56SH1 56 | .2 | * | .3 | 87 | 89 | 95 | 95 | 110 | 113 | 103 | 99 |
| PH99SH2 131 | .3 | .3 | .5 | * | * | * | * | * | * | * | * |
| PH99SH3 253 | .4 | .6 | .2 | * | * | * | * | * | * | * | * |
| PH99SH4 379 | * | 1.3 | 1.3 | * | * | * | * | * | * | * | * |
| PH99SH5 510 | .3 | * | .9 | * | * | * | * | * | * | * | * |
| PH99SH6 630 | .5 | .3 | .6 | * | * | * | * | * | * | * | * |
| PH99SH7 734 | .6 | .6 | .4 | 104 | * | 96 | * | 106 | * | * | * |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | |
| PL01SH1 1 | .1 | .6 | .8 | 89 | 89 | 97 | 96 | 110 | 115 | 103 | 95 |
| PL01SH2 1 | * | * | .1 | 92 | 93 | 98 | 95 | 107 | 109 | 98 | 90 |
| PL01SH3 1 | * | .3 | * | 86 | 87 | 99 | 96 | 112 | 118 | 96 | 91 |
| PL07SH2 7 | .1 | .3 | .8 | 82 | 82 | 97 | 91 | 115 | 111 | 95 | 94 |
| PL07SH1 7 | * | * | .2 | 81 | 83 | 94 | 94 | 112 | 120 | 93 | 91 |
| PL07SH3 7 | * | .6 | .9 | 75 | 78 | 101 | 95 | 152 | 137 | 92 | 88 |
| PL14SH3 14 | .1 | * | * | 90 | 85 | 100 | 97 | 112 | 127 | 101 | 96 |
| PL14SH1 14 | * | .6 | .9 | * | * | * | * | * | * | 94 | 90 |
| PL14SH2 14 | .4 | .6 | .1 | 88 | * | 108 | * | 126 | * | 102 | 99 |
| PL28SH2 28 | .1 | * | * | 84 | 97 | 97 | 113 | 115 | 126 | 97 | 99 |
| PL28SH3 28 | .2 | .3 | .3 | 84 | 91 | 95 | 109 | 110 | 125 | 96 | 103 |
| PL99SH1 28 | * | .3 | .2 | * | * | * | * | * | * | * | * |
| PL28SH1 28 | * | * | .3 | 85 | 90 | 98 | 97 | 112 | 108 | 98 | 92 |
| PL56SH1 56 | .1 | * | .3 | 80 | 75 | 100 | 101 | 120 | 155 | 100 | 92 |
| PL56SH3 56 | .1 | * | .7 | 88 | 97 | 95 | 104 | 112 | 112 | 91 | 101 |
| PL56SH2 56 | .1 | * | .4 | 87 | 102 | 94 | 106 | 116 | 110 | 97 | |
| PL99SH2 131 | .3 | * | * | * | * | * | * | * | * | * | * |
| PL99SH3 246 | * | 1.0 | 1.3 | * | * | * | * | * | * | * | * |
| PL99SH4 379 | .1 | .6 | .5 | * | * | * | * | * | * | * | * |
| PL99SH5 510 | .3 | * | .1 | * | * | * | * | * | * | * | * |
| PL99SH6 630 | .1 | .3 | .2 | * | * | * | * | * | * | * | * |
| PL99SH7 736 | .2 | .6 | .6 | 98 | * | 105 | * | 111 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | |
| PH01SM1 1 | .2 | * | .1 | 87 | 92 | 98 | 98 | 102 | 105 | 96 | 90 |
| PH07SM1 7 | .2 | * | .4 | 92 | 93 | 100 | 95 | 116 | 108 | 100 | 104 |
| PH14SM1 14 | * | .9 | .3 | 96 | 96 | 103 | 100 | 104 | 107 | 103 | 104 |
| PH28SM1 28 | .1 | 1.3 | .2 | 89 | 91 | 97 | 96 | 111 | 116 | 104 | 104 |
| PH99SM1 28 | .3 | .3 | .5 | * | * | * | * | * | * | * | * |
| PH56SM1 61 | .1 | .6 | .1 | 91 | 102 | 98 | 95 | 104 | 98 | 112 | 111 |
| PH99SM2 132 | .6 | * | .8 | * | * | * | * | * | * | * | * |
| PH99SM3 254 | .5 | * | .8 | * | * | * | * | * | * | * | * |
| PH99SM4 370 | .4 | .6 | .1 | * | * | * | * | * | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | |
| PH99SM5 511 | .3 | 1.9 | 1.3 | * | * | * | * | * | * | * | * |
| PH99SM6 624 | .6 | .3 | 1.3 | * | * | * | * | * | * | * | * |
| PH99SM7 735 | .7 | .3 | .6 | 106 | * | 104 | * | 106 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | |
| PL01SM2 1 | .2 | * | 1.0 | 91 | 89 | 101 | 92 | 102 | 94 | 94 | 92 |
| PL01SM3 1 | .2 | * | .1 | 89 | 88 | 99 | 94 | 102 | 97 | 93 | 91 |
| PL01SM1 1 | .2 | * | * | 88 | 88 | 98 | 95 | 102 | 101 | 93 | 90 |
| PL07SM2 7 | .4 | * | .2 | 88 | 87 | 97 | 95 | 110 | 113 | 104 | 98 |
| PL07SM3 7 | .4 | * | .2 | 89 | 89 | 101 | 97 | 117 | 117 | 105 | 95 |
| PL07SM1 7 | .2 | * | .1 | 86 | 93 | 100 | 97 | 121 | 112 | 107 | 95 |
| PL14SM1 14 | * | .6 | .7 | 92 | 94 | 101 | 100 | 100 | 103 | 105 | 104 |
| PL14SM3 15 | .4 | * | .3 | 100 | 105 | 97 | 101 | 89 | 101 | 114 | 111 |
| PL14SM2 15 | .3 | .3 | * | 99 | 101 | 99 | 98 | 97 | 101 | 111 | 108 |
| PL99SM1 28 | .1 | * | * | * | * | * | * | * | * | * | * |
| PL28SM3 28 | .2 | .3 | .1 | 90 | 86 | 102 | 98 | 105 | 115 | 95 | 93 |
| PL28SM2 28 | .2 | .3 | .5 | 84 | 85 | 97 | 99 | 104 | 121 | 101 | 94 |
| PL28SM1 28 | .1 | .3 | .2 | 86 | 84 | 100 | 95 | 107 | 120 | 95 | 98 |
| PL56SM2 56 | * | * | * | 85 | 92 | 96 | 95 | 100 | 103 | 106 | 100 |
| PL56SM3 56 | * | * | * | 88 | 94 | 99 | 96 | 102 | 100 | 104 | 105 |
| PL56SM1 61 | .2 | .3 | .4 | 96 | 88 | 101 | 93 | 102 | 105 | 113 | 104 |
| PL99SM2 132 | .3 | .3 | .2 | * | * | * | * | * | * | * | * |
| PL99SM3 246 | * | * | .8 | * | * | * | * | * | * | * | * |
| PL99SM4 370 | .2 | .3 | .2 | * | * | * | * | * | * | * | * |
| PL99SM5 511 | * | .3 | .7 | * | * | * | * | * | * | * | * |
| PL99SM6 624 | .8 | .3 | .7 | * | * | * | * | * | * | * | * |
| PL99SM7 737 | .9 | 1.0 | .8 | 97 | * | 101 | * | 102 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | | | |
| PH01WP1 1 | .8 | * | .3 | 92 | 95 | 97 | 97 | 92 | 97 | 101 | 98 |
| PH07WP1 7 | 1.2 | 1.3 | 1.3 | 84 | 87 | 100 | 96 | 120 | 117 | 100 | 100 |
| PH14WP1 14 | 1.7 | 1.6 | 1.9 | 108 | 108 | 102 | 101 | 90 | 96 | 105 | 99 |
| PH28WP1 28 | 1.7 | 1.9 | 2.2 | 87 | 94 | 92 | 96 | 99 | 105 | 105 | 102 |
| PH99WP1 28 | 2.1 | .9 | 1.4 | * | * | * | * | * | * | * | * |
| PH56WP1 56 | 1.4 | 1.9 | 1.9 | 97 | 98 | 99 | 93 | 94 | 100 | 107 | 103 |
| PH99WP2 133 | 2.3 | 1.9 | 2.7 | * | * | * | * | * | * | * | * |
| PH99WP3 254 | 2.7 | .9 | 2.1 | * | * | * | * | * | * | * | * |
| PH99WP4 370 | 2.5 | 2.2 | 3.6 | * | * | * | * | * | * | * | * |
| PH99WP5 503 | 2.6 | .9 | 1.8 | * | * | * | * | * | * | * | * |
| PH99WP6 622 | 2.6 | .6 | 1.8 | * | * | * | * | * | * | * | * |
| PH99WP7 735 | 2.5 | 1.6 | 2.5 | 96 | * | 95 | * | 112 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | | | |
| PL01WP2 1 | .1 | .3 | .3 | 94 | 96 | 103 | 101 | 105 | 101 | 99 | 97 |
| PL01WP1 1 | .3 | * | .3 | 95 | 96 | 103 | 102 | 107 | 113 | 99 | 96 |
| PL01WP3 1 | * | .3 | .3 | 93 | 99 | 105 | 101 | 111 | 104 | 100 | 97 |

POLYVINYL CHLORIDE: CHEMICAL IMMERSION ANALYSIS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 23°C | | | | | | | | | | | |
| PL07WP2 7 | .4 | * | .3 | 85 | 84 | 99 | 97 | 108 | 114 | 96 | 100 |
| PL07WP1 7 | .6 | .3 | .5 | 84 | 88 | 96 | 97 | 104 | 111 | 98 | 99 |
| PL07WP3 7 | .5 | .3 | .8 | 85 | 85 | 96 | 94 | 100 | 115 | 100 | 97 |
| PL14WP1 14 | .8 | 1.6 | 2.2 | 94 | 103 | 97 | 103 | 89 | 100 | 108 | 98 |
| PL14WP2 14 | .8 | 1.0 | 1.2 | 90 | 91 | 97 | 98 | 100 | 106 | 96 | 92 |
| PL14WP3 14 | .9 | .9 | 1.3 | 89 | 92 | 98 | 98 | 102 | 107 | 99 | 94 |
| PL28WP1 28 | .7 | .6 | 1.0 | 93 | 95 | 100 | 99 | 105 | 110 | 106 | 98 |
| PL99WP1 28 | 1.0 | .6 | .5 | * | * | * | * | * | * | * | * |
| PL28WP2 28 | .9 | .6 | .2 | 93 | 85 | 99 | 96 | 103 | 116 | 95 | 95 |
| PL28WP3 28 | .8 | .3 | .3 | 93 | 87 | 102 | 99 | 118 | 121 | 108 | 92 |
| PL56WP3 56 | 1.1 | 1.3 | 2.0 | 109 | 112 | 100 | 87 | 91 | 88 | 112 | 112 |
| PL56WP2 56 | .9 | .3 | 1.0 | 100 | 102 | 96 | 95 | 94 | 93 | 114 | 110 |
| PL56WP1 56 | .8 | 1.0 | 1.7 | 96 | 99 | 99 | 93 | 102 | 92 | 104 | 100 |
| PL99WP2 132 | 1.5 | .9 | .8 | * | * | * | * | * | * | * | * |
| PL99WP3 247 | .8 | .6 | 2.6 | * | * | * | * | * | * | * | * |
| PL99WP4 370 | 1.8 | .3 | .6 | * | * | * | * | * | * | * | * |
| PL99WP5 503 | 1.4 | .6 | .5 | * | * | * | * | * | * | * | * |
| PL99WP6 622 | 1.2 | .9 | .6 | * | * | * | * | * | * | * | * |
| PL99WP7 737 | .7 | .3 | .1 | 100 | * | 106 | * | 107 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | |
| PH01XM1 1 | .4 | * | .2 | 83 | 80 | 97 | 94 | 102 | 129 | 94 | 101 |
| PH07XM1 7 | .5 | * | .2 | 88 | 96 | 103 | 100 | 117 | 109 | 100 | 97 |
| PH14XM1 14 | .3 | .3 | .1 | 94 | 99 | 103 | 97 | 110 | 102 | 108 | 102 |
| PH99XM1 28 | .4 | .6 | .1 | * | * | * | * | * | * | * | * |
| PH28XM1 28 | .2 | 1.0 | .7 | 86 | 98 | 99 | 96 | 108 | 105 | 99 | 99 |
| PH56XM1 56 | .6 | .6 | * | 93 | 91 | 101 | 98 | 109 | 117 | 104 | 103 |
| PH99XM2 118 | .5 | .6 | .3 | * | * | * | * | * | * | * | * |
| PH99XM3 231 | .6 | .3 | * | * | * | * | * | * | * | * | * |
| PH99XM4 363 | .2 | .6 | .2 | * | * | * | * | * | * | * | * |
| PH99XM5 489 | .2 | .3 | .5 | * | * | * | * | * | * | * | * |
| PH99XM6 609 | .1 | .3 | .1 | * | * | * | * | * | * | * | * |
| PH99XM7 712 | * | .3 | .2 | 105 | * | 100 | * | 96 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | |
| PL01XM2 1 | .2 | .3 | .1 | 97 | 92 | 107 | 99 | 108 | 114 | 108 | 103 |
| PL01XM1 1 | .2 | .3 | .4 | 90 | 83 | 98 | 100 | 108 | 131 | 95 | 98 |
| PL01XM3 1 | .2 | .6 | .8 | 97 | 87 | 102 | 90 | 101 | 96 | 102 | 104 |
| PL07XM3 7 | .3 | * | .3 | 92 | 89 | 96 | 91 | 92 | 94 | 105 | 113 |
| PL07XM1 7 | .5 | * | .2 | 86 | 90 | 102 | 98 | 111 | 108 | 104 | 99 |
| PL07XM2 7 | .4 | .3 | .1 | 93 | 89 | 96 | 91 | 91 | 92 | 107 | 101 |
| PL14XM3 14 | .3 | .3 | .5 | 71 | 86 | 92 | 98 | 107 | 101 | 90 | 99 |
| PL14XM1 14 | .3 | .6 | .4 | 91 | 97 | 99 | 99 | 101 | 100 | 108 | 99 |
| PL14XM2 14 | .5 | .3 | .3 | 76 | 90 | 94 | 107 | 114 | 105 | 93 | 96 |
| PL28XM2 28 | .5 | * | .1 | 89 | 87 | 99 | 103 | 118 | 106 | 100 | 103 |
| PL28XM3 28 | .4 | .3 | .2 | 84 | 85 | 99 | 104 | 132 | 114 | 105 | 107 |
| PL99XM1 28 | .6 | * | .5 | * | * | * | * | * | * | * | * |

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | |
| PL28XM1 28 | .4 | .3 | .9 | 85 | 85 | 98 | 96 | 100 | 105 | 100 | 100 |
| PL56XM3 56 | 100.0 | * | .2 | 85 | 82 | 102 | 96 | 112 | 112 | 98 | 92 |
| PL56XM2 56 | 100.0 | .3 | .6 | 84 | 84 | 97 | 95 | 105 | 109 | 100 | 98 |
| PL56XM1 56 | .6 | * | .2 | 84 | 83 | 102 | 97 | 116 | 124 | 93 | 98 |
| PL99XM2 118 | .6 | .3 | .5 | * | * | * | * | * | * | * | * |
| PL99XM3 223 | .2 | * | .3 | * | * | * | * | * | * | * | * |
| PL99XM4 363 | .2 | * | * | * | * | * | * | * | * | * | * |
| PL99XM5 489 | .3 | .3 | .3 | * | * | * | * | * | * | * | * |
| PL99XM6 609 | .2 | .3 | .4 | * | * | * | * | * | * | * | * |
| PL99XM7 714 | .1 | .3 | .4 | 99 | * | 103 | * | 102 | * | * | * |

# CPE : FINAL PROPERTIES

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| CH01AM1 1 | * | * | * | * | 32.70 | 19.78 | 55.34 | 50.82 | 520.00 | 512.90 | 7.62 | 6.62 |
| CH07AM1 7 | 2.05 | 32.00 | 2.98 | 1.01 | * | * | * | * | * | * | * | * |
| CH14AM1 14 | 1.96 | 30.70 | 2.99 | 1.01 | 37.54 | 20.50 | 64.38 | 51.30 | 426.20 | 428.30 | 8.14 | 7.38 |
| CH99AM1 28 | 2.10 | 33.30 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| CH28AM1 29 | 2.05 | 32.50 | 2.99 | 1.01 | 39.74 | 19.54 | 65.86 | 48.02 | 374.20 | 356.20 | 8.92 | 7.92 |
| CH56AM1 56 | 36.19 | 32.90 | 7.48 | 6.92 | 41.54 | 21.30 | 75.90 | 60.66 | 403.80 | 430.90 | 8.22 | 8.34 |
| CH99AM2 144 | 2.22 | 34.70 | 2.98 | 1.02 | * | * | * | * | * | * | * | * |
| CH99AM3 252 | 2.31 | 37.00 | 2.98 | 1.03 | * | * | * | * | * | * | * | * |
| CH99AM4 368 | 2.33 | 36.20 | 2.98 | 1.03 | * | * | * | * | * | * | * | * |
| CH99AM5 511 | 2.40 | 37.50 | 2.97 | 1.04 | * | * | * | * | * | * | * | * |
| CH99AM6 621 | 2.43 | 38.00 | 2.97 | 1.04 | * | * | * | * | * | * | * | * |
| CH99AM7 732 | 2.53 | 40.10 | 2.97 | 1.04 | 32.63 | * | 55.29 | * | 396.20 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| CL01AM1 1 | 1.92 | 29.60 | 3.01 | 1.01 | 36.38 | 19.78 | 55.30 | 46.26 | 505.60 | 522.60 | 7.22 | 6.34 |
| CL07AM1 7 | 2.02 | 31.30 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| CL14AM1 14 | 2.01 | 31.50 | 3.00 | 1.00 | 36.62 | 17.42 | 54.50 | 47.06 | 445.20 | 596.70 | 6.90 | 6.94 |
| CL28AM1 29 | 1.99 | 31.00 | 3.01 | 1.01 | 39.78 | 19.06 | 60.38 | 50.90 | 446.50 | 584.20 | 7.13 | 6.75 |
| CL99AM1 31 | 2.03 | 31.20 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL56AM1 56 | 35.45 | 32.10 | 7.43 | 6.94 | 37.54 | 19.14 | 60.30 | 51.46 | 442.00 | 539.30 | 7.90 | 7.62 |
| CL99AM2 144 | 2.05 | 31.40 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99AM3 238 | 2.04 | 31.40 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL99AM4 368 | 2.05 | 31.50 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99AM5 511 | 2.05 | 31.20 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99AM6 621 | 2.05 | 31.40 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL99AM7 732 | 2.06 | 31.80 | 3.02 | 1.02 | 37.68 | * | 62.83 | * | 547.42 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| CH01BM1 1 | * | * | * | * | 32.98 | 15.30 | 54.18 | 47.54 | 499.90 | 664.90 | 7.36 | 6.96 |
| CH07BM1 7 | 2.10 | 32.70 | 3.02 | 1.00 | 19.82 | 21.14 | 49.70 | 50.18 | 517.60 | 457.00 | 6.92 | 6.90 |
| CH14BM1 14 | 2.06 | 32.30 | 2.98 | 1.02 | 36.34 | 20.10 | 62.78 | 47.98 | 502.70 | 462.10 | 7.54 | 6.16 |
| CH28BM1 28 | 2.05 | 32.70 | 3.02 | 0.99 | 37.82 | 18.58 | 59.54 | 47.38 | 461.60 | 519.90 | 7.18 | 6.17 |
| CH99BM1 29 | 2.12 | 33.10 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH56BM1 56 | 2.06 | 32.70 | 2.97 | 1.01 | 40.70 | 34.34 | 65.10 | 60.58 | 441.70 | 523.60 | 5.99 | 6.90 |
| CH99BM2 144 | 2.11 | 33.10 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH99BM3 252 | 2.13 | 33.50 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH99BM4 368 | 2.19 | 33.30 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH99BM5 510 | 2.15 | 33.40 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH99BM6 622 | 2.16 | 34.40 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH99BM7 732 | 2.22 | 35.20 | 2.97 | 1.01 | 37.98 | * | 57.39 | * | 491.08 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| CL01BM1 1 | 2.03 | 31.10 | 3.00 | 1.00 | 41.86 | 18.94 | 62.46 | 53.98 | 441.00 | 594.10 | 8.24 | 7.12 |
| CL07BM1 7 | 2.03 | 31.20 | 3.01 | 1.00 | 37.66 | 17.30 | 64.66 | 55.14 | 533.10 | 699.40 | 7.86 | 7.10 |
| CL14BM1 14 | 2.03 | 31.40 | 3.01 | 1.01 | 35.86 | 17.74 | 58.30 | 51.22 | 453.40 | 581.00 | 7.12 | 6.48 |
| CL99BM1 28 | 2.06 | 31.60 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| CL28BM1 28 | 2.03 | 31.60 | 3.02 | 1.00 | 32.38 | 17.30 | 55.42 | 45.82 | 534.70 | 517.30 | 6.98 | 6.34 |
| CL56BM1 56 | 2.04 | 31.80 | 3.02 | 1.01 | 20.06 | 16.18 | 48.42 | 43.90 | 489.00 | 576.10 | 8.24 | 7.73 |
| CL99BM2 144 | 2.06 | 31.80 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| CL99BM3 238 | 2.05 | 31.80 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99BM4 368 | 2.04 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| CL99BM5 510 | 2.04 | 31.50 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| CL99BM6 622 | 2.03 | 31.60 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| CL99BM7 732 | 2.03 | 31.60 | 3.01 | 1.00 | 41.67 | * | 64.42 | * | 564.92 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| CH01DH1 1 | 2.33 | 36.50 | 2.81 | 1.05 | 10.20 | 5.44 | 22.64 | 17.58 | 698.55 | 877.85 | 3.45 | 3.12 |
| CH07DH1 7 | 2.50 | 39.70 | 2.80 | 1.08 | 11.27 | 7.02 | 29.42 | 27.31 | 646.85 | 734.13 | 4.54 | 4.61 |
| CH14DH1 14 | 2.71 | 42.90 | 2.75 | 1.11 | 11.85 | 6.35 | 27.33 | 18.21 | 563.35 | 601.03 | 3.39 | 4.27 |
| CH99DH1 28 | 2.79 | 46.50 | 2.78 | 1.14 | * | * | * | * | * | * | * | * |
| CH28DH1 29 | 4.37 | 61.50 | 2.63 | 1.30 | 6.62 | 5.00 | 11.37 | 9.87 | 394.50 | 486.63 | 3.57 | 2.50 |
| CH56DH1 56 | 3.03 | 48.90 | 2.73 | 1.18 | 11.67 | 7.01 | 22.58 | 16.17 | 442.65 | 455.58 | 5.32 | 4.53 |
| CH99DH2 133 | 3.70 | 60.60 | 2.71 | 1.25 | * | * | * | * | * | * | * | * |
| CH99DH3 244 | 4.58 | 72.60 | 2.63 | 1.29 | * | * | * | * | * | * | * | * |
| CH99DH4 364 | 4.73 | 76.10 | 2.60 | 1.33 | * | * | * | * | * | * | * | * |
| CH99DH5 495 | 5.17 | 87.40 | 2.55 | 1.35 | * | * | * | * | * | * | * | * |
| CH99DH6 629 | 5.44 | 88.80 | 2.58 | 1.37 | * | * | * | * | * | * | * | * |
| CH99DH7 726 | 4.71 | 74.20 | 2.61 | 1.34 | 19.04 | * | 39.41 | * | 522.17 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| CL01DH1 1 | 2.29 | 34.20 | 2.99 | 1.04 | 9.19 | 4.43 | 21.20 | 13.78 | 685.40 | 879.68 | 3.25 | 2.94 |
| CL07DH1 7 | 2.37 | 35.90 | 2.97 | 1.05 | 5.65 | 3.94 | 12.28 | 14.19 | 618.58 | 1008.83 | 4.38 | 4.26 |
| CL14DH1 14 | 2.36 | 35.70 | 2.98 | 1.05 | 9.47 | 5.27 | 22.22 | 15.58 | 605.90 | 744.28 | 2.78 | 1.47 |
| CL99DH1 28 | 2.18 | 33.50 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| CL28DH1 29 | 2.57 | 38.90 | 2.89 | 1.11 | 5.99 | 4.63 | 11.87 | 12.61 | 496.38 | 670.68 | 3.15 | 3.22 |
| CL56DH1 56 | 2.49 | 37.40 | 2.97 | 1.10 | 11.31 | 5.65 | 23.10 | 15.15 | 448.13 | 525.30 | 3.72 | 3.72 |
| CL99DH2 134 | 2.73 | 40.70 | 2.95 | 1.13 | * | * | * | * | * | * | * | * |
| CL99DH3 231 | 2.80 | 40.70 | 2.93 | 1.15 | * | * | * | * | * | * | * | * |
| CL99DH4 364 | 3.01 | 43.90 | 2.91 | 1.18 | * | * | * | * | * | * | * | * |
| CL99DH5 495 | 3.31 | 48.50 | 2.90 | 1.22 | * | * | * | * | * | * | * | * |
| CL99DH6 630 | 4.18 | 64.60 | 2.69 | 1.32 | * | * | * | * | * | * | * | * |
| CL99DH7 725 | 5.68 | 85.30 | 2.44 | 1.72 | 6.93 | * | 16.53 | * | 533.92 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| CH01DL1 1 | 2.12 | 32.70 | 2.99 | 1.01 | 28.13 | 12.56 | 54.14 | 49.44 | 578.98 | 758.35 | 6.48 | 6.16 |
| CH07DL1 7 | 2.28 | 35.90 | 2.94 | 1.04 | 24.65 | 11.76 | 61.49 | 42.26 | 586.55 | 552.50 | 5.77 | 5.95 |
| CH14DL1 14 | 2.30 | 36.00 | 2.95 | 1.05 | 25.28 | 11.88 | 55.72 | 31.47 | 480.20 | 433.03 | 5.31 | 5.77 |
| CH99DL1 28 | 2.45 | 39.50 | 2.95 | 1.06 | * | * | * | * | * | * | * | * |
| CH28DL1 29 | 2.44 | 38.10 | 2.90 | 1.07 | 20.31 | 9.61 | 48.12 | 28.38 | 526.35 | 477.08 | 5.20 | 5.43 |
| CH56DL1 56 | 2.64 | 41.80 | 2.93 | 1.08 | 30.94 | 13.63 | 56.27 | 33.54 | 377.58 | 355.23 | 6.30 | 5.86 |
| CH99DL2 139 | 3.10 | 50.70 | 2.91 | 1.12 | * | * | * | * | * | * | * | * |
| CH99DL3 246 | 3.62 | 58.50 | 2.87 | 1.17 | * | * | * | * | * | * | * | * |
| CH99DL4 366 | 4.16 | 65.60 | 2.84 | 1.22 | * | * | * | * | * | * | * | * |
| CH99DL5 496 | 4.37 | 70.00 | 2.83 | 1.23 | * | * | * | * | * | * | * | * |
| CH99DL6 631 | 4.45 | 71.20 | 2.83 | 1.24 | * | * | * | * | * | * | * | * |
| CH99DL7 728 | 4.50 | 73.30 | 2.83 | 1.24 | 31.92 | * | 52.92 | * | 357.25 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| CL01DL1 1 | 2.02 | 31.00 | 3.01 | 1.01 | 30.06 | 13.71 | 54.70 | 44.49 | 533.35 | 697.05 | 6.85 | 6.34 |
| CL07DL1 7 | 2.11 | 32.50 | 3.01 | 1.02 | 26.03 | 12.53 | 51.32 | 49.85 | 577.75 | 808.73 | 5.97 | 5.80 |
| CL14DL1 14 | 2.13 | 32.60 | 3.01 | 1.01 | 22.54 | 10.54 | 45.80 | 37.51 | 589.45 | 742.43 | 4.82 | 5.01 |
| CL99DL1 28 | 2.13 | 32.80 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL28DL1 29 | 2.15 | 32.90 | 3.00 | 1.02 | 19.35 | 8.63 | 42.34 | 28.65 | 625.28 | 697.20 | 4.95 | 4.81 |
| CL56DL1 56 | 2.21 | 33.80 | 3.00 | 1.03 | 24.78 | 11.26 | 51.64 | 40.39 | 537.60 | 608.18 | 6.04 | 5.88 |
| CL99DL2 136 | 2.27 | 34.80 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CL99DL3 233 | 2.34 | 35.90 | 3.02 | 1.05 | * | * | * | * | * | * | * | * |
| CL99DL4 366 | 2.39 | 36.50 | 3.01 | 1.05 | * | * | * | * | * | * | * | * |
| CL99DL5 496 | 2.41 | 37.00 | 3.01 | 1.05 | * | * | * | * | * | * | * | * |
| CL99DL6 632 | 2.44 | 37.40 | 3.01 | 1.38 | * | * | * | * | * | * | * | * |
| CL99DL7 727 | 2.47 | 37.90 | 3.02 | 1.06 | 31.23 | * | 52.78 | * | 459.00 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| CH01DM1 1 | 2.23 | 35.10 | 2.86 | 1.04 | 16.33 | 8.38 | 34.60 | 28.94 | 647.88 | 847.88 | 4.16 | 4.27 |
| CH07DM1 7 | 2.45 | 39.00 | 2.80 | 1.08 | 15.63 | 8.03 | 39.33 | 28.61 | 635.73 | 667.58 | 4.81 | 4.75 |
| CH14DM1 14 | 2.56 | 40.60 | 2.78 | 1.11 | 15.34 | 7.57 | 31.93 | 20.90 | 491.65 | 525.55 | 4.42 | 4.55 |
| CH99DM1 28 | 2.68 | 43.90 | 2.78 | 1.11 | * | * | * | * | * | * | * | * |
| CH28DM1 29 | 2.68 | 42.30 | 2.76 | 1.13 | 15.44 | 8.10 | 32.32 | 22.44 | 487.58 | 520.45 | 4.45 | 4.30 |
| CH56DM1 56 | 2.83 | 44.90 | 2.77 | 1.15 | 18.93 | 9.49 | 35.77 | 24.77 | 401.03 | 433.65 | 5.96 | 4.88 |
| CH99DM3 245 | 3.67 | 60.90 | 2.73 | 1.20 | * | * | * | * | * | * | * | * |
| CH99DM4 365 | 3.95 | 65.20 | 2.73 | 1.22 | * | * | * | * | * | * | * | * |
| CH99DM5 496 | 4.44 | 78.30 | 2.64 | 1.25 | * | * | * | * | * | * | * | * |
| CH99DM6 630 | 4.78 | 80.50 | 2.63 | 1.29 | * | * | * | * | * | * | * | * |
| CH99DM7 727 | 4.87 | 84.10 | 2.61 | 1.28 | 31.50 | * | 52.03 | * | 371.92 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| CL01DM1 1 | 2.12 | 32.40 | 3.01 | 1.01 | 19.47 | 9.69 | 42.46 | 38.88 | 606.03 | 851.55 | 5.12 | 5.37 |
| CL07DM1 7 | 2.24 | 33.70 | 3.02 | 1.03 | 12.44 | 7.17 | 30.64 | 28.41 | 686.65 | 906.00 | 4.41 | 4.15 |
| CL14DM1 14 | 2.30 | 34.70 | 3.01 | 1.04 | 12.82 | 6.54 | 28.83 | 21.26 | 614.68 | 788.78 | 3.67 | 3.58 |
| CL99DM1 28 | 2.24 | 34.20 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| CL28DM1 29 | 2.32 | 35.00 | 2.99 | 1.05 | 12.05 | 6.17 | 28.37 | 18.99 | 565.98 | 371.60 | 4.07 | 3.93 |
| CL56DM1 56 | 2.38 | 35.70 | 3.00 | 1.06 | 15.25 | 6.99 | 34.16 | 22.75 | 476.30 | 561.15 | 4.76 | 4.45 |
| CL99DM2 135 | 2.36 | 36.10 | 3.01 | 1.05 | * | * | * | * | * | * | * | * |
| CL99DM3 233 | 2.49 | 37.80 | 3.01 | 1.07 | * | * | * | * | * | * | * | * |
| CL99DM4 365 | 2.50 | 38.60 | 3.00 | 1.07 | * | * | * | * | * | * | * | * |
| CL99DM5 496 | 2.73 | 41.60 | 2.98 | 1.10 | * | * | * | * | * | * | * | * |
| CL99DM6 631 | 2.81 | 41.90 | 2.97 | 1.13 | * | * | * | * | * | * | * | * |
| CL99DM7 726 | 3.04 | 44.90 | 2.94 | 1.16 | 15.04 | * | 31.23 | * | 539.83 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| CH01FH1 1 | 2.06 | 32.30 | 3.02 | 1.00 | 32.10 | 15.80 | 55.80 | 51.16 | 540.00 | 730.00 | 3.78 | 4.89 |
| CH07FH1 7 | 3.78 | 55.50 | 2.68 | 1.28 | 2.80 | 1.66 | 6.76 | 3.88 | 810.00 | 940.00 | 1.62 | 2.60 |
| CH14FH1 14 | 4.48 | 64.20 | 2.67 | 1.31 | 1.89 | 1.22 | 4.70 | 2.52 | 940.00 | 990.00 | 1.30 | 1.19 |
| CH28FH1 28 | 5.09 | 70.90 | 2.66 | 1.36 | 2.14 | 1.26 | 5.48 | 2.70 | 681.00 | 783.00 | 1.26 | 1.03 |
| CH99FH1 28 | 5.10 | 82.10 | 2.60 | 1.33 | * | * | * | * | * | * | * | * |
| CH56FH1 56 | 5.80 | 82.70 | 4.15 | 0.85 | 2.00 | 1.16 | 5.54 | 2.96 | 732.00 | 884.00 | 1.19 | 0.93 |
| CH99FH2 117 | 5.81 | 91.20 | 2.59 | 1.33 | * | * | * | * | * | * | * | * |
| CH99FH3 236 | 6.25 | 87.30 | 2.68 | 1.39 | * | * | * | * | * | * | * | * |
| CH99FH4 350 | 5.88 | 86.40 | 2.70 | 1.38 | * | * | * | * | * | * | * | * |
| CH99FH5 485 | 4.78 | 83.80 | 2.69 | 1.40 | * | * | * | * | * | * | * | * |
| CH99FH6 616 | 6.24 | 87.80 | 2.76 | 1.43 | * | * | * | * | * | * | * | * |
| CH99FH7 712 | 6.32 | 88.90 | 2.79 | 1.76 | 7.93 | * | 9.05 | * | 244.00 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| CL01FH1 1 | 2.01 | 31.00 | 3.01 | 1.00 | 35.80 | 17.80 | 57.70 | 52.40 | 490.00 | 640.00 | 4.31 | 5.87 |
| CL07FH1 7 | 3.23 | 46.10 | 2.84 | 1.21 | 2.26 | 1.72 | 6.13 | 5.16 | 958.00 | 1067.00 | 1.24 | 1.05 |
| CL14FH1 14 | 4.23 | 54.30 | 2.83 | 1.34 | 1.13 | 0.64 | 2.73 | 1.90 | 1108.30 | 1480.00 | 0.88 | 0.80 |
| CL99FH1 28 | 4.70 | 60.40 | 2.85 | 1.39 | * | * | * | * | * | * | * | * |
| CL28FH1 28 | 4.18 | 54.40 | 2.98 | 1.32 | 1.72 | 1.28 | 4.88 | 2.95 | 853.00 | 822.50 | 0.97 | 0.78 |
| CL56FH1 56 | 5.08 | 63.80 | 4.33 | 0.95 | 1.51 | 1.26 | 3.91 | 2.47 | 693.00 | 930.00 | 1.14 | 1.06 |
| CL99FH2 114 | 5.60 | 67.20 | 2.84 | 1.47 | * | * | * | * | * | * | * | * |
| CL99FH3 219 | 5.20 | 65.70 | 2.84 | 1.46 | * | * | * | * | * | * | * | * |
| CL99FH4 350 | 5.70 | 66.80 | 2.84 | 1.47 | * | * | * | * | * | * | * | * |
| CL99FH5 485 | 4.68 | 61.20 | 2.76 | 1.38 | * | * | * | * | * | * | * | * |
| CL99FH6 617 | 5.13 | 62.30 | 2.76 | 1.39 | * | * | * | * | * | * | * | * |
| CL99FH7 712 | 5.25 | 68.80 | 3.11 | 1.35 | 2.00 | * | 6.10 | * | 996.30 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FURFURAL 1.0% 50°C | | | | | | | | |
| CH01FL1 1 | 2.08 | 32.10 | 3.02 | 1.00 | 29.40 | 13.61 | 53.06 | 39.61 | 533.50 | 586.20 | 7.45 | 7.87 |
| CH07FL1 7 | 2.18 | 34.80 | 3.15 | 0.96 | 22.60 | 10.90 | 46.92 | 34.46 | 653.00 | 680.00 | 6.14 | 6.14 |
| CH14FL1 14 | 2.35 | 37.50 | 2.82 | 1.08 | 23.30 | 11.10 | 46.80 | 30.50 | 520.00 | 524.00 | 5.98 | 6.34 |
| CH28FL1 28 | 2.43 | 38.70 | 2.84 | 1.10 | 21.70 | 11.00 | 58.82 | 35.32 | 639.00 | 535.00 | 6.33 | 5.91 |
| CH99FL1 28 | 2.58 | 42.30 | 2.83 | 1.10 | * | * | * | * | * | * | * | * |
| CH56FL1 56 | 2.86 | 45.00 | 3.44 | 0.93 | 20.12 | 10.00 | 48.08 | 27.36 | 597.00 | 518.00 | 5.36 | 4.94 |
| CH99FL2 123 | 3.41 | 53.50 | 2.81 | 1.20 | * | * | * | * | * | * | * | * |
| CH99FL3 241 | 4.14 | 63.70 | 2.78 | 1.27 | * | * | * | * | * | * | * | * |
| CH99FL4 355 | 4.54 | 72.10 | 2.76 | 1.30 | * | * | * | * | * | * | * | * |
| CH99FL5 489 | 4.94 | 75.70 | 2.74 | 1.31 | * | * | * | * | * | * | * | * |
| CH99FL6 621 | 5.14 | 74.40 | 2.75 | 1.30 | * | * | * | * | * | * | * | * |
| CH99FL7 718 | 4.90 | 72.70 | 2.76 | 1.30 | 23.03 | * | 42.41 | * | 408.33 | * | * | * |
| | | | | FURFURAL 1.0% 23°C | | | | | | | | |
| CL01FL1 1 | 1.94 | 29.70 | 3.01 | 1.00 | 33.33 | 14.95 | 52.98 | 42.40 | 469.50 | 587.50 | 8.09 | 10.43 |
| CL07FL1 7 | 2.10 | 32.10 | 3.02 | 1.01 | 23.07 | 12.38 | 46.20 | 42.08 | 616.70 | 768.80 | 8.20 | 6.33 |
| CL14FL1 14 | 2.13 | 32.30 | 3.05 | 1.01 | 24.60 | 11.02 | 52.54 | 42.46 | 693.00 | 830.00 | 6.34 | 6.67 |
| CL99FL1 28 | 2.14 | 33.10 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL28FL1 28 | 2.16 | 33.10 | 3.06 | 1.01 | 23.30 | 11.30 | 49.70 | 40.84 | 604.00 | 739.00 | 5.78 | 5.88 |
| CL56FL1 56 | 2.25 | 34.20 | 3.10 | 1.01 | 20.34 | 10.00 | 46.22 | 39.62 | 684.00 | 850.00 | 5.03 | 5.07 |
| CL99FL2 123 | 2.28 | 35.00 | 3.01 | 1.05 | * | * | * | * | * | * | * | * |
| CL99FL3 224 | 2.40 | 36.60 | 3.02 | 1.07 | * | * | * | * | * | * | * | * |
| CL99FL4 355 | 2.52 | 38.00 | 3.01 | 1.08 | * | * | * | * | * | * | * | * |
| CL99FL5 489 | 2.60 | 38.80 | 3.02 | 1.09 | * | * | * | * | * | * | * | * |
| CL99FL6 622 | 2.68 | 40.10 | 3.01 | 1.10 | * | * | * | * | * | * | * | * |
| CL99FL7 717 | 2.72 | 40.80 | 3.01 | 1.11 | 24.23 | * | 49.83 | * | 578.50 | * | * | * |
| | | | | FURFURAL 4.0% 50°C | | | | | | | | |
| CH01FM1 1 | 2.29 | 35.30 | 3.13 | 0.97 | 11.26 | 5.89 | 26.21 | 18.71 | 640.70 | 832.00 | 4.53 | 5.21 |
| CH07FM1 7 | 2.53 | 39.70 | 3.32 | 0.93 | 9.62 | 5.90 | 20.84 | 17.86 | 658.00 | 855.00 | 4.08 | 3.61 |
| CH14FM1 14 | 2.83 | 44.20 | 3.43 | 0.92 | 9.00 | 4.58 | 18.93 | 14.50 | 511.30 | 575.00 | 3.65 | 4.13 |
| CH28FM1 28 | 3.32 | 50.20 | 3.56 | 0.92 | 7.56 | 4.30 | 17.92 | 11.16 | 512.00 | 616.00 | 3.47 | 3.39 |
| CH99FM1 29 | 3.46 | 54.40 | 2.70 | 1.19 | * | * | * | * | * | * | * | * |
| CH56FM1 56 | 4.10 | 60.60 | 3.79 | 0.90 | 8.14 | 5.00 | 16.90 | 10.48 | 436.00 | 433.80 | 3.81 | 4.50 |
| CH99FM2 124 | 4.94 | 76.20 | 2.65 | 1.34 | * | * | * | * | * | * | * | * |
| CH99FM3 242 | 5.03 | 76.20 | 2.75 | 1.34 | * | * | * | * | * | * | * | * |
| CH99FM4 356 | 4.94 | 75.50 | 2.65 | 1.34 | * | * | * | * | * | * | * | * |
| CH99FM5 490 | 4.90 | 75.90 | 2.65 | 1.34 | * | * | * | * | * | * | * | * |
| CH99FM6 622 | 5.02 | 78.10 | 3.67 | 1.36 | * | * | * | * | * | * | * | * |
| CH99FM7 719 | 5.12 | 79.80 | 2.69 | 1.37 | 18.76 | * | 23.35 | * | 383.83 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| CL01FM1 1 | 2.06 | 31.80 | 3.01 | 1.01 | 24.12 | 11.44 | 44.64 | 34.52 | 514.88 | 630.60 | 6.79 | 9.22 |
| CL07FM1 7 | 2.33 | 35.50 | 3.15 | 0.99 | 10.74 | 5.30 | 26.84 | 21.08 | 746.00 | 1189.00 | 3.95 | 4.28 |
| CL14FM1 14 | 2.40 | 36.60 | 3.19 | 0.97 | 9.20 | 4.94 | 25.26 | 15.34 | 723.80 | 902.00 | 3.49 | 3.48 |
| CL28FM1 28 | 2.58 | 38.50 | 3.30 | 0.97 | 7.98 | 4.30 | 19.94 | 13.98 | 578.00 | 777.00 | 3.46 | 3.26 |
| CL99FM1 29 | 2.51 | 37.80 | 2.90 | 1.10 | * | * | * | * | * | * | * | * |
| CL56FM1 56 | 2.75 | 40.70 | 2.88 | 1.14 | 8.20 | 4.64 | 21.30 | 13.30 | 695.00 | 769.00 | 3.03 | 3.30 |
| CL99FM2 124 | 2.95 | 43.50 | 2.87 | 1.16 | * | * | * | * | * | * | * | * |
| CL99FM3 228 | 3.16 | 46.20 | 2.86 | 1.21 | * | * | * | * | * | * | * | * |
| CL99FM4 356 | 3.67 | 51.20 | 2.86 | 1.27 | * | * | * | * | * | * | * | * |
| CL99FM5 490 | 4.01 | 53.30 | 2.86 | 1.31 | * | * | * | * | * | * | * | * |
| CL99FM6 623 | 4.33 | 56.90 | 2.84 | 1.35 | * | * | * | * | * | * | * | * |
| CL99FM7 715 | 4.50 | 60.40 | 2.86 | 1.39 | 7.68 | * | 25.17 | * | 667.08 | * | * | * |
| METHYL ETHYL KETONE 8.0% 50°C | | | | | | | | | | | | |
| CH01MD1 1 | 2.48 | 41.00 | 3.26 | 0.94 | 5.80 | 3.50 | 12.30 | 8.34 | 689.00 | 888.50 | 3.50 | 3.14 |
| CH07MD1 7 | 3.45 | 54.80 | 3.60 | 0.89 | 9.60 | 5.02 | 21.50 | 14.58 | 546.83 | 679.90 | 4.45 | 5.25 |
| CH14MD1 14 | 3.69 | 58.60 | 3.70 | 0.89 | 13.78 | 7.14 | 23.74 | 14.06 | 415.80 | 445.60 | 2.85 | 2.66 |
| CH28MD1 28 | 3.60 | 57.40 | 3.63 | 0.91 | 11.66 | 6.90 | 21.90 | 13.67 | 445.20 | 431.10 | 4.59 | 4.21 |
| CH56MD1 58 | 3.50 | 58.30 | 3.58 | 0.90 | 21.46 | 11.55 | 42.37 | 21.76 | 470.70 | 361.50 | 6.31 | 5.36 |
| METHYL ETHYL KETONE 8.0% 23°C | | | | | | | | | | | | |
| CL01MD1 1 | 2.09 | 32.70 | 3.02 | 1.00 | 15.86 | 7.90 | 35.58 | 27.62 | 610.10 | 814.20 | 5.78 | 5.10 |
| CL07MD1 7 | 2.26 | 35.70 | 2.93 | 1.08 | 9.54 | 5.02 | 28.06 | 19.98 | 781.30 | 999.00 | 4.76 | 4.87 |
| CL14MD1 14 | 2.51 | 39.00 | 3.28 | 0.97 | 18.60 | 9.94 | 35.83 | 24.42 | 563.75 | 590.80 | 3.16 | 3.18 |
| CL28MD1 28 | 2.51 | 38.70 | 3.31 | 0.98 | 11.38 | 5.79 | 26.52 | 17.90 | 543.38 | 675.00 | 4.17 | 4.67 |
| CL56MD1 56 | 2.51 | 39.20 | 3.29 | 0.96 | 17.08 | 8.40 | 39.67 | 24.55 | 551.10 | 535.10 | 5.51 | 5.88 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| CH01MH1 1 | 4.74 | 63.70 | 4.57 | 0.84 | 0.55 | 0.50 | 0.70 | 0.90 | 245.50 | 335.00 | 0.73 | 0.50 |
| CH99MH1 28 | 7.78 | 132.00 | 2.19 | 1.61 | * | * | * | * | * | * | * | * |
| CH99MH2 122 | 10.18 | 137.00 | 2.24 | 1.71 | * | * | * | * | * | * | * | * |
| CH99MH3 240 | 9.51 | 161.40 | 2.08 | 1.60 | * | * | * | * | * | * | * | * |
| CH99MH4 358 | 7.07 | 128.80 | 2.02 | 1.49 | * | * | * | * | * | * | * | * |
| CH99MH5 494 | 7.22 | 140.00 | 1.98 | 1.44 | * | * | * | * | * | * | * | * |
| CH99MH6 626 | 6.16 | 117.70 | 1.96 | 1.38 | * | * | * | * | * | * | * | * |
| CH99MH7 722 | 5.87 | 142.50 | 1.96 | 1.36 | 2.62 | * | 4.50 | * | 459.00 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| CL01MH1 1 | 3.47 | 52.20 | 3.87 | 0.94 | 1.10 | 0.54 | 1.54 | 0.70 | 337.70 | 513.50 | 1.02 | 0.90 |
| CL99MH1 28 | 6.09 | 90.30 | 2.75 | 1.48 | * | * | * | * | * | * | * | * |
| CL99MH2 121 | 11.14 | 121.00 | 2.97 | 1.67 | * | * | * | * | * | * | * | * |
| CL99MH3 235 | 7.26 | 106.00 | 2.68 | 1.62 | * | * | * | * | * | * | * | * |
| CL99MH4 358 | 8.76 | 110.80 | 2.68 | 1.64 | * | * | * | * | * | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| CL99MH5 494 | 8.39 | 100.00 | 2.69 | 1.64 | * | * | * | * | * | * | * | * |
| CL99MH6 627 | 7.98 | 133.00 | 2.52 | 1.61 | * | * | * | * | * | * | * | * |
| CL99MH7 721 | 7.42 | 104.80 | 2.59 | 1.59 | 0.74 | * | 2.18 | * | 661.17 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| CH01ML1 1 | 2.12 | 33.60 | 3.07 | 0.98 | 21.22 | 9.97 | 47.06 | 33.23 | 601.60 | 641.83 | 6.17 | 5.62 |
| CH07ML1 7 | 2.50 | 40.70 | 3.26 | 0.93 | 17.50 | 8.98 | 40.82 | 28.62 | 574.30 | 603.00 | 5.66 | 6.05 |
| CH14ML1 14 | 2.63 | 42.70 | 3.29 | 0.94 | 20.20 | 10.94 | 36.40 | 23.54 | 452.17 | 452.40 | 4.85 | 4.94 |
| CH28ML1 28 | 2.21 | 34.10 | 3.11 | 1.01 | 20.66 | 10.81 | 41.90 | 29.07 | 461.50 | 472.50 | 6.14 | 5.96 |
| CH99ML1 28 | 2.80 | 47.00 | 2.77 | 1.12 | * | * | * | * | * | * | * | * |
| CH56ML1 55 | 2.91 | 47.00 | 3.41 | 0.92 | 28.34 | 14.36 | 53.48 | 31.41 | 458.40 | 390.40 | 7.77 | 6.93 |
| CH99ML2 120 | 3.81 | 64.80 | 2.58 | 1.27 | * | * | * | * | * | * | * | * |
| CH99ML3 240 | 4.34 | 70.80 | 2.59 | 1.33 | * | * | * | * | * | * | * | * |
| CH99ML4 358 | 5.08 | 79.20 | 2.59 | 1.38 | * | * | * | * | * | * | * | * |
| CH99ML5 494 | 5.76 | 102.90 | 2.58 | 1.40 | * | * | * | * | * | * | * | * |
| CH99ML6 626 | 6.27 | 109.40 | 2.57 | 1.41 | * | * | * | * | * | * | * | * |
| CH99ML7 722 | 6.46 | 99.70 | 2.57 | 1.41 | 18.98 | * | 31.35 | * | 352.08 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| CL01ML1 1 | 1.93 | 30.10 | 2.99 | 1.00 | 30.70 | 14.62 | 58.02 | 53.10 | 605.60 | 821.20 | 7.46 | 7.02 |
| CL01ML2 1 | 2.06 | 31.90 | 3.01 | 1.01 | 29.94 | 13.30 | 53.46 | 45.62 | 567.60 | 751.00 | 7.06 | 7.02 |
| CL07ML1 7 | 2.11 | 32.40 | 3.05 | 1.01 | 21.20 | 9.78 | 46.70 | 41.06 | 645.60 | 890.60 | 5.76 | 5.67 |
| CL14ML1 14 | 2.19 | 33.70 | 3.07 | 1.01 | 23.50 | 11.78 | 40.10 | 32.06 | 532.40 | 643.70 | 5.06 | 5.04 |
| CL99ML1 28 | 2.21 | 34.00 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| CL28ML1 28 | 2.63 | 42.50 | 3.33 | 0.94 | 25.40 | 12.44 | 44.83 | 36.35 | 612.88 | 549.90 | 5.61 | 5.18 |
| CL56ML1 55 | 2.24 | 34.50 | 3.09 | 1.01 | 23.93 | 11.01 | 56.90 | 34.12 | 596.20 | 529.30 | 6.21 | 6.39 |
| CL99ML2 120 | 2.38 | 36.00 | 3.02 | 1.05 | * | * | * | * | * | * | * | * |
| CL99ML3 235 | 2.49 | 38.10 | 3.02 | 1.07 | * | * | * | * | * | * | * | * |
| CL99ML4 358 | 2.65 | 40.00 | 3.03 | 1.10 | * | * | * | * | * | * | * | * |
| CL99ML5 494 | 2.75 | 41.00 | 3.01 | 1.11 | * | * | * | * | * | * | * | * |
| CL99ML6 627 | 2.83 | 42.30 | 3.01 | 1.11 | * | * | * | * | * | * | * | * |
| CL99ML7 721 | 2.86 | 42.80 | 3.02 | 1.13 | 19.78 | * | 41.47 | * | 586.92 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| CH01MM1 1 | 2.82 | 45.40 | 3.40 | 0.92 | 3.90 | 2.80 | 8.18 | 6.35 | 642.00 | 746.25 | 2.62 | 2.34 |
| CH07MM1 7 | * | * | * | * | 2.77 | 1.90 | 6.23 | 4.37 | 533.67 | 676.17 | 1.50 | 1.30 |
| CH14MM1 14 | 5.91 | 89.90 | 2.56 | 1.38 | 2.67 | 1.45 | 5.43 | 2.73 | 575.00 | 582.20 | 1.33 | 1.23 |
| CH99MM1 28 | 2.97 | 48.50 | 2.77 | 1.13 | * | * | * | * | * | * | * | * |
| CH28MM1 28 | 3.08 | 46.60 | 3.56 | 0.95 | 4.50 | 2.91 | 10.93 | 7.23 | 535.88 | 546.40 | 3.53 | 3.01 |
| CH56MM1 55 | 6.19 | 101.10 | 4.20 | 0.80 | 2.18 | 1.35 | 4.70 | 2.85 | 622.38 | 598.40 | 1.60 | 1.19 |
| CH99MM2 120 | 6.22 | 100.00 | 2.45 | 1.34 | * | * | * | * | * | * | * | * |
| CH99MM3 239 | 8.37 | 116.00 | 2.55 | 1.64 | * | * | * | * | * | * | * | * |
| CH99MM4 357 | 9.11 | 156.60 | 2.41 | 1.55 | * | * | * | * | * | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| CH99MM5 493 | 8.44 | * | 2.35 | 1.51 | * | * | * | * | * | * | * | * |
| CH99MM6 625 | 8.18 | 146.70 | 2.33 | 1.50 | * | * | * | * | * | * | * | * |
| CH99MM7 721 | 8.24 | 112.90 | 2.37 | 1.50 | 5.90 | * | 15.20 | * | 676.42 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| CL01MM1 1 | 2.42 | 38.10 | 3.21 | 0.99 | 5.18 | 2.58 | 11.14 | 6.22 | 698.40 | 895.70 | 1.98 | 2.26 |
| CL01MM2 1 | 2.43 | 38.50 | 3.23 | 0.97 | 5.22 | 2.98 | 11.90 | 7.34 | 839.70 | 999.00 | 2.14 | 2.26 |
| CL07MM1 7 | 2.97 | 44.90 | 2.86 | 1.20 | 5.70 | 2.90 | 17.46 | 9.38 | 797.30 | 991.50 | 2.81 | 3.92 |
| CL14MM1 14 | 3.32 | 48.20 | 3.68 | 0.95 | 4.26 | 2.35 | 8.81 | 4.99 | 589.20 | 686.20 | 1.63 | 1.59 |
| CL28MM1 28 | 5.68 | 91.00 | 4.12 | 0.85 | 7.93 | 4.63 | 17.94 | 11.06 | 516.60 | 563.50 | 4.70 | 4.07 |
| CL99MM1 28 | 3.67 | 53.10 | 2.84 | 1.27 | * | * | * | * | * | * | * | * |
| CL56MM1 55 | 3.81 | 55.00 | 3.93 | 0.93 | 6.49 | 4.12 | 17.06 | 10.37 | 572.20 | 590.50 | 3.50 | 3.27 |
| CL99MM2 120 | 4.68 | 62.70 | 2.85 | 1.40 | * | * | * | * | * | * | * | * |
| CL99MM3 234 | 5.89 | 112.00 | 2.47 | 1.35 | * | * | * | * | * | * | * | * |
| CL99MM4 357 | 6.17 | 105.20 | 2.47 | 1.36 | * | * | * | * | * | * | * | * |
| CL99MM5 493 | 6.16 | * | 2.46 | 1.34 | * | * | * | * | * | * | * | * |
| CL99MM6 626 | 6.13 | 102.20 | 2.44 | 1.32 | * | * | * | * | * | * | * | * |
| CL99MM7 720 | 6.18 | 103.70 | 2.47 | 1.34 | 3.32 | * | 11.29 | * | 734.25 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| CH01OM1 1 | 2.04 | 31.60 | 3.02 | 1.00 | 31.66 | 15.78 | 51.58 | 45.74 | 542.10 | 726.30 | 6.70 | 6.58 |
| CH07OM1 7 | 2.19 | 44.10 | 3.07 | 1.00 | 31.46 | 15.02 | 50.86 | 42.18 | 494.60 | 613.00 | 7.66 | 6.82 |
| CH14OM1 14 | 2.19 | 34.30 | 3.09 | 1.00 | 29.74 | 13.15 | 48.90 | 37.78 | 543.60 | 713.20 | 8.42 | 7.26 |
| CH99OM1 28 | 2.39 | 37.80 | 2.97 | 1.05 | * | * | * | * | * | * | * | * |
| CH28OM1 28 | 2.37 | 37.20 | 3.14 | 0.99 | 25.40 | 10.70 | 50.00 | 43.80 | 462.00 | 543.00 | 5.90 | 5.44 |
| CH56OM1 56 | 2.56 | 40.20 | 3.01 | 0.99 | 30.50 | 13.50 | 50.38 | 34.94 | 464.00 | 550.70 | 6.26 | 5.66 |
| CH99OM2 128 | 3.06 | * | 2.94 | 1.11 | * | * | * | * | * | * | * | * |
| CH99OM3 251 | 3.62 | 59.20 | 2.91 | 1.16 | * | * | * | * | * | * | * | * |
| CH99OM4 364 | 3.94 | 61.70 | 2.90 | 1.19 | * | * | * | * | * | * | * | * |
| CH99OM5 503 | 4.30 | 67.80 | 2.89 | 1.21 | * | * | * | * | * | * | * | * |
| CH99OM6 626 | 4.49 | 70.70 | 2.89 | 1.23 | * | * | * | * | * | * | * | * |
| CH99OM7 727 | 4.70 | 74.20 | 2.89 | 1.23 | 29.47 | * | 47.73 | * | 347.25 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| CL01OM1 1 | 2.02 | 31.00 | 3.01 | 1.00 | 31.94 | 15.58 | 52.38 | 47.94 | 523.50 | 725.40 | 6.86 | 6.54 |
| CL07OM1 7 | 2.05 | 31.40 | 3.02 | 1.00 | 33.90 | 17.18 | 53.98 | 47.54 | 478.30 | 685.00 | 8.46 | 6.78 |
| CL14OM1 13 | 2.07 | 31.80 | 3.02 | 1.01 | 30.34 | 14.30 | 51.18 | 44.54 | 560.40 | 760.30 | 8.30 | 7.30 |
| CL99OM1 28 | 2.10 | 32.50 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL28OM1 28 | 2.10 | 32.30 | 3.04 | 1.01 | 25.40 | 10.70 | 50.00 | 43.80 | 560.00 | 745.00 | 6.30 | 5.80 |
| CL56OM1 56 | 2.11 | 32.40 | 3.01 | 1.02 | 32.02 | 14.55 | 51.86 | 45.30 | 486.70 | 654.63 | 7.54 | 6.54 |
| CL99OM2 128 | 2.23 | 34.20 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL99OM3 237 | 2.27 | 35.10 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CL99OM4 364 | 2.32 | 35.60 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| CL99OM5 503 | 2.34 | 35.90 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| CL99OM6 626 | 2.37 | 36.60 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CL99OM7 727 | 2.41 | 37.20 | 3.01 | 1.04 | 32.63 | * | 59.93 | * | 519.25 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| CH01OP1 1 | 1.97 | 30.60 | 3.00 | 1.01 | 27.45 | 12.45 | 45.20 | 38.05 | 567.00 | 750.50 | 5.86 | 5.65 |
| CH07OP1 7 | 2.12 | 32.70 | 3.04 | 1.00 | 29.80 | 12.04 | 49.60 | 42.20 | 462.00 | 639.00 | 5.90 | 5.50 |
| CH14OP1 14 | 2.15 | 33.20 | 3.06 | 1.00 | 34.26 | 15.58 | 54.22 | 44.50 | 467.80 | 604.10 | 6.10 | 5.30 |
| CH99OP1 28 | 2.21 | 34.40 | 3.00 | 1.03 | * | * | * | * | * | * | * | * |
| CH28OP1 28 | 2.16 | 33.30 | 3.05 | 1.00 | 30.78 | 13.50 | 46.74 | 42.00 | 410.70 | 659.75 | 5.98 | 5.70 |
| CH56OP1 56 | 2.17 | 33.80 | 3.07 | 1.00 | 34.55 | 14.06 | 53.75 | 43.46 | 435.33 | 606.50 | 7.06 | 6.70 |
| CH99OP2 141 | 2.33 | 36.50 | 3.00 | 1.04 | * | * | * | * | * | * | * | * |
| CH99OP3 257 | 2.40 | 37.30 | 3.00 | 1.04 | * | * | * | * | * | * | * | * |
| CH99OP4 385 | 2.39 | 37.70 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CH99OP5 509 | 2.41 | 37.60 | 3.00 | 1.04 | * | * | * | * | * | * | * | * |
| CH99OP6 627 | 2.43 | 37.60 | 3.00 | 1.05 | * | * | * | * | * | * | * | * |
| CH99OP7 733 | 2.43 | 38.10 | 3.01 | 1.05 | 36.45 | * | 55.16 | * | 421.25 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| CL01OP1 1 | 2.01 | 30.80 | 3.01 | 1.01 | 28.82 | 13.30 | 49.46 | 40.54 | 599.00 | 826.20 | 6.10 | 5.66 |
| CL07OP1 7 | 2.01 | 31.00 | 3.01 | 1.00 | 35.34 | 16.62 | 58.54 | 49.70 | 531.70 | 668.80 | 6.30 | 5.60 |
| CL14OP1 14 | 1.94 | 30.20 | 3.00 | 1.00 | 28.40 | 11.76 | 52.00 | 44.40 | 577.00 | 726.00 | 6.40 | 5.90 |
| CL99OP1 28 | 2.02 | 31.10 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| CL28OP1 28 | 2.06 | 31.50 | 3.01 | 1.01 | 33.70 | 15.03 | 55.38 | 49.03 | 494.60 | 671.00 | 7.86 | 6.66 |
| CL56OP1 56 | 2.05 | 31.30 | 3.00 | 1.00 | 35.03 | 16.54 | 56.10 | 48.94 | 518.67 | 698.00 | 7.48 | 7.22 |
| CL99OP2 141 | 2.05 | 31.40 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99OP3 244 | 2.06 | 31.70 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99OP4 385 | 2.08 | 31.90 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99OP5 509 | 2.10 | 32.10 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99OP6 627 | 2.13 | 32.00 | 2.68 | 1.01 | * | * | * | * | * | * | * | * |
| CL99OP7 733 | 2.11 | 32.80 | 3.02 | 1.02 | 37.00 | * | 57.52 | * | 518.58 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| CH01PH1 1 | 2.56 | 39.30 | 2.87 | 1.08 | 9.74 | 4.85 | 26.36 | 20.41 | 547.15 | 680.88 | 2.91 | 3.07 |
| CH07PH1 7 | 3.30 | 49.90 | 2.74 | 1.21 | 7.79 | 3.93 | 15.53 | 9.71 | 403.68 | 468.73 | 2.77 | 2.80 |
| CH14PH1 14 | 3.45 | 52.40 | 2.76 | 1.21 | 5.56 | 2.20 | 16.40 | 8.19 | 533.35 | 553.83 | 2.83 | 2.25 |
| CH28PH1 28 | 4.11 | 72.40 | 2.77 | 1.21 | 7.55 | 4.23 | 15.28 | 9.61 | 490.60 | 519.18 | 2.87 | 2.34 |
| CH99PH1 29 | 3.82 | 61.30 | 2.75 | 1.24 | * | * | * | * | * | * | * | * |
| CH56PH1 56 | 4.85 | * | 2.67 | 1.25 | 7.52 | 4.14 | 14.88 | 9.51 | 504.78 | 579.20 | 2.59 | 2.12 |
| CH99PH2 121 | 5.29 | 111.00 | 2.71 | 1.27 | * | * | * | * | * | * | * | * |
| CH99PH3 243 | 6.26 | 130.00 | 2.68 | 1.26 | * | * | * | * | * | * | * | * |
| CH99PH4 362 | 6.64 | 130.70 | 2.67 | 1.25 | * | * | * | * | * | * | * | * |
| CH99PH5 499 | 6.90 | * | 2.72 | 1.29 | * | * | * | * | * | * | * | * |
| CH99PH6 624 | 6.42 | 99.60 | 2.70 | 1.27 | * | * | * | * | * | * | * | * |
| CH99PH7 720 | 5.98 | 96.60 | 2.69 | 1.26 | 5.10 | * | 16.37 | * | 826.08 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| CL01PH1 1 | 2.28 | 35.20 | 3.01 | 1.01 | 20.20 | 9.39 | 45.47 | 38.57 | 507.78 | 636.15 | 4.05 | 3.81 |
| CL07PH1 7 | 2.78 | 40.90 | 2.97 | 1.10 | 7.64 | 3.70 | 18.53 | 12.45 | 480.88 | 604.33 | 2.62 | 3.06 |
| CL14PH1 14 | 3.01 | 44.00 | 2.94 | 1.16 | 6.69 | 3.82 | 21.63 | 13.44 | 565.88 | 699.65 | 2.46 | 2.71 |
| CL28PH1 28 | 3.10 | 46.00 | 2.94 | 1.14 | 5.80 | 5.26 | 18.11 | 11.75 | 626.15 | 458.98 | 2.61 | 2.65 |
| CL99PH1 29 | 2.89 | 43.00 | 2.95 | 1.13 | * | * | * | * | * | * | * | * |
| CL56PH1 56 | * | 43.40 | 2.90 | 1.15 | 7.01 | 3.20 | 20.53 | 12.32 | 647.50 | 775.20 | 2.36 | 2.77 |
| CL99PH2 121 | 3.21 | 47.40 | 2.93 | 1.17 | * | * | * | * | * | * | * | * |
| CL99PH3 230 | 3.12 | 46.90 | 2.93 | 1.17 | * | * | * | * | * | * | * | * |
| CL99PH4 362 | 3.15 | 47.30 | 2.92 | 1.17 | * | * | * | * | * | * | * | * |
| CL99PH5 499 | 3.85 | 54.20 | 2.90 | 1.27 | * | * | * | * | * | * | * | * |
| CL99PH6 625 | 3.36 | 48.10 | 2.88 | 1.20 | * | * | * | * | * | * | * | * |
| CL99PH7 719 | 3.14 | 46.20 | 2.89 | 1.19 | 8.28 | * | 19.42 | * | 657.83 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| CH01PL1 1 | 2.03 | 31.40 | 3.00 | 1.01 | 32.66 | 15.57 | 64.40 | 52.81 | 515.55 | 581.88 | 5.56 | 5.65 |
| CH07PL1 7 | 2.21 | 35.20 | 2.87 | 1.05 | 26.56 | 13.76 | 65.35 | 47.46 | 523.25 | 479.25 | 6.04 | 5.88 |
| CH14PL1 14 | 2.20 | 35.10 | 2.94 | 1.06 | 23.70 | 10.64 | 57.89 | 36.23 | 509.35 | 471.20 | 5.83 | 5.86 |
| CH99PL1 28 | 2.53 | 40.30 | 2.85 | 1.09 | * | * | * | * | * | * | * | * |
| CH28PL1 28 | 2.52 | 39.70 | 2.88 | 1.08 | 24.49 | 11.57 | 52.95 | 31.63 | 469.70 | 444.65 | 5.88 | 5.89 |
| CH56PL1 56 | 2.71 | 42.50 | 2.81 | 1.15 | 21.01 | 10.47 | 44.61 | 26.13 | 526.50 | 448.70 | 5.08 | 5.26 |
| CH99PL2 122 | 3.32 | 54.30 | 2.82 | 1.19 | * | * | * | * | * | * | * | * |
| CH99PL3 245 | 4.08 | 62.40 | 2.79 | 1.27 | * | * | * | * | * | * | * | * |
| CH99PL4 363 | 4.48 | 72.70 | 2.80 | 1.29 | * | * | * | * | * | * | * | * |
| CH99PL5 499 | 4.63 | 71.40 | 2.79 | 1.29 | * | * | * | * | * | * | * | * |
| CH99PL6 625 | 4.87 | 74.70 | 2.79 | 1.30 | * | * | * | * | * | * | * | * |
| CH99PL7 721 | 4.86 | 68.10 | 2.78 | 1.29 | 30.50 | * | 49.61 | * | 393.42 | * | * | * |
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| CL01PL1 1 | 2.04 | 31.50 | 3.01 | 1.00 | 34.17 | 16.48 | 60.22 | 49.05 | 484.13 | 564.00 | 5.88 | 5.69 |
| CL07PL1 7 | 2.01 | 31.20 | 3.01 | 1.01 | 32.83 | 15.75 | 60.03 | 52.97 | 481.20 | 600.90 | 6.86 | 6.68 |
| CL14PL1 14 | 2.10 | 32.40 | 3.01 | 1.01 | 29.97 | 14.08 | 59.77 | 52.35 | 534.18 | 649.30 | 6.36 | 6.15 |
| CL28PL1 28 | 2.14 | 33.00 | * | 1.02 | 26.78 | 12.62 | 60.69 | 48.60 | 603.40 | 663.88 | 6.29 | 6.05 |
| CL99PL1 28 | 2.36 | 36.00 | 3.03 | 1.04 | * | * | * | * | * | * | * | * |
| CL56PL1 56 | 2.16 | 33.40 | 3.01 | 1.03 | 24.45 | 11.72 | 54.74 | 41.63 | 596.58 | 617.60 | 5.47 | 5.33 |
| CL99PL2 122 | 2.71 | 39.90 | 3.00 | 1.11 | * | * | * | * | * | * | * | * |
| CL99PL3 233 | 2.78 | 41.40 | 2.98 | 1.13 | * | * | * | * | * | * | * | * |
| CL99PL4 363 | 2.83 | 42.20 | 2.99 | 1.13 | * | * | * | * | * | * | * | * |
| CL99PL5 499 | 2.86 | 42.40 | 2.98 | 1.13 | * | * | * | * | * | * | * | * |
| CL99PL6 626 | 2.93 | 42.90 | 2.98 | 1.14 | * | * | * | * | * | * | * | * |
| CL99PL7 720 | 2.94 | 43.70 | 2.98 | 1.14 | 21.87 | * | 48.33 | * | 615.42 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| CH01PM1 1 | 2.21 | 34.20 | 2.98 | 1.02 | 20.82 | 9.92 | 51.34 | 46.24 | 538.05 | 629.04 | 4.62 | 4.45 |
| CH07PM1 7 | 2.60 | 41.40 | 2.77 | 1.12 | 14.35 | 7.22 | 29.64 | 19.91 | 402.43 | 423.30 | 4.86 | 4.59 |
| CH14PM1 14 | 2.76 | 43.60 | 2.76 | 1.14 | 10.70 | 4.22 | 28.85 | 14.58 | 490.98 | 447.83 | 4.26 | 3.90 |
| CH28PM1 28 | 3.11 | 48.60 | 2.73 | 1.20 | 12.52 | 6.33 | 26.12 | 13.92 | 455.25 | 404.48 | 4.17 | 3.64 |
| CH99PM1 29 | 2.96 | 47.40 | 2.77 | 1.14 | * | * | * | * | * | * | * | * |
| CH56PM1 56 | 3.47 | 53.80 | 2.73 | 1.24 | 11.26 | 5.56 | 23.48 | 13.24 | 510.90 | 484.58 | 3.86 | 2.99 |
| CH99PM2 121 | 3.99 | 63.20 | 2.74 | 1.26 | * | * | * | * | * | * | * | * |
| CH99PM3 244 | 4.72 | 92.50 | 2.71 | 1.28 | * | * | * | * | * | * | * | * |
| CH99PM4 362 | 4.97 | 86.30 | 2.70 | 1.28 | * | * | * | * | * | * | * | * |
| CH99PM5 499 | 5.38 | * | 2.69 | 1.28 | * | * | * | * | * | * | * | * |
| CH99PM6 624 | 5.56 | 90.20 | 2.69 | 1.28 | * | * | * | * | * | * | * | * |
| CH99PM7 720 | 5.59 | 101.10 | 2.69 | 1.27 | 15.30 | * | 30.76 | * | 660.08 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| CL01PM1 1 | 2.07 | 32.00 | 3.01 | 1.00 | 30.26 | 14.35 | 57.06 | 48.87 | 495.68 | 594.78 | 5.88 | 5.84 |
| CL07PM1 7 | 2.07 | 31.70 | 3.02 | 1.02 | 19.77 | 9.62 | 48.37 | 36.90 | 539.65 | 591.60 | 5.83 | 5.58 |
| CL14PM1 14 | 2.37 | 35.80 | 3.03 | 1.05 | 11.42 | 5.13 | 31.60 | 24.63 | 491.60 | 580.44 | 4.47 | 4.63 |
| CL28PM1 28 | 2.54 | 38.00 | 3.00 | 1.08 | 12.24 | 6.10 | 32.09 | 18.35 | 555.48 | 533.10 | 3.81 | 4.02 |
| CL99PM1 29 | 2.13 | 32.90 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| CL56PM1 56 | * | 48.90 | 2.96 | 1.12 | 10.96 | 5.67 | 32.28 | 19.35 | 679.75 | 651.18 | 3.38 | 3.43 |
| CL99PM2 121 | 2.31 | 35.10 | 3.03 | 1.05 | * | * | * | * | * | * | * | * |
| CL99PM3 231 | 2.44 | 37.00 | 3.03 | 1.07 | * | * | * | * | * | * | * | * |
| CL99PM4 362 | 2.62 | 39.00 | 3.04 | 1 10 | * | * | * | * | * | * | * | * |
| CL99PM5 499 | 2.95 | 42.60 | 2.98 | 1.15 | * | * | * | * | * | * | * | * |
| CL99PM6 625 | 3.14 | 44.80 | 2.96 | 1.17 | * | * | * | * | * | * | * | * |
| CL99PM7 719 | 3.20 | 46.40 | 2.95 | 1.18 | 12.07 | * | 32.53 | * | 673.08 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| CH01SH1 1 | 1.95 | 30.00 | 3.01 | 1.00 | 34.61 | * | 54.47 | * | 516.25 | * | 6.62 | 6.14 |
| CH07SH1 7 | 2.02 | 31.00 | 3.00 | 1.01 | 31.58 | 14.42 | 50.86 | 39.82 | 525.30 | 650.10 | 6.65 | 6.02 |
| CH14SH1 14 | 2.03 | 31.70 | 2.99 | 1.00 | * | * | * | * | * | * | 6.54 | 6.61 |
| CH99SH1 28 | 2.06 | 32.00 | 2.99 | 1.01 | * | * | * | * | * | * | * | * |
| CH28SH1 28 | 2.01 | 31.20 | 3.01 | 1.00 | 40.14 | 17.06 | 63.38 | 50.46 | 484.50 | 675.90 | 6.70 | 6.58 |
| CH56SH1 56 | 2.02 | 32.00 | 2.99 | 1.00 | 33.14 | 15.66 | 54.10 | 44.86 | 566.40 | 649.80 | 6.80 | 7.96 |
| CH99SH2 131 | 2.06 | 31.90 | 2.98 | 1.01 | * | * | * | * | * | * | * | * |
| CH99SH3 253 | 2.06 | 31.70 | 2.98 | 1.02 | * | * | * | * | * | * | * | * |
| CH99SH4 379 | 2.05 | 31.80 | 2.99 | 1.02 | * | * | * | * | * | * | * | * |
| CH99SH5 510 | 2.06 | 31.70 | 2.97 | 1.01 | * | * | * | * | * | * | * | * |
| CH99SH6 630 | 2.05 | 31.80 | 2.98 | 1.01 | * | * | * | * | * | * | * | * |
| CH99SH7 733 | 2.05 | 32.00 | 2.98 | 1.02 | 39.00 | * | 54.61 | * | 521.42 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| CL01SH1 1 | 2.02 | 31.20 | 3.00 | 1.00 | 30.82 | 14.26 | 51.18 | 47.06 | 589.80 | 861.60 | 8.04 | 7.43 |
| CL07SH1 7 | 1.99 | 30.50 | 3.01 | 1.01 | 34.14 | 16.18 | 54.35 | 47.94 | 487.00 | 640.70 | 6.54 | 6.54 |
| CL14SH1 14 | 1.99 | 30.80 | 3.01 | 1.00 | * | * | * | * | * | * | 6.42 | 6.79 |
| CL28SH1 28 | 1.99 | 31.10 | 3.00 | 1.00 | 38.82 | 20.10 | 62.18 | 53.86 | 489.25 | 599.90 | 7.04 | 6.80 |
| CL99SH1 28 | 2.02 | 31.20 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| CL56SH1 56 | 2.03 | 31.60 | 3.00 | 1.01 | 30.46 | 13.38 | 53.26 | 43.66 | 554.70 | 708.50 | 6.94 | 6.77 |
| CL99SH2 131 | 2.03 | 31.10 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99SH3 246 | 2.03 | 31.20 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| CL99SH4 379 | 2.03 | 31.40 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| CL99SH5 510 | 2.04 | 31.20 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99SH6 630 | 2.03 | 31.10 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| CL99SH7 733 | 2.03 | 31.50 | 3.01 | 1.02 | 37.52 | * | 57.66 | * | 568.33 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| CH01SM1 1 | 1.99 | 31.10 | 2.99 | 1.01 | 36.94 | 16.46 | 56.58 | 43.58 | 451.20 | 559.80 | 7.62 | 6.42 |
| CH07SM1 7 | 1.96 | 31.00 | 2.98 | 1.01 | 36.14 | 17.62 | 55.22 | 44.10 | 465.20 | 536.20 | 7.93 | 7.70 |
| CH14SM1 14 | 35.24 | 31.80 | 7.48 | 6.95 | 34.62 | 17.46 | 57.90 | 45.70 | 488.20 | 540.20 | 7.94 | 6.14 |
| CH99SM1 28 | 2.12 | 32.90 | 2.99 | 1.02 | * | * | * | * | * | * | * | * |
| CH28SM1 28 | 35.39 | 32.30 | 7.46 | 6.89 | 29.34 | 15.70 | 54.70 | 45.22 | 564.10 | 683.00 | 7.82 | 6.58 |
| CH56SM1 61 | 35.78 | 32.80 | 7.50 | 6.92 | 37.10 | 19.94 | 55.90 | 46.78 | 412.40 | 489.20 | 9.02 | 6.90 |
| CH99SM2 132 | 2.11 | 32.50 | 2.98 | 1.02 | * | * | * | * | * | * | * | * |
| CH99SM3 254 | 2.10 | 32.60 | 2.98 | 1.02 | * | * | * | * | * | * | * | * |
| CH99SM4 370 | 2.15 | 32.50 | 2.98 | 1.03 | * | * | * | * | * | * | * | * |
| CH99SM5 511 | 2.10 | 32.40 | 2.98 | 1.02 | * | * | * | * | * | * | * | * |
| CH99SM6 624 | 2.09 | 32.60 | 2.97 | 1.02 | * | * | * | * | * | * | * | * |
| CH99SM7 734 | 2.08 | 32.50 | 2.98 | 1.03 | 37.88 | * | 50.73 | * | 505.83 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| CL01SM1 1 | 1.96 | 30.60 | 3.00 | 1.01 | 33.66 | 15.14 | 52.34 | 42.22 | 469.50 | 581.20 | 6.78 | 6.02 |
| CL07SM1 7 | 2.03 | 31.60 | 3.00 | 1.01 | 37.82 | 18.78 | 55.46 | 48.78 | 415.00 | 565.30 | 8.62 | 7.27 |
| CL14SM1 14 | 34.88 | 31.50 | 7.43 | 6.96 | 35.42 | 15.86 | 58.78 | 50.78 | 467.90 | 600.50 | 7.62 | 6.42 |
| CL28SM1 28 | 35.43 | 32.00 | 7.44 | 6.98 | 36.42 | 15.82 | 59.26 | 51.02 | 486.50 | 720.60 | 7.26 | 6.34 |
| CL99SM1 28 | 2.07 | 31.80 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL56SM1 61 | 35.37 | 32.10 | 7.44 | 6.97 | 35.38 | 16.86 | 56.90 | 46.54 | 452.70 | 558.40 | 8.10 | 6.74 |
| CL99SM2 132 | 2.09 | 32.10 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL99SM3 246 | 2.09 | 32.20 | 3.02 | 1.03 | * | * | * | * | * | * | * | * |
| CL99SM4 370 | 2.09 | 32.20 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| CL99SM5 511 | 2.08 | 31.90 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| CL99SM6 624 | 2.08 | 32.10 | 3.01 | 1.02 | * | * | * | * | * | * | * | * |
| CL99SM7 734 | 2.07 | 32.10 | 3.02 | 1.02 | 37.92 | * | 53.73 | * | 492.50 | * | * | * |

# CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | WATER 100.0% 50°C | | | | | | | | |
| CH01WP1 | 1 | 2.02 | 31.50 | 3.00 | 1.01 | 33.78 | 16.50 | 55.42 | 49.86 | 472.10 | 638.90 | 7.22 | 6.02 |
| CH07WP1 | 7 | 2.16 | 33.90 | 2.98 | 1.02 | 37.06 | 18.22 | 72.74 | 56.18 | 483.60 | 492.60 | 7.02 | 6.52 |
| CH14WP1 | 14 | 38.42 | 37.30 | 7.69 | 6.88 | 40.60 | 18.82 | 63.70 | 45.42 | 343.90 | 403.00 | 7.18 | 6.06 |
| CH99WP1 | 28 | 2.47 | 39.10 | 2.97 | 1.06 | * | * | * | * | * | * | * | * |
| CH28WP1 | 28 | 2.37 | 37.20 | 2.98 | 1.05 | 32.25 | 15.62 | 63.00 | 36.34 | 406.00 | 338.60 | 6.94 | 6.18 |
| CH56WP1 | 56 | 45.30 | 39.30 | 7.91 | 7.32 | 35.02 | 0.33 | 62.30 | 35.06 | 411.20 | 311.10 | 6.94 | 5.98 |
| CH99WP2 | 132 | 3.06 | 49.20 | 2.93 | 1.12 | * | * | * | * | * | * | * | * |
| CH99WP3 | 254 | 3.58 | 56.50 | 2.90 | 1.17 | * | * | * | * | * | * | * | * |
| CH99WP4 | 370 | 4.01 | 62.50 | 2.90 | 1.19 | * | * | * | * | * | * | * | * |
| CH99WP5 | 503 | 4.20 | 67.80 | 2.91 | 1.21 | * | * | * | * | * | * | * | * |
| CH99WP6 | 622 | 4.30 | 69.20 | 2.88 | 1.21 | * | * | * | * | * | * | * | * |
| CH99WP7 | 734 | 4.33 | 69.90 | 2.89 | 1.21 | 29.47 | * | 47.73 | * | 347.25 | * | * | * |
| | | | | | WATER 100.0% 23°C | | | | | | | | |
| CL01WP1 | 1 | 2.00 | 31.10 | 3.00 | 1.01 | 35.10 | 16.86 | 56.14 | 48.06 | 472.10 | 582.10 | 7.42 | 6.22 |
| CL07WP1 | 7 | 2.05 | 31.30 | 3.01 | 1.01 | 36.70 | 17.46 | 60.94 | 52.06 | 505.10 | 632.50 | 7.02 | 6.10 |
| CL14WP1 | 14 | 35.02 | 31.70 | 7.46 | 6.95 | 35.94 | 18.06 | 59.50 | 49.30 | 453.20 | 586.50 | 7.14 | 6.82 |
| CL28WP1 | 28 | 2.15 | 32.80 | 3.01 | 1.02 | 35.82 | 17.14 | 60.62 | 47.26 | 484.20 | 543.70 | 7.26 | 6.42 |
| CL99WP1 | 28 | 2.10 | 32.30 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| CL56WP1 | 56 | 37.58 | 32.10 | 7.55 | 7.25 | 35.66 | 17.46 | 61.74 | 48.78 | 521.60 | 540.50 | 6.82 | 5.86 |
| CL99WP2 | 132 | 2.23 | 34.40 | 3.01 | 1.03 | * | * | * | * | * | * | * | * |
| CL99WP3 | 246 | 2.27 | 35.20 | 3.03 | 1.06 | * | * | * | * | * | * | * | * |
| CL99WP4 | 370 | 2.32 | 35.70 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CL99WP5 | 503 | 2.35 | 36.20 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CL99WP6 | 622 | 2.36 | 36.40 | 3.01 | 1.04 | * | * | * | * | * | * | * | * |
| CL99WP7 | 734 | 2.38 | 37.00 | 3.01 | 1.04 | 37.18 | * | 65.53 | * | 526.00 | * | * | * |
| | | | | | POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | |
| CH01XM1 | 1 | 2.04 | 31.50 | 3.00 | 1.01 | 36.50 | 16.10 | 62.82 | 48.30 | 476.70 | 678.20 | 7.26 | 6.34 |
| CH07XM1 | 7 | 2.10 | 32.70 | 3.05 | 1.00 | 30.58 | 15.70 | 53.90 | 41.78 | 588.10 | 557.10 | 6.50 | 7.24 |
| CH14XM1 | 14 | 2.15 | 34.10 | 2.98 | 1.03 | 36.02 | 17.58 | 59.66 | 45.38 | 478.90 | 498.80 | 6.68 | 6.78 |
| CH99XM1 | 28 | 2.19 | 34.60 | 2.95 | 1.03 | * | * | * | * | * | * | * | * |
| CH28XM1 | 28 | 2.15 | 33.90 | 3.06 | 1.00 | 32.34 | 15.06 | 54.30 | 38.94 | 514.00 | 530.80 | 6.50 | 6.30 |
| CH56XM1 | 56 | 2.18 | 35.00 | 2.95 | 1.31 | 35.26 | 18.86 | 60.86 | 45.86 | 445.30 | 537.30 | 6.96 | 5.44 |
| CH99XM2 | 118 | 2.28 | 36.30 | 2.94 | 1.04 | * | * | * | * | * | * | * | * |
| CH99XM3 | 231 | 2.31 | 36.50 | 3.00 | 1.04 | * | * | * | * | * | * | * | * |
| CH99XM4 | 363 | 2.33 | 37.30 | 2.93 | 1.04 | * | * | * | * | * | * | * | * |
| CH99XM5 | 489 | 2.32 | 37.10 | 2.93 | 1.04 | * | * | * | * | * | * | * | * |
| CH99XM6 | 609 | 2.31 | 36.80 | 2.93 | 1.04 | * | * | * | * | * | * | * | * |
| CH99XM7 | 711 | 2.34 | 37.70 | 2.93 | 1.05 | 37.63 | * | 58.13 | * | 487.25 | * | * | * |

CHLORINATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| CL01XM1 1 | 2.03 | 31.10 | 3.00 | 1.01 | 36.62 | 18.58 | 63.42 | 49.90 | 585.10 | 514.40 | 7.22 | 7.32 |
| CL07XM1 7 | 2.01 | 30.90 | 3.01 | 1.01 | 33.66 | 15.82 | 55.14 | 50.30 | 503.40 | 710.60 | 6.88 | 7.22 |
| CL14XM1 14 | 2.06 | 32.00 | 3.01 | 1.02 | 35.38 | 18.30 | 60.90 | 48.22 | 489.30 | 524.40 | 7.86 | 6.50 |
| CL28XM1 28 | 2.04 | 31.70 | 3.02 | 1.01 | 33.42 | 15.50 | 60.06 | 46.10 | 535.50 | 642.50 | 6.90 | 6.44 |
| CL99XM1 28 | 2.11 | 32.50 | 3.00 | 1.01 | * | * | * | * | * | * | * | * |
| CL56XM1 56 | 2.10 | 32.70 | 3.01 | 1.02 | 33.78 | 15.10 | 58.54 | 46.38 | 492.60 | 641.80 | 6.84 | 6.07 |
| CL99XM2 118 | 2.18 | 33.60 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| CL99XM3 223 | 2.21 | 34.30 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| CL99XM4 363 | 2.25 | 34.60 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| CL99XM5 489 | 2.27 | 35.00 | 3.00 | 1.02 | * | * | * | * | * | * | * | * |
| CL99XM6 609 | 2.25 | 34.80 | 3.00 | 1.03 | * | * | * | * | * | * | * | * |
| CL99XM7 711 | 2.27 | 35.20 | 3.01 | 1.03 | 36.23 | * | 60.38 | * | 612.75 | * | * | * |

# CPE : STATISTICS

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| CH01AM1 1 | 5 | 2.406 | 5 | 2.456 | 5 | 26.555 | 5 | 48.838 | 5 | 1.540 | 5 | 0.303 |
| CH07AM1 7 | * | * | * | * | * | * | * | * | * | * | * | * |
| CH14AM1 14 | 5 | 3.727 | 5 | 3.003 | 5 | 42.750 | 5 | 32.459 | 5 | 0.555 | 5 | 0.303 |
| CH28AM1 29 | 5 | 1.915 | 5 | 4.413 | 5 | 19.190 | 5 | 16.030 | 10 | 0.733 | 10 | 0.520 |
| CH56AM1 56 | 5 | 3.660 | 5 | 3.180 | 5 | 24.050 | 5 | 25.987 | 5 | 0.228 | 5 | 0.767 |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| CL01AM1 1 | 5 | 2.260 | 5 | 2.960 | 5 | * | 5 | 67.480 | 5 | 0.240 | 5 | 0.167 |
| CL07AM1 7 | * | * | * | * | * | * | * | * | * | * | * | * |
| CL14AM1 14 | 5 | 1.570 | 5 | 1.905 | 5 | 27.917 | 5 | 70.430 | 5 | 0.374 | 5 | 0.385 |
| CL28AM1 29 | 5 | 1.910 | 5 | 3.216 | 5 | 59.740 | 5 | 65.370 | 9 | 0.308 | 10 | 0.392 |
| CL56AM1 56 | 5 | 3.579 | 5 | 2.170 | 5 | 50.710 | 5 | 18.260 | 5 | 0.326 | 5 | 0.228 |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| CH01BM1 1 | 5 | 4.100 | 5 | 2.000 | 5 | * | 5 | 36.300 | 10 | 0.100 | 10 | 0.270 |
| CH07BM1 7 | 5 | 1.770 | 5 | 1.993 | 5 | 60.420 | 5 | 52.277 | 5 | 52.277 | 10 | 0.231 |
| CH14BM1 14 | 5 | 1.130 | 5 | 2.090 | 5 | 22.600 | 5 | 23.090 | 10 | 0.207 | 10 | 0.250 |
| CH28BM1 28 | 5 | 0.975 | 5 | 2.720 | 5 | 43.530 | 5 | 43.190 | 8 | 0.100 | 8 | 0.390 |
| CH56BM1 56 | 5 | 4.598 | 5 | 1.601 | 5 | 21.350 | 5 | 31.440 | 7 | 0.107 | 10 | 0.313 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| CL01BM1 1 | 5 | 2.120 | 5 | 2.880 | 5 | 59.370 | 5 | 55.100 | 10 | 0.380 | 9 | 0.440 |
| CL07BM1 7 | 5 | 4.430 | 5 | 1.880 | 5 | 40.730 | 5 | 24.960 | 10 | 0.158 | 10 | 0.327 |
| CL14BM1 14 | 5 | 4.280 | 5 | 1.970 | 5 | 33.790 | 5 | 47.960 | 10 | 0.270 | 10 | 0.390 |
| CL28BM1 28 | 5 | 1.450 | 5 | 0.687 | 5 | 50.210 | 5 | 26.190 | 10 | 0.700 | 10 | 0.260 |
| CL56BM1 56 | 5 | 1.260 | 5 | 2.130 | 5 | 38.540 | 5 | 35.760 | 7 | 0.458 | 7 | 0.668 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| CH01DH1 1 | 5 | 1.412 | 5 | 0.689 | 5 | 42.373 | 5 | 34.900 | 5 | 0.169 | 5 | 0.048 |
| CH07DH1 7 | 5 | 3.774 | 5 | 2.400 | 5 | 31.327 | 5 | 37.210 | 5 | 0.058 | 5 | 0.072 |
| CH14DH1 14 | 4 | 3.036 | 4 | 1.347 | 4 | 8.852 | 4 | 12.917 | 5 | 0.330 | 5 | 0.270 |
| CH28DH1 29 | 5 | 4.253 | 5 | 1.704 | 5 | 97.512 | 5 | 87.314 | 5 | 0.821 | 5 | 0.382 |
| CH56DH1 56 | 5 | 1.463 | 5 | 0.522 | 5 | 15.309 | 5 | 36.213 | 5 | 0.426 | 5 | 0.303 |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| CL01DH1 1 | 5 | 1.424 | 5 | 0.936 | 5 | 32.717 | 5 | 61.826 | 5 | 0.351 | 5 | 0.107 |
| CL07DH1 7 | 5 | 5.870 | 5 | 3.170 | 5 | 72.470 | 5 | 69.000 | 5 | 0.080 | 5 | 0.090 |
| CL14DH1 14 | 5 | 4.415 | 5 | 2.110 | 5 | 58.700 | 5 | 36.280 | 5 | 0.273 | 5 | 0.300 |
| CL28DH1 29 | 4 | 2.013 | 5 | 2.127 | 4 | 80.717 | 5 | 53.450 | 5 | 0.381 | 5 | 0.043 |
| CL56DH1 56 | 5 | 0.322 | 5 | 0.393 | 5 | 11.613 | 5 | 5.498 | 5 | 0.091 | 5 | 0.125 |

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| CH01DL1 1 | 5 | 1.082 | 5 | 1.335 | 5 | 23.230 | 5 | 26.665 | 5 | 0.114 | 5 | 0.091 |
| CH07DL1 7 | 5 | 1.520 | 5 | 3.410 | 5 | 18.630 | 5 | 20.140 | 5 | 0.110 | 5 | 0.100 |
| CH14DL1 14 | 5 | 2.840 | 5 | 1.650 | 5 | 30.090 | 5 | 31.360 | 5 | 0.110 | 5 | 0.200 |
| CH28DL1 29 | 5 | 4.217 | 5 | 0.924 | 5 | 18.922 | 5 | 22.123 | 5 | 0.092 | 5 | 0.107 |
| CH56DL1 56 | 5 | 1.071 | 5 | 0.547 | 5 | 12.948 | 5 | 9.090 | 5 | 0.261 | 5 | 0.169 |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| CL01DL1 1 | 5 | 1.258 | 5 | 1.133 | 5 | 34.653 | 5 | 20.061 | 5 | 0.145 | 5 | 0.110 |
| CL07DL1 7 | 5 | 1.640 | 5 | 0.560 | 5 | 19.050 | 5 | 11.990 | 5 | 0.110 | 5 | 0.300 |
| CL14DL1 14 | 5 | 0.380 | 5 | 1.390 | 5 | 15.390 | 5 | 25.420 | 5 | 0.050 | 5 | 0.050 |
| CL28DL1 29 | 5 | 2.800 | 5 | 2.016 | 5 | 34.411 | 5 | 33.012 | 5 | 0.048 | 5 | 0.048 |
| CL56DL1 56 | 5 | 2.920 | 5 | 2.852 | 5 | 22.390 | 5 | 53.210 | 5 | 0.264 | 5 | 0.152 |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| CH01DM1 1 | 5 | 0.937 | 5 | 0.479 | 5 | 43.340 | 5 | 15.169 | 5 | 0.185 | 5 | 0.091 |
| CH07DM1 7 | 5 | 4.760 | 5 | 1.780 | 5 | 70.850 | 5 | 58.400 | 5 | 0.150 | 5 | 0.098 |
| CH14DM1 14 | 5 | 0.600 | 5 | 0.940 | 5 | 16.300 | 5 | 21.860 | 5 | 0.220 | 5 | 0.080 |
| CH28DM1 29 | 5 | 0.501 | 5 | 0.705 | 5 | 11.640 | 5 | 25.335 | 5 | 0.246 | 5 | 0.079 |
| CH56DM1 56 | 5 | 0.351 | 5 | 1.149 | 5 | 6.110 | 5 | 10.443 | 5 | 0.682 | 5 | 0.233 |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| CL01DM1 1 | 5 | 2.571 | 5 | 1.048 | 5 | 36.888 | 5 | 22.341 | 5 | 0.068 | 5 | 0.054 |
| CL07DM1 7 | 5 | 5.350 | 5 | 0.760 | 5 | 20.700 | 5 | 7.070 | 5 | 0.096 | 5 | 0.080 |
| CL14DM1 14 | 5 | 0.536 | 5 | 1.290 | 5 | 29.808 | 5 | 32.890 | 5 | 0.040 | 5 | 0.060 |
| CL28DM1 29 | 5 | 1.964 | 5 | 1.394 | 5 | 19.832 | 5 | 36.844 | 5 | 0.209 | 5 | 0.093 |
| CL56DM1 56 | 5 | 2.358 | 5 | 0.818 | 5 | 29.369 | 5 | 21.391 | 5 | 0.060 | 5 | 0.162 |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| CH01FH1 1 | 5 | 2.460 | 5 | 3.131 | 5 | 22.360 | 5 | 77.860 | 5 | 0.239 | 5 | 0.268 |
| CH07FH1 7 | 5 | 1.165 | 5 | 0.449 | 5 | 97.790 | 5 | 99.940 | 5 | 0.257 | 5 | 0.114 |
| CH14FH1 14 | 5 | 0.570 | 5 | 0.164 | 5 | 78.300 | 5 | 41.800 | 5 | 0.065 | 5 | 0.041 |
| CH28FH1 28 | 5 | 1.188 | 5 | 0.274 | 5 | * | 5 | 94.840 | 5 | 0.071 | 5 | 0.024 |
| CH56FH1 56 | 5 | 0.826 | 5 | 0.410 | 5 | * | 5 | * | 5 | 0.089 | 5 | 0.068 |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| CL01FH1 1 | 5 | 2.970 | 5 | 2.987 | 5 | 41.800 | 5 | 82.160 | 5 | 0.313 | 5 | 0.233 |
| CL07FH1 7 | 5 | 0.934 | 5 | 1.254 | 5 | * | 5 | * | 5 | 0.041 | 5 | 0.061 |
| CL14FH1 14 | 5 | 0.231 | 5 | 0.447 | 5 | * | 5 | * | 5 | 0.057 | 5 | 0.036 |
| CL28FH1 28 | 5 | 0.377 | 5 | 0.436 | 5 | 80.510 | 5 | * | 5 | 0.061 | 5 | 0.076 |
| CL56FH1 56 | 5 | 0.573 | 5 | 0.399 | 5 | 86.570 | 5 | * | 5 | 0.063 | 5 | 0.112 |

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| CH01FL1 1 | 5 | 1.992 | 5 | 1.592 | 5 | 21.282 | 5 | 29.498 | 5 | 0.115 | 5 | 1.850 |
| CH07FL1 7 | 5 | 4.106 | 5 | 4.929 | 5 | 52.870 | 5 | 57.990 | 5 | 0.318 | 5 | 0.087 |
| CH14FL1 14 | 5 | 3.094 | 5 | 2.538 | 5 | 57.010 | 5 | 36.300 | 5 | 0.107 | 5 | 0.311 |
| CH28FL1 28 | 5 | 4.913 | 5 | 3.662 | 5 | 50.300 | 5 | 56.680 | 5 | 1.141 | 5 | 0.074 |
| CH56FL1 56 | 5 | 4.400 | 5 | 3.890 | 5 | 55.600 | 5 | 68.800 | 5 | 0.176 | 5 | 0.177 |
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| CL01FL1 1 | 5 | 2.995 | 5 | 1.634 | 5 | 51.850 | 5 | 30.961 | 5 | 0.376 | 5 | 0.429 |
| CL07FL1 7 | 5 | 3.460 | 5 | 3.867 | 5 | 14.430 | 5 | 37.500 | 5 | 0.917 | 5 | 0.378 |
| CL14FL1 14 | 5 | 2.265 | 5 | 3.554 | 5 | 60.170 | 5 | 67.450 | 5 | 0.409 | 5 | 0.321 |
| CL28FL1 28 | 5 | 1.876 | 5 | 2.496 | 5 | 42.920 | 5 | 55.950 | 5 | 0.148 | 5 | 0.104 |
| CL56FL1 56 | 5 | 2.493 | 5 | 3.553 | 5 | 44.220 | 5 | 76.400 | 5 | 0.067 | 5 | 0.203 |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| CH01FM1 1 | 5 | 1.391 | 5 | 2.210 | 5 | 47.692 | 5 | 83.612 | 5 | 0.150 | 5 | 0.246 |
| CH07FM1 7 | 5 | 2.674 | 5 | 2.970 | 5 | * | 5 | 59.690 | 5 | 0.219 | 5 | 0.285 |
| CH14FM1 14 | 5 | 1.059 | 5 | 3.674 | 5 | 29.550 | 5 | 12.250 | 5 | 0.172 | 5 | 0.214 |
| CH28FM1 28 | 5 | 1.375 | 5 | 0.522 | 5 | 35.810 | 5 | 61.580 | 5 | 0.319 | 5 | 0.143 |
| CH56FM1 56 | 5 | 2.234 | 5 | 1.170 | 5 | 57.270 | 5 | 67.990 | 5 | 0.554 | 5 | 0.961 |
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| CL01FM1 1 | 5 | 3.500 | 5 | 2.301 | 5 | 55.090 | 5 | 46.916 | 5 | 0.476 | 5 | 0.749 |
| CL07FM1 7 | 5 | 1.983 | 5 | 1.951 | 5 | 65.420 | 5 | 96.720 | 5 | 0.093 | 5 | 0.128 |
| CL14FM1 14 | 5 | 1.647 | 5 | 2.720 | 5 | 77.800 | 5 | 62.910 | 5 | 0.167 | 5 | 0.182 |
| CL28FM1 28 | 5 | 2.515 | 5 | 3.255 | 5 | 58.370 | 5 | * | 5 | 0.652 | 5 | 0.108 |
| CL56FM1 56 | 5 | 1.329 | 5 | 1.204 | 5 | 39.370 | 5 | 34.710 | 5 | 0.154 | 5 | 0.120 |
| METHYL ETHYL KETONE 8.0% 50°C | | | | | | | | | | | | |
| CH01MD1 1 | 5 | 0.380 | 5 | 0.430 | 5 | 30.930 | 5 | 50.760 | 5 | 0.200 | 5 | 0.260 |
| CH07MD1 7 | 5 | 3.230 | 5 | 1.494 | 5 | 76.840 | 5 | 73.700 | 5 | 0.226 | 5 | 0.744 |
| CH14MD1 14 | 5 | 2.790 | 5 | 1.320 | 5 | 44.030 | 5 | 27.820 | 5 | 0.120 | 5 | 0.178 |
| CH28MD1 28 | 5 | 2.140 | 5 | 0.915 | 5 | 80.760 | 5 | 19.299 | 5 | 0.135 | 5 | 0.098 |
| CH56MD1 58 | 5 | 4.300 | 5 | 0.655 | 5 | 42.720 | 5 | 17.080 | 5 | 0.258 | 5 | 0.100 |

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 8.0% 23°C | | | | | | | | | | | | |
| CL01MD1 1 | 5 | 2.550 | 5 | 3.320 | 5 | 67.760 | 5 | 91.405 | 5 | 0.110 | 5 | 0.140 |
| CL07MD1 7 | 5 | 4.439 | 5 | 0.729 | 5 | 44.796 | 5 | 26.315 | 5 | 0.101 | 5 | 0.198 |
| CL14MD1 14 | 5 | 1.630 | 5 | 1.660 | 5 | 13.230 | 5 | 22.390 | 5 | 0.106 | 5 | 0.250 |
| CL28MD1 28 | 4 | 0.979 | 4 | 2.190 | 4 | 38.868 | 4 | 73.520 | 5 | 0.170 | 5 | 0.180 |
| CL56MD1 56 | 5 | 1.830 | 5 | 0.701 | 5 | 32.440 | 5 | 22.440 | 5 | 0.194 | 5 | 0.192 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| CH01MH1 1 | 4 | 0.200 | 1 | * | 4 | 52.696 | 1 | * | 3 | 0.153 | 3 | 0.100 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| CL01MH1 1 | 5 | 0.170 | 5 | 0.141 | 5 | 37.100 | 5 | * | 5 | 0.230 | 5 | 0.140 |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| CH01ML1 1 | 5 | 2.520 | 3 | 2.043 | 5 | 84.630 | 3 | 44.397 | 5 | 0.420 | 5 | 0.110 |
| CH07ML1 7 | 5 | 6.367 | 5 | 1.800 | 5 | 75.610 | 5 | 26.300 | 5 | 0.149 | 5 | 0.210 |
| CH14ML1 14 | 5 | 1.980 | 5 | 0.980 | 5 | 29.300 | 5 | 35.300 | 5 | 0.063 | 5 | 0.215 |
| CH28ML1 28 | 5 | 2.176 | 5 | 2.229 | 5 | 26.503 | 5 | 43.108 | 5 | 0.051 | 5 | 0.185 |
| CH56ML1 55 | 5 | 1.720 | 5 | 0.577 | 5 | 31.100 | 5 | 14.100 | 5 | 0.070 | 5 | 0.430 |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| CL01ML2 1 | 5 | 2.980 | 5 | 3.250 | 5 | 43.200 | 5 | 44.500 | 5 | 0.090 | 5 | 0.170 |
| CL01ML1 1 | 5 | 2.580 | 5 | 1.720 | 5 | 19.700 | 5 | 34.400 | 5 | 0.260 | 5 | 0.180 |
| CL07ML1 7 | 5 | 3.046 | 5 | 1.900 | 5 | 31.470 | 5 | 18.904 | 5 | 0.239 | 5 | 0.142 |
| CL14ML1 14 | 5 | 2.250 | 5 | 1.180 | 5 | 97.400 | 5 | 27.930 | 5 | 0.100 | 5 | 0.039 |
| CL28ML1 28 | 4 | 2.065 | 5 | 1.491 | 4 | * | 5 | 37.017 | 5 | 0.644 | 5 | 0.130 |
| CL56ML1 55 | 5 | 4.590 | 5 | 1.260 | 5 | 55.130 | 5 | 31.360 | 5 | 0.160 | 5 | 0.297 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| CH01MM1 1 | 5 | 1.706 | 4 | 1.865 | 5 | 78.350 | 4 | * | 5 | 0.390 | 5 | 0.170 |
| CH07MM1 7 | 3 | 1.501 | 3 | 0.503 | 3 | 59.779 | 3 | 29.956 | 3 | * | 3 | * |
| CH14MM1 14 | 5 | 0.981 | 5 | 0.233 | 5 | 44.600 | 5 | 73.970 | 5 | 0.055 | 5 | 0.105 |
| CH28MM1 28 | 4 | 0.790 | 5 | 0.792 | 4 | 30.899 | 5 | 49.397 | 5 | 0.449 | 5 | 0.316 |
| CH56MM1 55 | 4 | 0.075 | 5 | 0.160 | 4 | 60.280 | 5 | 48.400 | 5 | 0.446 | 5 | 0.074 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| CL01MM1 1 | 5 | 0.740 | 5 | 0.390 | 5 | 86.030 | 5 | 53.180 | 5 | 0.180 | 5 | 0.170 |
| CL01MM2 1 | 5 | 1.090 | 5 | 1.320 | 5 | 91.210 | 5 | 62.250 | 5 | 0.260 | 5 | 0.260 |
| CL07MM1 7 | 5 | 1.884 | 5 | 0.990 | 5 | 38.651 | 5 | 87.600 | 5 | 0.443 | 5 | 0.529 |
| CL14MM1 14 | 5 | 0.561 | 5 | 0.761 | 5 | 32.110 | 5 | 48.122 | 5 | 0.103 | 5 | 0.144 |
| CL28MM1 28 | 5 | 1.290 | 4 | 0.404 | 5 | 33.500 | 4 | 38.138 | 5 | 0.291 | 5 | 0.298 |
| CL56MM1 55 | 5 | 1.640 | 5 | 2.150 | 5 | 55.260 | 5 | * | 5 | 0.417 | 5 | 0.120 |

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| CH01OM1 1 | 5 | 1.879 | 5 | 1.367 | 5 | 27.923 | 5 | 36.062 | 5 | * | 5 | 0.228 |
| CH07OM1 7 | 5 | 2.520 | 5 | 1.853 | 5 | 43.803 | 5 | 45.690 | 5 | 0.590 | 5 | 0.110 |
| CH14OM1 14 | 5 | 1.613 | 5 | 3.060 | 5 | 20.080 | 5 | 36.105 | 5 | 1.205 | 5 | 0.167 |
| CH28OM1 28 | 5 | 3.536 | 5 | 1.643 | 5 | 51.600 | 5 | 45.000 | 5 | 0.400 | 5 | 0.300 |
| CH56OM1 56 | 5 | 2.935 | 5 | 2.295 | 5 | 68.844 | 5 | 45.075 | 5 | 0.219 | 5 | 0.167 |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| CL01OM1 1 | 5 | 3.905 | 5 | 1.126 | 5 | 75.126 | 5 | 53.185 | 5 | 0.089 | 5 | 0.219 |
| CL07OM1 7 | 5 | 4.125 | 5 | 5.129 | 5 | 55.025 | 5 | 82.800 | 5 | 0.953 | 5 | 0.460 |
| CL14OM1 13 | 5 | 1.820 | 5 | 2.463 | 5 | 9.667 | 5 | 35.113 | 5 | 0.872 | 5 | 1.020 |
| CL28OM1 28 | 5 | * | 5 | * | 5 | 48.750 | 5 | 11.750 | 5 | 0.200 | 5 | 0.100 |
| CL56OM1 56 | 5 | 1.735 | 4 | 4.305 | 5 | 19.641 | 4 | 93.897 | 5 | 0.805 | 5 | 0.167 |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| CH01OP1 1 | 4 | 1.800 | 4 | 1.628 | 4 | 35.656 | 4 | 21.004 | 5 | 0.090 | 5 | 0.190 |
| CH07OP1 7 | 5 | 2.584 | 5 | 1.643 | 5 | 47.500 | 5 | 52.300 | 5 | 0.300 | 5 | 0.200 |
| CH14OP1 14 | 5 | 1.074 | 5 | 2.939 | 5 | 32.740 | 5 | 48.905 | 5 | 0.100 | 5 | 0.200 |
| CH28OP1 28 | 5 | 1.187 | 4 | 1.887 | 5 | 47.920 | 4 | 62.135 | 5 | 0.390 | 5 | 0.432 |
| CH56OP1 56 | 4 | 1.636 | 5 | 1.452 | 3 | 26.312 | 5 | 20.724 | 5 | 0.297 | 5 | 0.374 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| CL01OP1 1 | 5 | 2.598 | 5 | 1.374 | 5 | 6.175 | 5 | 34.682 | 5 | * | 5 | 0.167 |
| CL07OP1 7 | 5 | 2.269 | 5 | 2.404 | 5 | 37.106 | 5 | 31.542 | 5 | 0.200 | 5 | 0.200 |
| CL14OP1 14 | 5 | 1.581 | 5 | 1.140 | 5 | 37.900 | 5 | 27.300 | 5 | 0.100 | 5 | 0.080 |
| CL28OP1 28 | 5 | 3.684 | 3 | 4.588 | 5 | 52.887 | 3 | 80.117 | 5 | 0.713 | 5 | 0.089 |
| CL56OP1 56 | 3 | 1.039 | 5 | 1.894 | 3 | 20.599 | 5 | 32.909 | 5 | 0.402 | 5 | 0.228 |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| CH01PH1 1 | 5 | 0.868 | 5 | 1.353 | 5 | 24.219 | 5 | 32.814 | 5 | 0.076 | 5 | 0.045 |
| CH07PH1 7 | 5 | 0.615 | 5 | 0.373 | 5 | 25.769 | 5 | 23.584 | 5 | 1.550 | 5 | 0.215 |
| CH14PH1 14 | 5 | 1.226 | 5 | 0.754 | 5 | 32.382 | 5 | 43.713 | 5 | 0.076 | 5 | 0.020 |
| CH28PH1 28 | 5 | 2.248 | 5 | 2.826 | 5 | * | 5 | * | 5 | 0.119 | 5 | 0.052 |
| CH56PH1 56 | 5 | 0.407 | 5 | 2.925 | 5 | 24.180 | 5 | 65.989 | 5 | 0.115 | 5 | 0.050 |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| CL01PH1 1 | 5 | 2.213 | 5 | 2.077 | 5 | 18.285 | 5 | 35.192 | 5 | 0.163 | 5 | 0.041 |
| CL07PH1 7 | 5 | 0.692 | 5 | 0.670 | 5 | 32.809 | 5 | 20.318 | 5 | 0.014 | 5 | 0.112 |
| CL14PH1 14 | 5 | 1.716 | 5 | 0.846 | 5 | 28.265 | 5 | 75.808 | 5 | 0.052 | 5 | 0.042 |
| CL28PH1 28 | 5 | 6.681 | 5 | 3.134 | 5 | * | 5 | 85.547 | 5 | 0.127 | 5 | 0.139 |
| CL56PH1 56 | 5 | 1.251 | 5 | 1.672 | 5 | 44.084 | 5 | 67.638 | 5 | 0.029 | 5 | 0.058 |

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| CH01PL1 1 | 5 | 1.782 | 5 | 4.514 | 5 | 23.467 | 5 | 43.557 | 5 | 0.107 | 5 | 0.165 |
| CH07PL1 7 | 5 | 4.435 | 5 | 2.285 | 5 | 25.514 | 5 | 20.797 | 5 | 0.121 | 5 | 0.169 |
| CH14PL1 14 | 5 | 4.133 | 5 | 3.415 | 5 | 20.566 | 5 | 22.875 | 5 | 0.084 | 5 | 0.113 |
| CH28PL1 28 | 5 | 2.957 | 5 | 1.952 | 5 | 29.683 | 5 | 27.976 | 5 | 0.069 | 5 | 0.101 |
| CH56PL1 56 | 5 | 1.142 | 5 | 1.741 | 5 | 25.581 | 5 | 29.018 | 5 | 0.170 | 5 | 0.196 |
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| CL01PL1 1 | 5 | 3.732 | 5 | 1.176 | 5 | 32.411 | 5 | 14.968 | 5 | 0.272 | 5 | 0.057 |
| CL07PL1 7 | 5 | 4.481 | 5 | 1.898 | 5 | 43.641 | 5 | 21.633 | 5 | 0.179 | 5 | 0.158 |
| CL14PL1 14 | 5 | 4.060 | 5 | 2.150 | 5 | 37.260 | 5 | 16.110 | 5 | 0.169 | 5 | 0.138 |
| CL28PL1 28 | 5 | 1.752 | 5 | 2.589 | 5 | 13.799 | 5 | 38.242 | 5 | 0.270 | 5 | 0.141 |
| CL56PL1 56 | 5 | 1.902 | 5 | 1.614 | 5 | 8.420 | 5 | 27.054 | 5 | 0.112 | 5 | 0.199 |
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| CH01PM1 1 | 5 | 1.282 | 4 | 2.200 | 5 | 28.400 | 4 | 31.029 | 5 | 0.091 | 5 | 0.117 |
| CH07PM1 7 | 5 | 1.465 | 5 | 1.043 | 5 | 15.067 | 5 | 10.469 | 5 | 0.078 | 5 | 0.169 |
| CH14PM1 14 | 5 | 3.253 | 5 | 1.428 | 5 | 52.501 | 5 | 39.271 | 5 | 0.076 | 5 | 0.066 |
| CH28PM1 28 | 5 | 0.988 | 5 | 0.850 | 5 | 21.484 | 5 | 20.182 | 5 | 0.074 | 5 | 0.091 |
| CH56PM1 56 | 5 | 1.894 | 5 | 0.300 | 5 | 35.583 | 5 | 9.551 | 5 | 0.116 | 5 | 0.028 |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| CL01PM1 1 | 5 | 2.755 | 5 | 3.032 | 5 | 30.931 | 5 | 36.090 | 5 | 0.077 | 5 | 0.084 |
| CL07PM1 7 | 5 | 4.094 | 5 | 3.279 | 5 | 38.050 | 5 | 41.722 | 5 | 0.186 | 5 | 0.277 |
| CL14PM1 14 | 5 | 7.600 | 5 | 4.190 | 5 | 53.600 | 5 | 56.730 | 5 | 0.172 | 5 | 0.119 |
| CL28PM1 28 | 5 | 4.250 | 5 | 1.170 | 5 | 74.504 | 5 | 21.858 | 5 | 0.062 | 5 | 0.089 |
| CL56PM1 56 | 5 | 2.315 | 5 | 0.947 | 5 | 28.651 | 5 | 15.625 | 5 | 0.048 | 5 | 0.054 |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| CH01SH1 1 | 4 | 3.626 | * | * | 4 | 43.117 | * | * | 5 | 0.169 | 5 | 0.167 |
| CH07SH1 7 | 5 | 2.030 | 5 | 2.820 | 5 | 39.700 | 5 | 43.729 | 4 | 0.191 | 5 | 0.109 |
| CH14SH1 14 | * | * | * | * | * | * | * | * | 5 | 0.310 | 5 | 0.176 |
| CH28SH1 28 | 5 | 2.027 | 5 | 3.819 | 5 | 58.857 | 5 | 51.230 | 5 | 0.473 | 5 | 0.133 |
| CH56SH1 56 | 5 | 3.050 | 5 | 3.254 | 5 | 52.230 | 5 | 53.639 | 5 | 0.216 | 5 | 1.070 |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| CL01SH1 1 | 5 | 4.115 | 5 | 1.500 | 5 | 67.448 | 5 | 20.558 | 5 | 0.249 | 5 | 0.502 |
| CL07SH1 7 | 4 | 4.297 | 5 | 3.761 | 4 | 95.669 | 5 | 49.920 | 5 | 0.089 | 5 | 0.219 |
| CL14SH1 14 | * | * | * | * | * | * | * | * | 10 | 0.169 | 9 | 0.145 |
| CL28SH1 28 | 5 | 1.368 | 5 | 2.917 | 4 | 23.139 | 5 | 36.015 | 10 | 0.165 | 10 | 0.287 |
| CL56SH1 56 | 5 | 1.345 | 5 | 1.479 | 5 | 21.076 | 5 | 42.714 | 10 | 0.685 | 9 | 0.424 |

CHLORINATED POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| CH01SM1 1 | 5 | 2.680 | 5 | 2.480 | 5 | 46.130 | 5 | 58.770 | 5 | 0.540 | 5 | 0.410 |
| CH07SM1 7 | 5 | 1.246 | 5 | 1.980 | 5 | 43.537 | 5 | 56.877 | 7 | 0.535 | 6 | 0.876 |
| CH14SM1 14 | 5 | 1.310 | 5 | 1.620 | 5 | 15.400 | 5 | 35.380 | 5 | 0.590 | 5 | 0.167 |
| CH28SM1 28 | 5 | 2.550 | 5 | 1.600 | 5 | 43.790 | 5 | 16.390 | 5 | 0.110 | 5 | 0.110 |
| CH56SM1 61 | 5 | 3.170 | 5 | 1.680 | 5 | 70.200 | 5 | 19.570 | 5 | 0.300 | 5 | 0.240 |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| CL01SM1 1 | 5 | 2.150 | 5 | 1.530 | 5 | 30.700 | 5 | 30.500 | 5 | 0.870 | 5 | 0.300 |
| CL07SM1 7 | 5 | 3.488 | 5 | 4.021 | 5 | 51.731 | 5 | 67.084 | 6 | 0.325 | 6 | 0.731 |
| CL14SM1 14 | 5 | 2.110 | 5 | 2.400 | 5 | 13.000 | 5 | 32.690 | 5 | 0.610 | 5 | 0.230 |
| CL28SM1 28 | 5 | 1.930 | 5 | 0.890 | 5 | 25.400 | 5 | 18.870 | 5 | 0.090 | 5 | 0.090 |
| CL56SM1 61 | 5 | 3.720 | 5 | 1.860 | 5 | 27.600 | 5 | 13.970 | 5 | 0.420 | 5 | 0.650 |
| WATER 100.0% 50°C | | | | | | | | | | | | |
| CH01WP1 1 | 5 | 1.741 | 5 | 1.967 | 5 | 28.057 | 5 | 39.695 | 5 | 0.303 | 5 | 0.179 |
| CH07WP1 7 | 5 | 2.605 | 5 | 2.500 | 5 | 34.492 | 5 | 35.300 | 8 | 0.270 | 5 | 0.230 |
| CH14WP1 14 | 6 | 4.800 | 5 | 3.810 | 6 | 41.400 | 5 | 57.360 | 5 | 0.230 | 5 | 0.220 |
| CH28WP1 28 | 4 | 2.877 | 5 | 0.620 | 4 | 27.401 | 5 | 15.670 | 5 | 0.300 | 5 | 0.230 |
| CH56WP1 56 | 5 | 2.960 | 5 | 1.040 | 5 | 43.790 | 5 | 16.010 | 5 | 0.260 | 5 | 0.110 |
| WATER 100.0% 23°C | | | | | | | | | | | | |
| CL01WP1 1 | 5 | 2.490 | 5 | 1.310 | 5 | 31.970 | 5 | 13.850 | 5 | 0.230 | 5 | 0.110 |
| CL07WP1 7 | 5 | 2.300 | 5 | 1.670 | 5 | 26.440 | 5 | 43.200 | 5 | 0.110 | 5 | 0.200 |
| CL14WP1 14 | 5 | 3.250 | 5 | 3.760 | 5 | 36.500 | 5 | 69.000 | 5 | 0.170 | 5 | 0.270 |
| CL28WP1 28 | 5 | 1.980 | 5 | 2.710 | 5 | 24.560 | 5 | 48.490 | 5 | 0.167 | 5 | 0.179 |
| CL56WP1 56 | 5 | 2.040 | 5 | 2.530 | 5 | 41.680 | 5 | 38.370 | 5 | 0.335 | 5 | 0.090 |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| CH01XM1 1 | 5 | 2.720 | 5 | 5.380 | 5 | 46.970 | 5 | * | 10 | 0.160 | 5 | 0.370 |
| CH07XM1 7 | 5 | 2.100 | 5 | 3.530 | 5 | 20.482 | 5 | 57.200 | 10 | 0.430 | 10 | 0.542 |
| CH14XM1 14 | 5 | 2.310 | 5 | 2.650 | 5 | 29.370 | 5 | 31.100 | 10 | 0.720 | 10 | 0.330 |
| CH28XM1 28 | 5 | 1.790 | 5 | 2.460 | 5 | 15.122 | 5 | 26.500 | 10 | 0.330 | 10 | 0.210 |
| CH56XM1 56 | 5 | 2.651 | 5 | 0.953 | 5 | 42.495 | 5 | 78.033 | 7 | 0.251 | 7 | 0.223 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| CL01XM1 1 | 5 | 1.560 | 5 | 3.280 | 5 | 65.700 | 5 | 37.980 | 10 | 0.330 | 10 | 0.380 |
| CL07XM1 7 | 5 | 2.368 | 5 | 1.840 | 5 | 25.567 | 5 | 37.940 | 10 | 0.200 | 10 | 0.460 |
| CL14XM1 14 | 5 | 1.980 | 5 | 3.000 | 5 | 20.000 | 5 | 53.490 | 9 | 0.750 | 10 | 0.710 |
| CL28XM1 28 | 5 | 1.860 | 5 | 1.170 | 5 | 20.580 | 5 | 42.150 | 10 | 0.340 | 10 | 0.190 |
| CL56XM1 56 | 5 | 1.750 | 5 | 3.800 | 5 | 79.400 | 5 | 49.700 | 7 | 0.220 | 7 | 0.140 |

# CPE : RETENTION OF PROPERTIES

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | |
| CH01AM1 1 | 100.0 | 100.0 | 100.0 | 86 | 116 | 102 | 108 | 119 | 88 | 102 | 109 |
| CH07AM1 7 | 2.9 | .3 | .1 | * | * | * | * | * | * | * | * |
| CH14AM1 14 | 4.0 | 4.4 | 4.4 | 99 | 121 | 119 | 109 | 98 | 74 | 109 | 121 |
| CH99AM1 28 | 4.1 | 7.4 | 7.3 | * | * | * | * | * | * | * | * |
| CH28AM1 29 | 4.2 | 5.2 | 5.6 | 105 | 115 | 122 | 102 | 86 | 61 | 119 | 130 |
| CH56AM1 56 | 4.5 | 6.1 | 6.8 | 109 | 125 | 141 | 129 | 92 | 74 | 110 | 137 |
| CH99AM2 144 | 10.0 | 11.9 | 12.6 | * | * | * | * | * | * | * | * |
| CH99AM3 252 | 14.7 | 19.4 | 20.9 | * | * | * | * | * | * | * | * |
| CH99AM4 368 | 15.6 | 16.8 | 18.8 | * | * | * | * | * | * | * | * |
| CH99AM5 511 | 19.2 | 21.0 | 22.8 | * | * | * | * | * | * | * | * |
| CH99AM6 621 | 20.4 | 22.6 | 24.8 | * | * | * | * | * | * | * | * |
| CH99AM7 732 | 25.2 | 29.4 | 32.3 | 89 | * | 94 | * | 69 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | |
| CL01AM1 1 | .5 | .7 | .1 | 96 | 116 | 102 | 98 | 116 | 90 | 96 | 104 |
| CL07AM1 7 | 1.2 | .3 | .7 | * | * | * | * | * | * | * | * |
| CL14AM1 14 | 1.8 | 1.6 | 1.8 | 96 | 102 | 101 | 100 | 102 | 103 | 92 | 114 |
| CL28AM1 29 | 1.8 | 1.6 | 2.1 | 105 | 112 | 112 | 108 | 102 | 101 | 95 | 111 |
| CL99AM1 31 | 1.5 | 1.6 | 2.0 | * | * | * | * | * | * | * | * |
| CL56AM1 56 | 2.2 | 2.9 | 3.6 | 99 | 113 | 112 | 109 | 101 | 93 | 105 | 125 |
| CL99AM2 144 | 2.6 | 2.3 | 2.5 | * | * | * | * | * | * | * | * |
| CL99AM3 238 | 2.2 | 2.3 | 3.2 | * | * | * | * | * | * | * | * |
| CL99AM4 368 | 2.7 | 2.6 | 3.0 | * | * | * | * | * | * | * | * |
| CL99AM5 511 | 2.8 | 1.6 | 1.4 | * | * | * | * | * | * | * | * |
| CL99AM6 621 | 2.6 | 2.3 | 2.9 | * | * | * | * | * | * | * | * |
| CL99AM7 732 | 3.2 | 3.6 | 4.6 | 103 | * | 107 | * | 95 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | |
| CH01BM1 1 | 100.0 | 100.0 | 100.0 | 87 | 90 | 100 | 101 | 114 | 115 | 98 | 114 |
| CH07BM1 7 | 2.8 | 3.8 | 3.4 | 52 | 124 | 92 | 107 | 118 | 79 | 92 | 113 |
| CH14BM1 14 | 3.2 | 4.2 | 4.0 | 96 | 118 | 116 | 102 | 115 | 80 | 101 | 101 |
| CH28BM1 28 | 3.0 | 5.5 | 4.6 | 100 | 109 | 110 | 101 | 106 | 90 | 96 | 101 |
| CH99BM1 29 | 4.2 | 6.1 | 5.3 | * | * | * | * | * | * | * | * |
| CH56BM1 56 | 3.8 | 6.2 | 6.0 | 107 | 202 | 121 | 129 | 101 | 90 | 80 | 113 |
| CH99BM2 144 | 3.7 | 6.1 | 5.2 | * | * | * | * | * | * | * | * |
| CH99BM3 252 | 4.9 | 7.4 | 6.4 | * | * | * | * | * | * | * | * |
| CH99BM4 368 | 7.6 | 6.7 | 6.4 | * | * | * | * | * | * | * | * |
| CH99BM5 510 | 5.8 | 7.1 | 6.2 | * | * | * | * | * | * | * | * |
| CH99BM6 622 | 6.4 | 10.3 | 9.9 | * | * | * | * | * | * | * | * |
| CH99BM7 732 | 9.3 | 12.8 | 12.6 | 104 | * | 98 | * | 86 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | |
| CL01BM1 1 | .3 | .3 | .2 | 110 | 111 | 116 | 115 | 101 | 102 | 110 | 117 |
| CL07BM1 7 | .8 | .3 | .6 | 99 | 102 | 120 | 117 | 122 | 121 | 105 | 116 |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SODIUM HYDROXIDE 10.0% 23°C | | | | | | | |
| CL14BM1 | 14 | 1.0 | .6 | 1.0 | 94 | 104 | 108 | 109 | 104 | 100 | 95 | 106 |
| CL99BM1 | 28 | 1.6 | 1.6 | 2.0 | * | * | * | * | * | * | * | * |
| CL28BM1 | 28 | 1.7 | 1.9 | 2.4 | 85 | 102 | 103 | 97 | 122 | 89 | 93 | 104 |
| CL56BM1 | 56 | 2.4 | 2.3 | 3.3 | 53 | 95 | 90 | 93 | 112 | 99 | 110 | 127 |
| CL99BM2 | 144 | 1.8 | 2.3 | 2.8 | * | * | * | * | * | * | * | * |
| CL99BM3 | 238 | 1.1 | 2.3 | 2.9 | * | * | * | * | * | * | * | * |
| CL99BM4 | 368 | 1.0 | 1.6 | 1.7 | * | * | * | * | * | * | * | * |
| CL99BM5 | 510 | .7 | 1.3 | 1.0 | * | * | * | * | * | * | * | * |
| CL99BM6 | 622 | .2 | 1.6 | 2.0 | * | * | * | * | * | * | * | * |
| CL99BM7 | 732 | .3 | 1.6 | 1.8 | 114 | * | 110 | * | 99 | * | * | * |
| | | | | | 1 2 DICHLOROETHANE .8% 50°C | | | | | | | |
| CH01DH1 | 1 | 15.1 | 17.4 | 15.6 | 27 | 32 | 42 | 37 | 160 | 151 | 46 | 51 |
| CH07DH1 | 7 | 23.3 | 27.2 | 28.2 | 30 | 41 | 54 | 58 | 148 | 127 | 61 | 76 |
| CH14DH1 | 14 | 32.4 | 36.2 | 38.5 | 31 | 37 | 51 | 39 | 129 | 104 | 45 | 70 |
| CH99DH1 | 28 | 37.1 | 48.1 | 56.3 | * | * | * | * | * | * | * | * |
| CH28DH1 | 29 | 119.3 | 99.7 | 127.8 | 17 | 29 | 21 | 21 | 90 | 84 | 48 | 41 |
| CH56DH1 | 56 | 53.5 | 60.3 | 70.4 | 31 | 41 | 42 | 34 | 101 | 79 | 71 | 74 |
| CH99DH2 | 133 | 81.8 | 93.0 | 118.5 | * | * | * | * | * | * | * | * |
| CH99DH3 | 244 | 125.0 | 131.2 | 160.9 | * | * | * | * | * | * | * | * |
| CH99DH4 | 364 | 132.6 | 142.4 | 178.9 | * | * | * | * | * | * | * | * |
| CH99DH5 | 495 | 154.2 | 178.3 | 219.2 | * | * | * | * | * | * | * | * |
| CH99DH6 | 629 | 167.4 | 182.8 | 233.3 | * | * | * | * | * | * | * | * |
| CH99DH7 | 726 | 131.6 | 136.3 | 176.3 | 52 | * | 67 | * | 91 | * | * | * |
| | | | | | 1 2 DICHLOROETHANE .8% 23°C | | | | | | | |
| CL01DH1 | 1 | 14.0 | 10.0 | 12.3 | 24 | 26 | 39 | 29 | 157 | 152 | 43 | 48 |
| CL07DH1 | 7 | 17.1 | 15.1 | 18.8 | 15 | 23 | 23 | 30 | 142 | 174 | 58 | 70 |
| CL14DH1 | 14 | 17.0 | 15.2 | 19.9 | 25 | 31 | 41 | 33 | 139 | 128 | 37 | 24 |
| CL99DH1 | 28 | 8.6 | 8.1 | 10.9 | * | * | * | * | * | * | * | * |
| CL28DH1 | 29 | 26.6 | 24.7 | 32.5 | 16 | 27 | 22 | 27 | 114 | 116 | 42 | 53 |
| CL56DH1 | 56 | 27.0 | 23.0 | 32.4 | 30 | 33 | 43 | 32 | 103 | 91 | 50 | 61 |
| CL99DH2 | 134 | 35.7 | 31.3 | 45.4 | * | * | * | * | * | * | * | * |
| CL99DH3 | 231 | 39.1 | 31.3 | 46.6 | * | * | * | * | * | * | * | * |
| CL99DH4 | 364 | 49.6 | 41.6 | 61.8 | * | * | * | * | * | * | * | * |
| CL99DH5 | 495 | 64.8 | 56.5 | 83.2 | * | * | * | * | * | * | * | * |
| CL99DH6 | 630 | 107.8 | 108.4 | 146.4 | * | * | * | * | * | * | * | * |
| CL99DH7 | 725 | 182.3 | 175.2 | 284.4 | 19 | * | 28 | * | 93 | * | * | * |
| | | | | | 1 2 DICHLOROETHANE .1% 50°C | | | | | | | |
| CH01DL1 | 1 | 3.7 | 4.1 | 4.2 | 74 | 74 | 100 | 105 | 132 | 131 | 86 | 101 |
| CH07DL1 | 7 | 11.7 | 14.0 | 16.1 | 65 | 69 | 114 | 90 | 134 | 95 | 77 | 98 |
| CH14DL1 | 14 | 14.2 | 16.5 | 19.6 | 67 | 70 | 103 | 67 | 110 | 75 | 71 | 95 |
| CH99DL1 | 28 | 21.6 | 25.4 | 29.4 | * | * | * | * | * | * | * | * |
| CH28DL1 | 29 | 22.8 | 25.3 | 29.9 | 53 | 57 | 89 | 60 | 120 | 82 | 69 | 89 |
| CH56DL1 | 56 | 30.7 | 34.8 | 40.8 | 81 | 80 | 104 | 71 | 86 | 61 | 84 | 96 |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | |
| CH99DL2 139 | 53.5 | 61.0 | 73.8 | * | * | * | * | * | * | * | * |
| CH99DL3 246 | 79.7 | 85.7 | 106.6 | * | * | * | * | * | * | * | * |
| CH99DL4 366 | 106.3 | 108.3 | 139.5 | * | * | * | * | * | * | * | * |
| CH99DL5 496 | 116.9 | 122.2 | 156.5 | * | * | * | * | * | * | * | * |
| CH99DL6 631 | 120.7 | 126.0 | 163.1 | * | * | * | * | * | * | * | * |
| CH99DL7 728 | 123.0 | 132.7 | 170.2 | 87 | * | 90 | * | 62 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | |
| CL01DL1 1 | 1.2 | .6 | 1.3 | 79 | 81 | 101 | 95 | 122 | 120 | 91 | 104 |
| CL07DL1 7 | 3.5 | 3.5 | 4.7 | 69 | 74 | 95 | 106 | 132 | 139 | 80 | 95 |
| CL14DL1 14 | 5.5 | 5.2 | 6.5 | 59 | 62 | 85 | 80 | 135 | 128 | 64 | 82 |
| CL99DL1 28 | 5.2 | 5.1 | 6.7 | * | * | * | * | * | * | * | * |
| CL28DL1 29 | 7.7 | 6.8 | 8.9 | 51 | 51 | 78 | 61 | 143 | 120 | 66 | 79 |
| CL56DL1 56 | 8.7 | 8.7 | 11.3 | 65 | 66 | 96 | 86 | 123 | 105 | 80 | 96 |
| CL99DL2 136 | 12.0 | 11.5 | 15.3 | * | * | * | * | * | * | * | * |
| CL99DL3 233 | 15.3 | 15.1 | 20.6 | * | * | * | * | * | * | * | * |
| CL99DL4 366 | 17.9 | 17.0 | 22.4 | * | * | * | * | * | * | * | * |
| CL99DL5 496 | 19.3 | 18.6 | 25.0 | * | * | * | * | * | * | * | * |
| CL99DL6 632 | 20.4 | 19.9 | 65.7 | * | * | * | * | * | * | * | * |
| CL99DL7 727 | 22.0 | 21.5 | 29.5 | 85 | * | 90 | * | 80 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | |
| CH01DM1 1 | 11.4 | 14.7 | 13.3 | 43 | 49 | 64 | 62 | 148 | 146 | 55 | 70 |
| CH07DM1 7 | 20.6 | 25.0 | 25.1 | 41 | 47 | 73 | 61 | 145 | 115 | 64 | 78 |
| CH14DM1 14 | 29.2 | 32.7 | 35.6 | 40 | 45 | 59 | 44 | 113 | 91 | 59 | 75 |
| CH99DM1 28 | 32.0 | 40.3 | 44.1 | * | * | * | * | * | * | * | * |
| CH28DM1 29 | 31.9 | 36.0 | 41.0 | 41 | 48 | 60 | 48 | 112 | 90 | 59 | 70 |
| CH56DM1 56 | 42.6 | 47.2 | 54.5 | 50 | 56 | 66 | 53 | 92 | 75 | 79 | 80 |
| CH99DM3 245 | 81.0 | 94.6 | 111.4 | * | * | * | * | * | * | * | * |
| CH99DM4 365 | 95.0 | 108.3 | 130.0 | * | * | * | * | * | * | * | * |
| CH99DM5 496 | 119.0 | 150.2 | 175.0 | * | * | * | * | * | * | * | * |
| CH99DM6 630 | 135.9 | 157.2 | 189.9 | * | * | * | * | * | * | * | * |
| CH99DM7 727 | 140.3 | 168.7 | 198.9 | 86 | * | 88 | * | 65 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | |
| CL01DM1 1 | 5.4 | 4.9 | 5.6 | 51 | 57 | 79 | 83 | 139 | 147 | 68 | 88 |
| CL07DM1 7 | 11.0 | 8.7 | 12.1 | 33 | 42 | 57 | 60 | 157 | 156 | 59 | 68 |
| CL14DM1 14 | 14.1 | 11.9 | 15.8 | 34 | 38 | 53 | 45 | 141 | 136 | 49 | 59 |
| CL99DM1 28 | 10.9 | 10.0 | 13.1 | * | * | * | * | * | * | * | * |
| CL28DM1 29 | 17.2 | 14.8 | 20.2 | 32 | 36 | 53 | 40 | 130 | 64 | 54 | 64 |
| CL56DM1 56 | 18.8 | 15.5 | 22.0 | 40 | 41 | 63 | 48 | 109 | 97 | 63 | 73 |
| CL99DM2 135 | 17.2 | 16.1 | 21.9 | * | * | * | * | * | * | * | * |
| CL99DM3 233 | 23.4 | 21.5 | 30.0 | * | * | * | * | * | * | * | * |
| CL99DM4 365 | 24.1 | 24.1 | 33.2 | * | * | * | * | * | * | * | * |
| CL99DM5 496 | 35.1 | 33.8 | 46.4 | * | * | * | * | * | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | |
| CL99DM6 631 | 39.4 | 34.7 | 50.1 | * | * | * | * | * | * | * | * |
| CL99DM7 726 | 50.6 | 44.4 | 64.6 | 41 | * | 53 | * | 94 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | | |
| CH01FH1 1 | 3.4 | 4.5 | 4.6 | 84 | 93 | 103 | 109 | 124 | 126 | 50 | 80 |
| CH07FH1 7 | 87.6 | 79.0 | 104.6 | 7 | 10 | 13 | 8 | 185 | 162 | 22 | 43 |
| CH14FH1 14 | 125.1 | 109.8 | 144.5 | 5 | 7 | 9 | 5 | 215 | 171 | 17 | 20 |
| CH28FH1 28 | 160.7 | 136.3 | 183.8 | 6 | 7 | 10 | 6 | 156 | 135 | 17 | 17 |
| CH99FH1 28 | 154.3 | 166.6 | 204.8 | * | * | * | * | * | * | * | * |
| CH56FH1 56 | 191.3 | 169.4 | 216.9 | 5 | 7 | 10 | 6 | 168 | 152 | 16 | 15 |
| CH99FH2 117 | 190.0 | 196.1 | 237.7 | * | * | * | * | * | * | * | * |
| CH99FH3 236 | 212.0 | 183.4 | 250.4 | * | * | * | * | * | * | * | * |
| CH99FH4 350 | 193.6 | 180.5 | 246.6 | * | * | * | * | * | * | * | * |
| CH99FH5 485 | 138.7 | 172.1 | 237.8 | * | * | * | * | * | * | * | * |
| CH99FH6 616 | 211.6 | 185.1 | 273.4 | * | * | * | * | * | * | * | * |
| CH99FH7 712 | 215.3 | 188.6 | 369.3 | 22 | * | 15 | * | 43 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | | |
| CL01FH1 1 | .8 | .6 | .9 | 94 | 105 | 107 | 111 | 112 | 110 | 57 | 96 |
| CL07FH1 7 | 61.3 | 49.7 | 70.6 | 6 | 10 | 11 | 11 | 219 | 184 | 17 | 17 |
| CL14FH1 14 | 112.3 | 78.0 | 123.8 | 3 | 4 | 5 | 4 | 254 | 255 | 12 | 13 |
| CL99FH1 28 | 130.6 | 93.0 | 154.4 | * | * | * | * | * | * | * | * |
| CL28FH1 28 | 113.6 | 81.3 | 138.1 | 5 | 8 | 9 | 6 | 195 | 142 | 13 | 13 |
| CL56FH1 56 | 149.6 | 103.8 | 175.7 | 4 | 7 | 7 | 5 | 159 | 160 | 15 | 17 |
| CL99FH2 114 | 174.5 | 114.7 | 199.4 | * | * | * | * | * | * | * | * |
| CL99FH3 219 | 155.1 | 109.9 | 190.5 | * | * | * | * | * | * | * | * |
| CL99FH4 350 | 179.6 | 113.4 | 198.0 | * | * | * | * | * | * | * | * |
| CL99FH5 485 | 129.5 | 95.5 | 148.3 | * | * | * | * | * | * | * | * |
| CL99FH6 617 | 151.4 | 99.0 | 154.8 | * | * | * | * | * | * | * | * |
| CL99FH7 712 | 157.6 | 119.8 | 208.9 | 5 | * | 10 | * | 174 | * | * | * |
| FURFURAL 1.0% 50°C | | | | | | | | | | | |
| CH01FL1 1 | 3.9 | 4.6 | 4.9 | 77 | 80 | 98 | 84 | 122 | 101 | 99 | 129 |
| CH07FL1 7 | 12.7 | 17.2 | 18.1 | 59 | 64 | 87 | 73 | 149 | 117 | 82 | 101 |
| CH14FL1 14 | 18.9 | 24.2 | 25.4 | 61 | 65 | 87 | 65 | 119 | 90 | 80 | 104 |
| CH28FL1 28 | 25.9 | 29.9 | 33.9 | 57 | 65 | 109 | 75 | 146 | 92 | 84 | 97 |
| CH99FL1 28 | 27.9 | 35.6 | 38.9 | * | * | * | * | * | * | * | * |
| CH56FL1 56 | 40.4 | 43.8 | 53.0 | 53 | 59 | 89 | 58 | 137 | 89 | 71 | 81 |
| CH99FL2 123 | 69.2 | 71.5 | 90.3 | * | * | * | * | * | * | * | * |
| CH99FL3 241 | 105.3 | 104.2 | 137.4 | * | * | * | * | * | * | * | * |
| CH99FL4 355 | 125.1 | 131.1 | 172.3 | * | * | * | * | * | * | * | * |
| CH99FL5 489 | 145.2 | 142.6 | 186.9 | * | * | * | * | * | * | * | * |
| CH99FL6 621 | 155.2 | 138.5 | 181.1 | * | * | * | * | * | * | * | * |
| CH99FL7 718 | 142.8 | 133.0 | 175.9 | 63 | * | 72 | * | 71 | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FURFURAL 1.0% 23°C | | | | | | | |
| CL01FL1 1 | 1.2 | 1.4 | 1.5 | 88 | 88 | 98 | 90 | 107 | 101 | 108 | 171 |
| CL07FL1 7 | 3.6 | 3.2 | 4.2 | 61 | 73 | 86 | 90 | 141 | 133 | 109 | 104 |
| CL14FL1 14 | 6.2 | 4.9 | 6.5 | 65 | 65 | 97 | 90 | 159 | 143 | 85 | 109 |
| CL99FL1 28 | 6.5 | 6.4 | 8.1 | * | * | * | * | * | * | * | * |
| CL28FL1 28 | 8.3 | 7.5 | 10.5 | 61 | 66 | 92 | 87 | 138 | 127 | 77 | 96 |
| CL56FL1 56 | 11.4 | 9.6 | 14.0 | 54 | 59 | 86 | 84 | 157 | 147 | 67 | 83 |
| CL99FL2 123 | 13.5 | 12.5 | 16.8 | * | * | * | * | * | * | * | * |
| CL99FL3 224 | 19.2 | 17.7 | 25.2 | * | * | * | * | * | * | * | * |
| CL99FL4 355 | 25.4 | 22.2 | 30.8 | * | * | * | * | * | * | * | * |
| CL99FL5 489 | 29.4 | 24.8 | 35.2 | * | * | * | * | * | * | * | * |
| CL99FL6 622 | 33.2 | 28.9 | 40.8 | * | * | * | * | * | * | * | * |
| CL99FL7 717 | 35.2 | 31.2 | 44.5 | 66 | * | 85 | * | 101 | * | * | * |
| | | | | FURFURAL 4.0% 50°C | | | | | | | |
| CH01FM1 1 | 13.9 | 13.9 | 14.2 | 30 | 35 | 49 | 40 | 147 | 143 | 60 | 85 |
| CH07FM1 7 | 29.8 | 32.3 | 35.8 | 25 | 35 | 39 | 38 | 151 | 147 | 54 | 59 |
| CH14FM1 14 | 42.2 | 44.0 | 49.7 | 24 | 27 | 35 | 31 | 117 | 99 | 49 | 68 |
| CH28FM1 28 | 66.4 | 63.0 | 76.0 | 20 | 25 | 33 | 24 | 117 | 106 | 46 | 56 |
| CH99FM1 29 | 73.0 | 77.2 | 89.5 | * | * | * | * | * | * | * | * |
| CH56FM1 56 | 105.9 | 97.4 | 123.9 | 21 | 29 | 31 | 22 | 100 | 75 | 51 | 74 |
| CH99FM2 124 | 147.4 | 148.2 | 192.2 | * | * | * | * | * | * | * | * |
| CH99FM3 242 | 151.9 | 148.2 | 202.6 | * | * | * | * | * | * | * | * |
| CH99FM4 356 | 147.4 | 145.9 | 188.9 | * | * | * | * | * | * | * | * |
| CH99FM5 490 | 145.4 | 147.2 | 191.3 | * | * | * | * | * | * | * | * |
| CH99FM6 622 | 151.3 | 154.4 | 321.2 | * | * | * | * | * | * | * | * |
| CH99FM7 719 | 156.1 | 159.9 | 217.6 | 51 | * | 40 | * | 67 | * | * | * |
| | | | | FURFURAL 4.0% 23°C | | | | | | | |
| CL01FM1 1 | 3.5 | 4.3 | 4.6 | 63 | 67 | 83 | 73 | 118 | 109 | 90 | 151 |
| CL07FM1 7 | 15.9 | 14.1 | 17.8 | 28 | 31 | 50 | 45 | 171 | 205 | 53 | 70 |
| CL14FM1 14 | 20.3 | 19.2 | 23.2 | 24 | 29 | 47 | 33 | 166 | 156 | 47 | 57 |
| CL28FM1 28 | 31.5 | 27.9 | 35.4 | 21 | 25 | 37 | 30 | 132 | 134 | 46 | 53 |
| CL99FM1 29 | 23.3 | 20.8 | 27.9 | * | * | * | * | * | * | * | * |
| CL56FM1 56 | 36.5 | 31.3 | 42.5 | 22 | 27 | 39 | 28 | 159 | 133 | 40 | 54 |
| CL99FM2 124 | 45.0 | 39.0 | 54.2 | * | * | * | * | * | * | * | * |
| CL99FM3 228 | 55.4 | 47.6 | 69.5 | * | * | * | * | * | * | * | * |
| CL99FM4 356 | 80.3 | 63.6 | 98.0 | * | * | * | * | * | * | * | * |
| CL99FM5 490 | 97.3 | 70.3 | 111.3 | * | * | * | * | * | * | * | * |
| CL99FM6 623 | 112.8 | 81.8 | 130.6 | * | * | * | * | * | * | * | * |
| CL99FM7 715 | 121.2 | 93.0 | 154.1 | 21 | * | 43 | * | 116 | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 8.0% 50°C | | | | | | | | | | | |
| CH01MD1 1 | 23.7 | 32.7 | 34.8 | 15 | 21 | 23 | 18 | 158 | 153 | 47 | 51 |
| CH07MD1 7 | 72.1 | 77.9 | 89.2 | 25 | 30 | 40 | 31 | 125 | 117 | 59 | 86 |
| CH14MD1 14 | 85.0 | 87.8 | 106.0 | 36 | 42 | 44 | 30 | 95 | 77 | 38 | 44 |
| CH28MD1 28 | 79.2 | 85.8 | 102.4 | 31 | 41 | 41 | 29 | 102 | 74 | 61 | 69 |
| CH56MD1 58 | 75.5 | 88.7 | 100.5 | 56 | 68 | 78 | 46 | 108 | 62 | 84 | 88 |
| METHYL ETHYL KETONE 8.0% 23°C | | | | | | | | | | | |
| CL01MD1 1 | 7.0 | 8.6 | 9.4 | 42 | 46 | 66 | 59 | 140 | 140 | 77 | 84 |
| CL07MD1 7 | 17.9 | 21.4 | 28.1 | 25 | 30 | 52 | 43 | 179 | 172 | 63 | 80 |
| CL14MD1 14 | 24.2 | 25.0 | 32.5 | 49 | 58 | 66 | 52 | 129 | 102 | 42 | 52 |
| CL28MD1 28 | 25.7 | 26.1 | 34.9 | 30 | 34 | 49 | 38 | 124 | 116 | 56 | 77 |
| CL56MD1 56 | 25.5 | 26.5 | 33.5 | 45 | 49 | 73 | 52 | 126 | 92 | 74 | 96 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | |
| CH01MH1 1 | 135.8 | 106.1 | 160.9 | 1 | 3 | 1 | 2 | 56 | 58 | 10 | 8 |
| CH99MH1 28 | 288.0 | 327.2 | 401.3 | * | * | * | * | * | * | * | * |
| CH99MH2 122 | 408.2 | 343.4 | 465.0 | * | * | * | * | * | * | * | * |
| CH99MH3 240 | 374.7 | 422.3 | 478.1 | * | * | * | * | * | * | * | * |
| CH99MH4 358 | 252.8 | 316.8 | 315.4 | * | * | * | * | * | * | * | * |
| CH99MH5 494 | 260.4 | 353.1 | 329.2 | * | * | * | * | * | * | * | * |
| CH99MH6 626 | 207.4 | 280.9 | 241.9 | * | * | * | * | * | * | * | * |
| CH99MH7 722 | 192.8 | 361.2 | 308.7 | 7 | * | 8 | * | 80 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | |
| CL01MH1 1 | 70.6 | 66.8 | 100.1 | 3 | 3 | 3 | 1 | 77 | 89 | 14 | 15 |
| CL99MH1 28 | 202.4 | 190.4 | 289.8 | * | * | * | * | * | * | * | * |
| CL99MH2 121 | 453.3 | 289.1 | 537.7 | * | * | * | * | * | * | * | * |
| CL99MH3 235 | 260.5 | 240.8 | 387.2 | * | * | * | * | * | * | * | * |
| CL99MH4 358 | 335.0 | 256.3 | 416.9 | * | * | * | * | * | * | * | * |
| CL99MH5 494 | 316.4 | 221.5 | 370.1 | * | * | * | * | * | * | * | * |
| CL99MH6 627 | 296.2 | 327.7 | 473.6 | * | * | * | * | * | * | * | * |
| CL99MH7 721 | 268.4 | 237.0 | 359.7 | 2 | * | 4 | * | 115 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | |
| CH01ML1 1 | 6.1 | 8.7 | 8.4 | 56 | 59 | 87 | 71 | 138 | 111 | 82 | 92 |
| CH07ML1 7 | 24.8 | 32.6 | 34.2 | 46 | 53 | 76 | 61 | 131 | 104 | 75 | 99 |
| CH14ML1 14 | 31.1 | 38.2 | 41.1 | 53 | 64 | 67 | 50 | 103 | 78 | 65 | 81 |
| CH28ML1 28 | 10.6 | 11.1 | 15.7 | 54 | 64 | 78 | 62 | 106 | 81 | 82 | 98 |
| CH99ML1 28 | 38.0 | 50.6 | 54.3 | * | * | * | * | * | * | * | * |
| CH56ML1 55 | 45.0 | 52.1 | 59.1 | 75 | 84 | 99 | 67 | 105 | 67 | 104 | 114 |
| CH99ML2 120 | 88.3 | 107.7 | 126.2 | * | * | * | * | * | * | * | * |
| CH99ML3 240 | 114.4 | 126.9 | 159.2 | * | * | * | * | * | * | * | * |
| CH99ML4 358 | 150.8 | 153.8 | 201.4 | * | * | * | * | * | * | * | * |
| CH99ML5 494 | 184.1 | 229.8 | 294.3 | * | * | * | * | * | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | |
| CH99ML6 626 | 209.6 | 250.6 | 320.0 | * | * | * | * | * | * | * | * |
| CH99ML7 722 | 219.1 | 219.6 | 282.7 | 52 | * | 53 | * | 61 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | |
| CL01ML1 1 | 1.8 | 2.4 | 2.6 | 81 | 86 | 107 | 113 | 139 | 142 | 99 | 115 |
| CL01ML2 1 | 1.4 | 1.9 | 2.1 | 79 | 78 | 99 | 97 | 130 | 129 | 94 | 115 |
| CL07ML1 7 | 5.4 | 5.9 | 8.0 | 56 | 58 | 86 | 87 | 148 | 154 | 77 | 93 |
| CL14ML1 14 | 7.7 | 7.3 | 10.3 | 62 | 69 | 74 | 68 | 122 | 111 | 67 | 83 |
| CL99ML1 28 | 9.0 | 8.6 | 11.4 | * | * | * | * | * | * | * | * |
| CL28ML1 28 | 31.0 | 37.5 | 42.1 | 67 | 73 | 83 | 77 | 140 | 95 | 75 | 85 |
| CL56ML1 55 | 12.3 | 12.0 | 15.5 | 63 | 65 | 105 | 73 | 136 | 91 | 83 | 105 |
| CL99ML2 120 | 17.4 | 15.0 | 20.6 | * | * | * | * | * | * | * | * |
| CL99ML3 235 | 23.0 | 21.7 | 30.1 | * | * | * | * | * | * | * | * |
| CL99ML4 358 | 31.1 | 27.8 | 40.4 | * | * | * | * | * | * | * | * |
| CL99ML5 494 | 36.1 | 31.0 | 44.3 | * | * | * | * | * | * | * | * |
| CL99ML6 627 | 39.7 | 35.1 | 49.0 | * | * | * | * | * | * | * | * |
| CL99ML7 721 | 41.3 | 36.7 | 52.9 | 54 | * | 71 | * | 102 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | |
| CH01MM1 1 | 42.3 | 48.9 | 53.7 | 10 | 16 | 15 | 14 | 147 | 129 | 35 | 38 |
| CH07MM1 7 | 100.0 | 100.0 | 100.0 | 7 | 11 | 12 | 9 | 122 | 117 | 20 | 21 |
| CH14MM1 14 | 208.8 | 204.7 | 256.6 | 7 | 9 | 10 | 6 | 132 | 100 | 18 | 20 |
| CH99MM1 28 | 47.3 | 55.4 | 62.5 | * | * | * | * | * | * | * | * |
| CH28MM1 28 | 54.4 | 50.3 | 69.4 | 12 | 17 | 20 | 15 | 123 | 94 | 47 | 49 |
| CH56MM1 55 | 207.8 | 226.1 | 262.2 | 6 | 8 | 9 | 6 | 142 | 103 | 21 | 20 |
| CH99MM2 120 | 208.2 | 220.5 | 250.7 | * | * | * | * | * | * | * | * |
| CH99MM3 239 | 314.9 | 271.8 | 421.3 | * | * | * | * | * | * | * | * |
| CH99MM4 357 | 351.7 | 401.9 | 523.5 | * | * | * | * | * | * | * | * |
| CH99MM5 493 | 318.5 | 100.0 | 100.0 | * | * | * | * | * | * | * | * |
| CH99MM6 625 | 305.4 | 370.2 | 451.4 | * | * | * | * | * | * | * | * |
| CH99MM7 721 | 308.6 | 261.9 | 328.1 | 16 | * | 26 | * | 118 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | |
| CL01MM1 1 | 19.4 | 22.1 | 28.6 | 14 | 15 | 21 | 13 | 160 | 154 | 26 | 37 |
| CL01MM2 1 | 19.9 | 23.4 | 27.9 | 14 | 18 | 22 | 16 | 192 | 172 | 29 | 37 |
| CL07MM1 7 | 47.0 | 45.8 | 65.9 | 15 | 17 | 32 | 20 | 182 | 171 | 37 | 64 |
| CL14MM1 14 | 64.0 | 54.5 | 79.5 | 11 | 14 | 16 | 11 | 135 | 118 | 22 | 26 |
| CL28MM1 28 | 184.8 | 195.5 | 242.7 | 21 | 27 | 33 | 24 | 118 | 97 | 63 | 67 |
| CL99MM1 28 | 81.7 | 70.2 | 106.7 | * | * | * | * | * | * | * | * |
| CL56MM1 55 | 89.7 | 78.6 | 116.8 | 17 | 24 | 32 | 22 | 131 | 102 | 47 | 54 |
| CL99MM2 120 | 131.4 | 101.0 | 169.5 | * | * | * | * | * | * | * | * |
| CL99MM3 234 | 191.6 | 259.0 | 300.8 | * | * | * | * | * | * | * | * |
| CL99MM4 357 | 205.1 | 237.2 | 279.5 | * | * | * | * | * | * | * | * |
| CL99MM5 493 | 205.0 | 100.0 | 100.0 | * | * | * | * | * | * | * | * |
| CL99MM6 626 | 203.3 | 227.6 | 251.6 | * | * | * | * | * | * | * | * |
| CL99MM7 720 | 206.0 | 232.4 | 267.8 | 9 | * | 19 | * | 128 | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | |
| CH010M1 1 | 2.7 | 3.6 | 3.9 | 83 | 93 | 96 | 97 | 124 | 125 | 89 | 108 |
| CH070M1 7 | 9.1 | 43.2 | 45.7 | 83 | 88 | 94 | 90 | 113 | 106 | 102 | 112 |
| CH140M1 14 | 11.9 | 13.6 | 13.1 | 78 | 77 | 91 | 80 | 124 | 123 | 112 | 119 |
| CH990M1 28 | 19.4 | 23.1 | 27.3 | * | * | * | * | * | * | * | * |
| CH280M1 28 | 19.1 | 21.2 | 24.3 | 67 | 63 | 93 | 93 | 106 | 94 | 79 | 89 |
| CH560M1 56 | 27.5 | 29.3 | 27.5 | 80 | 79 | 93 | 74 | 106 | 95 | 83 | 93 |
| CH990M2 128 | 52.9 | 100.0 | 100.0 | * | * | * | * | * | * | * | * |
| CH990M3 251 | 80.6 | 92.8 | 116.5 | * | * | * | * | * | * | * | * |
| CH990M4 364 | 97.0 | 101.0 | 130.2 | * | * | * | * | * | * | * | * |
| CH990M5 503 | 114.9 | 120.8 | 156.5 | * | * | * | * | * | * | * | * |
| CH990M6 626 | 124.1 | 130.3 | 171.4 | * | * | * | * | * | * | * | * |
| CH990M7 727 | 134.9 | 141.7 | 185.8 | 80 | * | 81 | * | 61 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | |
| CL010M1 1 | .6 | .6 | .8 | 84 | 92 | 97 | 102 | 120 | 125 | 91 | 107 |
| CL070M1 7 | 2.1 | 1.9 | 2.5 | 89 | 101 | 100 | 101 | 109 | 118 | 113 | 111 |
| CL140M1 13 | 6.1 | 6.0 | 7.1 | 80 | 84 | 95 | 95 | 128 | 131 | 111 | 120 |
| CL990M1 28 | 5.0 | 5.5 | 6.9 | * | * | * | * | * | * | * | * |
| CL280M1 28 | 5.4 | 4.9 | 5.5 | 67 | 63 | 93 | 93 | 128 | 128 | 84 | 95 |
| CL560M1 56 | 6.5 | 6.2 | 8.3 | 84 | 86 | 96 | 96 | 111 | 113 | 101 | 107 |
| CL990M2 128 | 11.5 | 11.0 | 13.9 | * | * | * | * | * | * | * | * |
| CL990M3 237 | 13.6 | 14.0 | 18.1 | * | * | * | * | * | * | * | * |
| CL990M4 364 | 16.0 | 15.6 | 19.6 | * | * | * | * | * | * | * | * |
| CL990M5 503 | 17.1 | 16.6 | 20.2 | * | * | * | * | * | * | * | * |
| CL990M6 626 | 18.6 | 18.8 | 23.8 | * | * | * | * | * | * | * | * |
| CL990M7 727 | 20.5 | 20.8 | 26.3 | 89 | * | 102 | * | 91 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | |
| CH010P1 1 | 1.7 | 1.7 | 1.8 | 72 | 73 | 84 | 81 | 130 | 129 | 78 | 93 |
| CH070P1 7 | 5.0 | 5.5 | 5.7 | 78 | 71 | 92 | 90 | 106 | 110 | 79 | 90 |
| CH140P1 14 | 7.3 | 7.1 | 8.7 | 90 | 92 | 100 | 95 | 107 | 104 | 81 | 87 |
| CH990P1 28 | 9.8 | 10.6 | 13.3 | * | * | * | * | * | * | * | * |
| CH280P1 28 | 8.0 | 8.5 | 9.6 | 81 | 79 | 87 | 89 | 94 | 114 | 80 | 93 |
| CH560P1 56 | 11.4 | 12.3 | 14.0 | 91 | 83 | 100 | 92 | 100 | 105 | 94 | 110 |
| CH990P2 141 | 15.7 | 17.4 | 21.1 | * | * | * | * | * | * | * | * |
| CH990P3 257 | 18.8 | 19.9 | 24.4 | * | * | * | * | * | * | * | * |
| CH990P4 385 | 18.6 | 21.2 | 26.4 | * | * | * | * | * | * | * | * |
| CH990P5 509 | 19.5 | 20.9 | 25.6 | * | * | * | * | * | * | * | * |
| CH990P6 627 | 20.3 | 20.9 | 26.0 | * | * | * | * | * | * | * | * |
| CH990P7 733 | 20.3 | 22.5 | 28.6 | 99 | * | 94 | * | 73 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | |
| CL010P1 1 | .7 | .3 | .5 | 76 | 78 | 92 | 86 | 137 | 142 | 81 | 93 |
| CL070P1 7 | .7 | .6 | .6 | 93 | 98 | 108 | 106 | 122 | 115 | 84 | 92 |
| CL140P1 14 | 1.0 | 1.3 | 1.0 | 75 | 69 | 96 | 94 | 132 | 125 | 85 | 97 |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ASTM #2 OIL 100.0% 23°C | | | | | | | |
| CL99OP1 28 | 1.3 | 1.3 | 1.6 | * | * | * | * | * | * | * | * |
| CL28OP1 28 | 1.0 | .3 | .7 | 89 | 88 | 103 | 104 | 113 | 116 | 105 | 109 |
| CL56OP1 56 | 1.6 | 1.0 | .7 | 92 | 97 | 104 | 104 | 119 | 120 | 100 | 118 |
| CL99OP2 141 | 2.7 | 2.3 | 3.3 | * | * | * | * | * | * | * | * |
| CL99OP3 244 | 3.1 | 3.3 | 4.5 | * | * | * | * | * | * | * | * |
| CL99OP4 385 | 4.2 | 3.9 | 5.7 | * | * | * | * | * | * | * | * |
| CL99OP5 509 | 5.1 | 4.6 | 5.8 | * | * | * | * | * | * | * | * |
| CL99OP6 627 | 6.5 | 4.2 | 6.0 | * | * | * | * | * | * | * | * |
| CL99OP7 733 | 5.7 | 6.8 | 8.9 | 101 | * | 98 | * | 90 | * | * | * |
| | | | | PHENOL 8.0% 50°C | | | | | | | |
| CH01PH1 1 | 27.0 | 26.8 | 30.6 | 26 | 29 | 49 | 43 | 125 | 117 | 39 | 50 |
| CH07PH1 7 | 65.5 | 62.0 | 78.2 | 21 | 23 | 29 | 21 | 92 | 81 | 37 | 46 |
| CH14PH1 14 | 85.5 | 83.2 | 104.1 | 15 | 13 | 30 | 17 | 122 | 95 | 38 | 37 |
| CH28PH1 28 | 104.0 | 132.1 | 158.5 | 20 | 25 | 28 | 20 | 112 | 90 | 38 | 38 |
| CH99PH1 29 | 89.5 | 97.1 | 121.4 | * | * | * | * | * | * | * | * |
| CH56PH1 56 | 149.5 | 100.0 | 100.0 | 20 | 24 | 28 | 20 | 116 | 100 | 34 | 35 |
| CH99PH2 121 | 162.2 | 256.9 | 304.4 | * | * | * | * | * | * | * | * |
| CH99PH3 243 | 210.3 | 318.0 | 365.1 | * | * | * | * | * | * | * | * |
| CH99PH4 362 | 228.8 | 320.3 | 361.0 | * | * | * | * | * | * | * | * |
| CH99PH5 499 | 241.8 | 100.0 | 100.0 | * | * | * | * | * | * | * | * |
| CH99PH6 624 | 217.9 | 220.3 | 263.8 | * | * | * | * | * | * | * | * |
| CH99PH7 720 | 196.6 | 210.6 | 246.2 | 14 | * | 28 | * | 144 | * | * | * |
| | | | | PHENOL 8.0% 23°C | | | | | | | |
| CL01PH1 1 | 12.6 | 12.8 | 13.8 | 53 | 55 | 84 | 82 | 116 | 110 | 54 | 62 |
| CL07PH1 7 | 43.1 | 35.9 | 48.2 | 20 | 22 | 34 | 26 | 110 | 104 | 35 | 50 |
| CL14PH1 14 | 55.0 | 47.2 | 65.9 | 18 | 22 | 40 | 29 | 129 | 121 | 33 | 44 |
| CL28PH1 28 | 54.7 | 48.4 | 65.9 | 15 | 31 | 34 | 25 | 143 | 79 | 35 | 43 |
| CL99PH1 29 | 43.6 | 38.3 | 52.8 | * | * | * | * | * | * | * | * |
| CL56PH1 56 | 100.0 | 48.6 | 65.5 | 18 | 19 | 38 | 26 | 148 | 134 | 31 | 45 |
| CL99PH2 121 | 59.4 | 52.4 | 73.0 | * | * | * | * | * | * | * | * |
| CL99PH3 230 | 54.9 | 50.8 | 71.3 | * | * | * | * | * | * | * | * |
| CL99PH4 362 | 56.6 | 52.1 | 72.3 | * | * | * | * | * | * | * | * |
| CL99PH5 499 | 91.1 | 74.3 | 112.5 | * | * | * | * | * | * | * | * |
| CL99PH6 625 | 66.8 | 54.7 | 78.1 | * | * | * | * | * | * | * | * |
| CL99PH7 719 | 55.9 | 48.6 | 69.1 | 23 | * | 33 | * | 115 | * | * | * |
| | | | | PHENOL 1.0% 50°C | | | | | | | |
| CH01PL1 1 | 3.5 | 3.6 | 4.1 | 86 | 92 | 119 | 112 | 118 | 100 | 74 | 93 |
| CH07PL1 7 | 13.6 | 17.3 | 17.8 | 70 | 81 | 121 | 101 | 120 | 83 | 81 | 96 |
| CH14PL1 14 | 18.4 | 21.9 | 26.4 | 62 | 63 | 107 | 77 | 117 | 81 | 78 | 96 |
| CH99PL1 28 | 26.2 | 30.8 | 36.4 | * | * | * | * | * | * | * | * |
| CH28PL1 28 | 25.6 | 28.1 | 32.6 | 64 | 68 | 98 | 67 | 107 | 77 | 78 | 97 |
| CH56PL1 56 | 39.4 | 41.7 | 52.1 | 55 | 62 | 83 | 56 | 120 | 77 | 68 | 86 |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PHENOL 1.0% 50°C | | | | | | | |
| CH99PL2 122 | 65.6 | 76.3 | 98.6 | * | * | * | * | * | * | * | * |
| CH99PL3 245 | 103.0 | 102.6 | 141.0 | * | * | * | * | * | * | * | * |
| CH99PL4 363 | 123.3 | 136.0 | 185.9 | * | * | * | * | * | * | * | * |
| CH99PL5 499 | 130.8 | 131.8 | 179.7 | * | * | * | * | * | * | * | * |
| CH99PL6 625 | 142.7 | 142.5 | 195.1 | * | * | * | * | * | * | * | * |
| CH99PL7 721 | 142.2 | 121.1 | 166.5 | 83 | * | 84 | * | 69 | * | * | * |
| | | | | PHENOL 1.0% 23°C | | | | | | | |
| CL01PL1 1 | .9 | 1.0 | 1.2 | 90 | 97 | 112 | 104 | 111 | 97 | 78 | 93 |
| CL07PL1 7 | 3.1 | 3.3 | 4.2 | 86 | 93 | 111 | 113 | 110 | 104 | 91 | 109 |
| CL14PL1 14 | 4.6 | 3.8 | 5.3 | 79 | 83 | 111 | 111 | 122 | 112 | 85 | 101 |
| CL28PL1 28 | 7.8 | 7.1 | 100.0 | 70 | 74 | 112 | 103 | 138 | 114 | 84 | 99 |
| CL99PL1 28 | 17.3 | 16.1 | 23.2 | * | * | * | * | * | * | * | * |
| CL56PL1 56 | 11.1 | 11.3 | 15.2 | 64 | 69 | 101 | 89 | 137 | 106 | 73 | 87 |
| CL99PL2 122 | 34.5 | 28.7 | 43.6 | * | * | * | * | * | * | * | * |
| CL99PL3 233 | 38.0 | 33.5 | 50.8 | * | * | * | * | * | * | * | * |
| CL99PL4 363 | 40.6 | 36.1 | 54.3 | * | * | * | * | * | * | * | * |
| CL99PL5 499 | 41.9 | 36.8 | 55.1 | * | * | * | * | * | * | * | * |
| CL99PL6 626 | 45.3 | 38.4 | 57.1 | * | * | * | * | * | * | * | * |
| CL99PL7 720 | 45.9 | 41.0 | 60.9 | 60 | * | 82 | * | 107 | * | * | * |
| | | | | PHENOL 4.0% 50°C | | | | | | | |
| CH01PM1 1 | 9.8 | 10.3 | 11.7 | 55 | 58 | 95 | 98 | 123 | 108 | 62 | 73 |
| CH07PM1 7 | 29.7 | 33.5 | 37.6 | 38 | 42 | 55 | 42 | 92 | 73 | 65 | 75 |
| CH14PM1 14 | 39.4 | 42.0 | 48.7 | 28 | 25 | 53 | 31 | 112 | 77 | 57 | 64 |
| CH28PM1 28 | 54.7 | 56.8 | 70.1 | 33 | 37 | 48 | 30 | 104 | 70 | 56 | 60 |
| CH99PM1 29 | 47.9 | 53.4 | 62.7 | * | * | * | * | * | * | * | * |
| CH56PM1 56 | 87.3 | 88.1 | 113.0 | 30 | 33 | 43 | 28 | 117 | 84 | 51 | 49 |
| CH99PM2 121 | 99.3 | 104.5 | 135.6 | * | * | * | * | * | * | * | * |
| CH99PM3 244 | 136.0 | 199.4 | 248.0 | * | * | * | * | * | * | * | * |
| CH99PM4 362 | 148.5 | 179.3 | 222.6 | * | * | * | * | * | * | * | * |
| CH99PM5 499 | 169.2 | 100.0 | 100.0 | * | * | * | * | * | * | * | * |
| CH99PM6 624 | 178.1 | 191.9 | 235.9 | * | * | * | * | * | * | * | * |
| CH99PM7 720 | 179.5 | 227.2 | 274.0 | 42 | * | 52 | * | 115 | * | * | * |
| | | | | PHENOL 4.0% 23°C | | | | | | | |
| CL01PM1 1 | 3.1 | 3.2 | 3.3 | 80 | 84 | 106 | 104 | 113 | 103 | 78 | 96 |
| CL07PM1 7 | 12.2 | 11.2 | 14.2 | 52 | 57 | 90 | 79 | 123 | 102 | 78 | 91 |
| CL14PM1 14 | 17.7 | 14.7 | 21.3 | 30 | 30 | 59 | 52 | 112 | 100 | 60 | 76 |
| CL28PM1 28 | 26.9 | 22.6 | 31.5 | 32 | 36 | 59 | 39 | 127 | 92 | 51 | 66 |
| CL99PM1 29 | 5.8 | 5.8 | 7.8 | * | * | * | * | * | * | * | * |
| CL56PM1 56 | 100.0 | 63.5 | 80.2 | 29 | 33 | 60 | 41 | 156 | 112 | 45 | 56 |
| CL99PM2 121 | 14.9 | 12.9 | 18.0 | * | * | * | * | * | * | * | * |
| CL99PM3 231 | 21.4 | 19.0 | 27.5 | * | * | * | * | * | * | * | * |
| CL99PM4 362 | 30.2 | 25.4 | 37.9 | * | * | * | * | * | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PHENOL 4.0% 23°C | | | | | | | |
| CL99PM5 499 | 46.7 | 37.0 | 55.3 | * | * | * | * | * | * | * | * |
| CL99PM6 625 | 56.0 | 44.1 | 64.6 | * | * | * | * | * | * | * | * |
| CL99PM7 719 | 59.0 | 49.2 | 71.9 | 33 | * | 55 | * | 117 | * | * | * |
| | | | | SODIUM CHLORIDE 35.0% 50°C | | | | | | | |
| CH01SH1 1 | .7 | .3 | .4 | 91 | * | 101 | * | 118 | * | 88 | 101 |
| CH07SH1 7 | 1.4 | 1.0 | 1.0 | 83 | 85 | 94 | 85 | 120 | 112 | 89 | 99 |
| CH14SH1 14 | 1.2 | 1.9 | 1.9 | * | * | * | * | * | * | 87 | 108 |
| CH99SH1 28 | 1.6 | 2.6 | 3.4 | * | * | * | * | * | * | * | * |
| CH28SH1 28 | 2.4 | 2.0 | 2.1 | 106 | 100 | 117 | 107 | 111 | 117 | 89 | 108 |
| CH56SH1 56 | 1.5 | 2.6 | 3.0 | 87 | 92 | 100 | 95 | 130 | 112 | 91 | 130 |
| CH99SH2 131 | 1.7 | 2.2 | 3.0 | * | * | * | * | * | * | * | * |
| CH99SH3 253 | 1.7 | 1.6 | 2.5 | * | * | * | * | * | * | * | * |
| CH99SH4 379 | 1.3 | 1.9 | 3.8 | * | * | * | * | * | * | * | * |
| CH99SH5 510 | 1.5 | 1.6 | 1.8 | * | * | * | * | * | * | * | * |
| CH99SH6 630 | 1.1 | 1.9 | 2.6 | * | * | * | * | * | * | * | * |
| CH99SH7 733 | 1.2 | 2.6 | 4.0 | 106 | * | 93 | * | 91 | * | * | * |
| | | | | SODIUM CHLORIDE 35.0% 23°C | | | | | | | |
| CL01SH1 1 | .2 | .3 | .1 | 81 | 84 | 95 | 100 | 135 | 149 | 107 | 122 |
| CL07SH1 7 | .7 | .3 | .7 | 90 | 95 | 101 | 102 | 111 | 110 | 87 | 107 |
| CL14SH1 14 | 4.9 | * | .6 | * | * | * | * | * | * | 86 | 111 |
| CL28SH1 28 | .9 | 1.3 | 1.6 | 102 | 118 | 115 | 115 | 112 | 103 | 94 | 111 |
| CL99SH1 28 | .7 | .6 | 1.4 | * | * | * | * | * | * | * | * |
| CL56SH1 56 | 1.5 | 1.3 | 2.0 | 80 | 79 | 99 | 93 | 127 | 122 | 93 | 111 |
| CL99SH2 131 | 1.3 | .3 | 1.1 | * | * | * | * | * | * | * | * |
| CL99SH3 246 | 1.2 | .6 | 2.5 | * | * | * | * | * | * | * | * |
| CL99SH4 379 | 1.5 | 1.3 | 3.0 | * | * | * | * | * | * | * | * |
| CL99SH5 510 | 1.6 | .6 | 1.8 | * | * | * | * | * | * | * | * |
| CL99SH6 630 | 1.2 | .3 | 1.4 | * | * | * | * | * | * | * | * |
| CL99SH7 733 | 1.3 | 1.6 | 2.9 | 102 | * | 98 | * | 99 | * | * | * |
| | | | | SODIUM CHLORIDE 10.0% 50°C | | | | | | | |
| CH01SM1 1 | 1.6 | 2.3 | 2.0 | 97 | 97 | 105 | 93 | 103 | 97 | 102 | 105 |
| CH07SM1 7 | 3.6 | 4.0 | 4.1 | 95 | 104 | 102 | 94 | 106 | 92 | 106 | 126 |
| CH14SM1 14 | 2.6 | 3.6 | 3.8 | 91 | 103 | 107 | 97 | 112 | 93 | 106 | 101 |
| CH99SM1 28 | 5.5 | 6.8 | 7.9 | * | * | * | * | * | * | * | * |
| CH28SM1 28 | 3.8 | 5.6 | 5.7 | 77 | 92 | 101 | 96 | 129 | 118 | 104 | 108 |
| CH56SM1 61 | 3.6 | 5.8 | 6.3 | 98 | 117 | 104 | 100 | 94 | 84 | 120 | 113 |
| CH99SM2 132 | 5.1 | 5.5 | 6.2 | * | * | * | * | * | * | * | * |
| CH99SM3 254 | 4.7 | 5.8 | 6.5 | * | * | * | * | * | * | * | * |
| CH99SM4 370 | 7.4 | 5.5 | 6.5 | * | * | * | * | * | * | * | * |
| CH99SM5 511 | 4.6 | 5.2 | 5.5 | * | * | * | * | * | * | * | * |
| CH99SM6 624 | 4.0 | 5.8 | 6.2 | * | * | * | * | * | * | * | * |
| CH99SM7 734 | 3.7 | 5.5 | 6.7 | 103 | * | 86 | * | 88 | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | |
| CL01SM1 1 | .6 | .3 | .1 | 89 | 89 | 97 | 90 | 107 | 100 | 90 | 99 |
| CL07SM1 7 | 1.3 | 1.3 | 1.8 | 100 | 110 | 103 | 104 | 95 | 97 | 115 | 119 |
| CL14SM1 14 | 1.7 | 2.6 | 3.2 | 93 | 93 | 109 | 108 | 107 | 104 | 102 | 105 |
| CL28SM1 28 | 2.8 | 3.9 | 4.7 | 96 | 93 | 110 | 109 | 111 | 124 | 97 | 104 |
| CL99SM1 28 | 2.7 | 2.9 | 4.3 | * | * | * | * | * | * | * | * |
| CL56SM1 61 | 3.0 | 3.9 | 4.6 | 93 | 99 | 105 | 99 | 104 | 96 | 108 | 110 |
| CL99SM2 132 | 4.1 | 3.9 | 5.9 | * | * | * | * | * | * | * | * |
| CL99SM3 246 | 3.8 | 4.2 | 7.2 | * | * | * | * | * | * | * | * |
| CL99SM4 370 | 3.8 | 4.2 | 6.3 | * | * | * | * | * | * | * | * |
| CL99SM5 511 | 3.4 | 3.2 | 5.1 | * | * | * | * | * | * | * | * |
| CL99SM6 624 | 3.2 | 3.9 | 5.9 | * | * | * | * | * | * | * | * |
| CL99SM7 734 | 3.0 | 3.9 | 6.0 | 103 | * | 91 | * | 86 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | | | |
| CH01WP1 1 | 1.8 | 2.3 | 2.2 | 89 | 97 | 103 | 106 | 108 | 110 | 96 | 99 |
| CH07WP1 7 | 8.1 | 10.1 | 11.4 | 98 | 107 | 135 | 120 | 111 | 85 | 94 | 107 |
| CH14WP1 14 | 14.6 | 21.5 | 27.2 | 107 | 111 | 118 | 97 | 79 | 69 | 96 | 99 |
| CH99WP1 28 | 8.5 | 26.9 | 32.4 | * | * | * | * | * | * | * | * |
| CH28WP1 28 | 18.1 | 20.8 | 25.4 | 85 | 92 | 117 | 77 | 93 | 58 | 93 | 101 |
| CH56WP1 56 | 25.4 | 32.3 | 37.7 | 92 | 2 | 115 | 75 | 94 | 54 | 93 | 98 |
| CH99WP2 132 | 34.6 | 59.7 | 73.8 | * | * | * | * | * | * | * | * |
| CH99WP3 254 | 57.4 | 83.4 | 106.5 | * | * | * | * | * | * | * | * |
| CH99WP4 370 | 76.2 | 102.9 | 131.3 | * | * | * | * | * | * | * | * |
| CH99WP5 503 | 84.8 | 120.1 | 156.5 | * | * | * | * | * | * | * | * |
| CH99WP6 622 | 89.2 | 124.7 | 159.5 | * | * | * | * | * | * | * | * |
| CH99WP7 734 | 90.3 | 126.9 | 162.8 | 80 | * | 81 | * | 61 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | | | |
| CL01WP1 1 | .9 | .6 | 1.1 | 92 | 99 | 104 | 102 | 108 | 100 | 99 | 102 |
| CL07WP1 7 | 2.4 | 2.0 | 3.4 | 97 | 103 | 113 | 111 | 116 | 109 | 94 | 100 |
| CL14WP1 14 | 3.0 | 3.6 | 4.2 | 95 | 106 | 110 | 105 | 104 | 101 | 95 | 112 |
| CL28WP1 28 | 5.3 | 4.8 | 6.5 | 94 | 101 | 112 | 101 | 111 | 94 | 97 | 105 |
| CL99WP1 28 | 4.8 | 4.5 | 6.2 | * | * | * | * | * | * | * | * |
| CL56WP1 56 | 6.6 | 7.4 | 8.6 | 94 | 103 | 114 | 104 | 119 | 93 | 91 | 96 |
| CL99WP2 132 | 11.3 | 11.3 | 14.5 | * | * | * | * | * | * | * | * |
| CL99WP3 246 | 13.3 | 13.9 | 21.6 | * | * | * | * | * | * | * | * |
| CL99WP4 370 | 16.0 | 15.5 | 20.2 | * | * | * | * | * | * | * | * |
| CL99WP5 503 | 17.4 | 17.2 | 21.7 | * | * | * | * | * | * | * | * |
| CL99WP6 622 | 18.0 | 17.8 | 22.8 | * | * | * | * | * | * | * | * |
| CL99WP7 734 | 18.9 | 19.7 | 25.0 | 101 | * | 111 | * | 92 | * | * | * |

CHLORINATED POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | |
| CH01XM1 1 | 2.1 | .6 | .8 | 96 | 95 | 116 | 103 | 109 | 117 | 97 | 104 |
| CH07XM1 7 | 5.4 | 3.2 | 4.6 | 80 | 92 | 100 | 89 | 135 | 96 | 87 | 119 |
| CH14XM1 14 | 7.3 | 8.9 | 10.3 | 95 | 103 | 110 | 97 | 110 | 86 | 89 | 111 |
| CH99XM1 28 | 9.6 | 12.7 | 13.7 | * | * | * | * | * | * | * | * |
| CH28XM1 28 | 7.1 | 8.7 | 10.5 | 85 | 89 | 101 | 83 | 118 | 92 | 87 | 103 |
| CH56XM1 56 | 11.8 | 14.4 | 47.0 | 93 | 111 | 113 | 98 | 102 | 93 | 93 | 89 |
| CH99XM2 118 | 13.9 | 18.2 | 20.2 | * | * | * | * | * | * | * | * |
| CH99XM3 231 | 15.4 | 18.9 | 23.7 | * | * | * | * | * | * | * | * |
| CH99XM4 363 | 16.3 | 21.5 | 23.5 | * | * | * | * | * | * | * | * |
| CH99XM5 489 | 16.0 | 20.8 | 22.7 | * | * | * | * | * | * | * | * |
| CH99XM6 609 | 15.4 | 19.9 | 21.9 | * | * | * | * | * | * | * | * |
| CH99XM7 711 | 17.1 | 22.8 | 25.2 | 103 | * | 99 | * | 85 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | |
| CL01XM1 1 | .7 | 1.0 | 1.3 | 96 | 109 | 117 | 106 | 134 | 89 | 96 | 120 |
| CL07XM1 7 | 1.9 | 1.6 | 1.9 | 89 | 93 | 102 | 107 | 115 | 123 | 92 | 118 |
| CL14XM1 14 | 2.4 | 1.9 | 2.9 | 93 | 108 | 113 | 103 | 112 | 90 | 105 | 107 |
| CL28XM1 28 | 3.6 | 3.6 | 5.0 | 88 | 91 | 111 | 98 | 123 | 111 | 92 | 106 |
| CL99XM1 28 | 3.6 | 3.8 | 4.3 | * | * | * | * | * | * | * | * |
| CL56XM1 56 | 4.9 | 4.8 | 6.1 | 89 | 89 | 108 | 99 | 113 | 111 | 91 | 100 |
| CL99XM2 118 | 6.9 | 7.3 | 9.0 | * | * | * | * | * | * | * | * |
| CL99XM3 223 | 8.4 | 9.6 | 12.1 | * | * | * | * | * | * | * | * |
| CL99XM4 363 | 10.3 | 10.5 | 13.0 | * | * | * | * | * | * | * | * |
| CL99XM5 489 | 11.1 | 11.8 | 14.1 | * | * | * | * | * | * | * | * |
| CL99XM6 609 | 10.6 | 11.2 | 13.8 | * | * | * | * | * | * | * | * |
| CL99XM7 711 | 11.3 | 12.5 | 15.6 | 99 | * | 103 | * | 107 | * | * | * |

# EPDM : FINAL PROPERTIES

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | |
| EH01AM1 1 | 2.12 | 37.50 | 3.01 | 1.00 | 65.04 | 69.20 | 496.40 | 450.08 | 7.90 | 8.42 |
| EH07AM1 7 | 2.13 | 37.30 | 3.04 | 1.02 | 66.65 | 69.05 | 441.84 | 422.40 | 9.07 | 9.24 |
| EH14AM1 14 | 2.27 | 39.40 | 3.05 | 1.02 | 68.30 | 64.36 | 419.28 | 401.92 | 7.90 | 8.26 |
| EH28AM1 27 | 2.70 | 37.40 | 3.05 | 1.01 | 59.30 | 62.17 | 362.72 | 378.00 | 8.05 | 8.58 |
| EH99AM1 28 | 2.75 | 46.10 | 3.08 | 1.04 | * | * | * | * | * | * |
| EH56AM1 56 | 46.24 | 45.50 | 7.71 | 7.28 | 58.32 | 61.36 | 341.92 | 321.84 | 8.50 | 10.10 |
| EH99AM2 144 | 3.65 | 50.90 | 3.39 | 1.14 | * | * | * | * | * | * |
| EH99AM3 252 | 4.40 | 53.60 | 3.68 | 1.24 | * | * | * | * | * | * |
| EH99AM4 368 | 4.75 | 55.00 | 3.72 | 1.26 | * | * | * | * | * | * |
| EH99AM5 511 | 5.22 | 56.60 | 3.86 | 1.32 | * | * | * | * | * | * |
| EH99AM6 621 | 5.36 | 57.10 | 3.91 | 1.34 | * | * | * | * | * | * |
| EH99AM7 741 | 5.06 | 56.80 | 3.82 | 1.30 | 30.24 | * | 233.58 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | |
| EL01AM2 1 | 2.28 | 40.20 | 3.00 | 1.00 | 54.48 | 57.84 | 452.24 | 426.00 | 6.82 | 7.90 |
| EL01AM1 1 | 1.78 | 31.60 | 3.00 | 1.00 | 56.72 | 59.44 | 431.28 | 378.00 | 8.78 | 7.78 |
| EL01AM3 1 | 1.80 | 32.70 | 3.00 | 1.00 | 70.00 | 54.96 | 434.32 | 438.64 | 8.42 | 7.90 |
| EL07AM1 7 | 2.54 | 45.70 | 3.00 | 1.00 | 56.36 | 62.57 | 476.00 | 399.44 | 8.10 | 8.03 |
| EL07AM3 7 | 1.96 | 34.40 | 3.00 | 1.00 | 51.92 | 70.30 | 449.04 | 430.16 | 8.59 | 9.89 |
| EL07AM2 7 | 2.53 | 45.90 | 3.01 | 1.00 | 69.54 | 57.11 | 440.40 | 433.20 | 10.21 | 8.48 |
| EL14AM3 14 | 1.80 | 31.60 | 3.01 | 1.01 | 59.21 | 74.70 | 409.04 | 434.16 | 9.11 | 10.43 |
| EL14AM1 14 | 1.79 | 31.40 | 3.01 | 1.01 | 74.74 | 75.30 | 481.12 | 450.24 | 10.74 | 10.87 |
| EL14AM2 14 | 1.78 | 31.20 | 3.01 | 1.01 | 63.26 | 64.71 | 416.40 | 427.68 | 9.65 | 9.39 |
| EL28AM1 27 | 2.55 | 45.70 | 3.00 | 1.00 | 65.82 | 67.58 | 439.50 | 440.24 | 9.99 | 10.24 |
| EL28AM2 27 | 2.56 | 45.40 | 3.00 | 1.00 | 71.00 | 71.48 | 430.64 | 450.40 | 10.10 | 10.17 |
| EL28AM3 27 | 1.86 | 32.70 | 3.01 | 1.01 | 64.89 | 72.15 | 423.76 | 461.68 | 9.08 | 9.69 |
| EL99AM1 28 | 2.51 | 44.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL56AM2 56 | 43.54 | 44.00 | 7.48 | 6.98 | 70.96 | 64.72 | 434.72 | 407.76 | 10.42 | 8.50 |
| EL56AM1 56 | 39.09 | 42.60 | 7.43 | 6.97 | 58.00 | 61.04 | 432.00 | 393.84 | 9.50 | 9.30 |
| EL56AM3 56 | 42.49 | 43.40 | 7.44 | 7.01 | 66.64 | 70.48 | 426.40 | 423.20 | 10.82 | 9.78 |
| EL99AM2 144 | 2.54 | 44.30 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL99AM3 238 | 2.54 | 44.30 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL99AM4 368 | 2.56 | 44.50 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99AM5 511 | 2.60 | 44.80 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99AM6 621 | 2.60 | 44.70 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99AM7 736 | 2.61 | 45.20 | 3.04 | 1.01 | 60.52 | * | 738.92 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | |
| EH01BM1 1 | 2.56 | 44.40 | 3.00 | 1.00 | 71.18 | 67.75 | 433.52 | 445.60 | 8.78 | 8.52 |
| EH07BM1 7 | 1.88 | 32.90 | 3.00 | 1.00 | 75.43 | 74.90 | 460.00 | 430.48 | 9.57 | 9.09 |
| EH14BM1 14 | 2.27 | 39.80 | 3.00 | 1.00 | 59.86 | 64.63 | 420.96 | 425.76 | 8.77 | 9.89 |
| EH28BM1 28 | 2.24 | 39.60 | 3.00 | 1.00 | 78.78 | 75.22 | 427.28 | 402.56 | 10.01 | 9.03 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | |
| EH99BM1 29 | 2.45 | 42.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH56BM1 56 | 2.33 | 40.60 | 3.00 | 1.00 | 71.85 | 75.13 | 444.48 | 431.36 | 7.94 | 9.02 |
| EH99BM2 144 | 2.45 | 42.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99BM3 252 | 2.45 | 42.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99BM4 368 | 2.46 | 42.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99BM5 510 | 2.46 | 42.40 | 3.00 | 0.99 | * | * | * | * | * | * |
| EH99BM6 622 | 2.45 | 42.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99BM7 741 | 2.50 | 43.10 | 3.00 | 1.00 | 69.82 | * | 771.50 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | |
| EL01BM3 1 | 2.49 | 42.90 | 3.00 | 1.00 | 62.81 | 68.41 | 429.36 | 415.12 | 8.88 | 8.40 |
| EL01BM1 1 | 2.51 | 43.50 | 3.00 | 1.00 | 77.50 | 71.00 | 430.88 | 427.52 | 9.44 | 8.24 |
| EL01BM2 1 | 2.42 | 41.70 | 3.00 | 1.00 | 65.40 | 74.76 | 403.68 | 432.08 | 9.93 | 9.21 |
| EL07BM3 7 | 2.59 | 45.30 | 3.00 | 1.00 | 68.05 | 71.90 | 456.72 | 459.84 | 9.04 | 8.89 |
| EL07BM2 7 | 2.72 | 47.20 | 3.00 | 1.00 | 55.29 | 56.26 | 454.64 | 414.72 | 7.45 | 6.69 |
| EL07BM1 7 | 2.15 | 37.20 | 2.99 | 1.00 | 76.86 | 79.88 | 448.96 | 432.08 | 9.64 | 9.98 |
| EL14BM2 14 | 2.51 | 42.90 | 3.00 | 1.00 | 52.46 | 55.27 | 438.32 | 409.28 | 7.48 | 6.93 |
| EL14BM1 14 | 2.28 | 39.90 | 3.00 | 1.00 | 59.93 | 63.13 | 441.84 | 431.80 | 7.02 | 8.70 |
| EL14BM3 14 | 2.73 | 47.00 | 3.00 | 1.00 | 60.07 | 63.06 | 437.68 | 452.56 | 7.63 | 7.62 |
| EL28BM2 28 | 1.98 | 34.50 | 3.00 | 1.00 | 65.40 | 68.98 | 480.88 | 413.20 | 8.49 | 8.26 |
| EL99BM1 28 | 2.50 | 43.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL28BM1 28 | 2.25 | 39.40 | 3.00 | 1.00 | 60.65 | 75.30 | 440.80 | 388.96 | 6.84 | 8.60 |
| EL28BM3 28 | 2.07 | 35.90 | 3.00 | 1.00 | 64.81 | 70.02 | 453.28 | 430.40 | 8.75 | 9.49 |
| EL56BM3 56 | 1.99 | 34.90 | 3.00 | 1.00 | 64.86 | 67.58 | 496.40 | 448.80 | 8.39 | 7.71 |
| EL56BM1 56 | 2.16 | 38.40 | 3.00 | 1.00 | 63.90 | 74.23 | 496.00 | 438.80 | 8.89 | 9.21 |
| EL56BM2 56 | 2.54 | 44.00 | 3.00 | 1.00 | 54.38 | 62.02 | 473.28 | * | 8.15 | 8.13 |
| EL99BM2 144 | 2.49 | 43.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99BM3 238 | 2.47 | 43.40 | 3.00 | 1.01 | * | * | * | * | * | * |
| EL99BM4 368 | 2.48 | 43.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99BM5 510 | 2.49 | 43.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99BM6 622 | 2.47 | 43.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99BM7 736 | 2.48 | 43.50 | 3.00 | 1.00 | 62.73 | * | 776.25 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | |
| EH01DH1 1 | 2.42 | 40.00 | 3.06 | 1.02 | 48.22 | 50.76 | 409.16 | 390.90 | 7.13 | 6.79 |
| EH07DH1 7 | 2.03 | 33.80 | 3.03 | 1.02 | 47.82 | 49.48 | 435.02 | 416.08 | 6.79 | 6.34 |
| EH14DH1 14 | 2.44 | 40.60 | 3.05 | 1.02 | 51.28 | 52.94 | 471.86 | 466.12 | 7.39 | 6.32 |
| EH99DH1 28 | 2.71 | 46.20 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH28DH1 28 | 2.36 | 38.60 | 3.07 | 1.02 | 55.76 | 54.66 | 426.06 | 410.30 | 6.82 | 6.95 |
| EH56DH1 56 | 2.02 | 34.10 | 3.05 | 1.02 | 52.96 | 56.84 | 436.88 | 436.02 | 8.69 | 7.18 |
| EH99DH2 133 | 2.70 | 45.90 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99DH3 244 | 2.88 | 46.50 | 3.06 | 1.02 | * | * | * | * | * | * |
| EH99DH4 364 | 2.83 | 46.70 | 3.10 | 1.03 | * | * | * | * | * | * |
| EH99DH5 495 | 2.82 | 47.00 | 3.09 | 1.02 | * | * | * | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | |
| EH99DH6 629 | 2.87 | 47.30 | 3.09 | 1.03 | * | * | * | * | * | * |
| EH99DH7 734 | 2.80 | 47.20 | 3.09 | 1.03 | 54.91 | * | 813.20 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | |
| EL01DH3 1 | 2.32 | 39.10 | 3.02 | 1.01 | 54.82 | 57.36 | 410.90 | 382.52 | 7.82 | 7.54 |
| EL01DH2 1 | 2.02 | 34.30 | 3.01 | 1.01 | 57.62 | 57.04 | 455.10 | 398.46 | 7.48 | 7.67 |
| EL01DH1 1 | 2.11 | 35.10 | 3.04 | 1.01 | 52.54 | 51.90 | 422.62 | 387.28 | 7.70 | 6.43 |
| EL07DH1 7 | 2.31 | 39.00 | 3.04 | 1.01 | 52.00 | 52.14 | 458.32 | 414.36 | 7.39 | 6.85 |
| EL07DH2 7 | 2.43 | 41.50 | 3.02 | 1.01 | 54.96 | 59.24 | 460.12 | 436.00 | 7.74 | 7.11 |
| EL07DH3 7 | 2.30 | 39.80 | 3.02 | 1.01 | 59.34 | * | 490.68 | * | 9.30 | 8.23 |
| EL14DH2 14 | 2.01 | 33.50 | 3.05 | 1.02 | 57.74 | 60.84 | 432.94 | 410.00 | 7.33 | 7.21 |
| EL14DH1 14 | 2.05 | 34.00 | 3.05 | 1.02 | 60.54 | 61.50 | * | * | 8.29 | 7.71 |
| EL14DH3 14 | 2.41 | 40.00 | 3.01 | 1.02 | 58.78 | 58.60 | 440.84 | 431.54 | 7.79 | 6.89 |
| EL28DH1 28 | 2.53 | 42.10 | 3.07 | 1.02 | 46.62 | 47.86 | 426.32 | 396.14 | 5.89 | 5.81 |
| EL28DH2 28 | 2.54 | 42.40 | 3.04 | 1.02 | 47.62 | 49.18 | 425.54 | 402.84 | 6.85 | 5.98 |
| EL28DH3 28 | 2.24 | 37.70 | 3.04 | 1.02 | 51.30 | 56.00 | 411.08 | 386.36 | 8.62 | 5.99 |
| EL99DH1 28 | 2.35 | 40.20 | 3.02 | 1.04 | * | * | * | * | * | * |
| EL56DH1 56 | 1.94 | 33.20 | 3.02 | 1.02 | 51.36 | 58.70 | 392.46 | 412.36 | 8.59 | 7.51 |
| EL56DH2 56 | 2.34 | 39.30 | 3.04 | 1.02 | 59.08 | 60.50 | 432.46 | 398.02 | 8.00 | 7.56 |
| EL56DH3 56 | 2.00 | 33.50 | 3.04 | 1.02 | 56.24 | 56.48 | 427.94 | 402.26 | 7.03 | 8.03 |
| EL99DH2 134 | 2.42 | 40.50 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99DH3 231 | 2.38 | 40.90 | 3.07 | 1.02 | * | * | * | * | * | * |
| EL99DH4 364 | 2.39 | 37.60 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99DH5 495 | 2.38 | 40.40 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99DH6 630 | 2.43 | 43.90 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99DH7 729 | 2.44 | 41.10 | 3.06 | 1.02 | 64.87 | * | 737.58 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | |
| EH01DL1 1 | 2.27 | 39.50 | 3.01 | 1.00 | 49.06 | 50.98 | 417.56 | 393.94 | 6.98 | 6.84 |
| EH07DL1 7 | 1.89 | 32.70 | 3.02 | 1.00 | 55.92 | 56.10 | 429.44 | 404.18 | 7.28 | 7.52 |
| EH14DL1 14 | 2.25 | 38.60 | 3.02 | 1.00 | 57.82 | 58.44 | * | * | 7.62 | 8.06 |
| EH28DL1 28 | 2.22 | 37.90 | 3.01 | 1.00 | 56.82 | 54.36 | 427.70 | 397.06 | 6.84 | 6.79 |
| EH99DL1 28 | 2.58 | 45.20 | 3.01 | 1.01 | * | * | * | * | * | * |
| EH56DL1 56 | 2.25 | 39.20 | 3.01 | 1.00 | 52.30 | 52.66 | 412.12 | 388.18 | 8.35 | 7.46 |
| EH99DL2 139 | 2.61 | 44.80 | 3.02 | 1.01 | * | * | * | * | * | * |
| EH99DL3 246 | 2.66 | 45.30 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99DL4 366 | 2.66 | 45.10 | 3.04 | 1.02 | * | * | * | * | * | * |
| EH99DL5 496 | 2.66 | 45.40 | 3.04 | 1.02 | * | * | * | * | * | * |
| EH99DL6 631 | 2.67 | 45.70 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99DL7 736 | 2.66 | 45.50 | 3.04 | 1.02 | 66.45 | * | 779.33 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | |
| EL01DL3 1 | 1.93 | 33.80 | 3.01 | 1.00 | 54.04 | 56.96 | 423.16 | 401.48 | 8.06 | 7.04 |
| EL01DL2 1 | 1.88 | 32.60 | 3.01 | 1.00 | 52.90 | 53.12 | 424.04 | 402.94 | 7.22 | 6.62 |
| EL01DL1 1 | 2.23 | 38.60 | 3.00 | 1.00 | 55.66 | 56.76 | 407.70 | 400.54 | 8.17 | 7.41 |
| EL07DL1 7 | 1.88 | 32.70 | 3.01 | 1.00 | 53.00 | 52.12 | 433.38 | 400.36 | 7.32 | 7.00 |
| EL07DL2 7 | 2.30 | 39.60 | 2.99 | 1.00 | 56.36 | 59.62 | 428.40 | 407.28 | 8.15 | 7.58 |
| EL07DL3 7 | 2.23 | 38.40 | 3.00 | 1.00 | 59.70 | 61.70 | 432.08 | 442.06 | 8.73 | 8.13 |
| EL14DL1 14 | 2.27 | 39.20 | 3.00 | 1.00 | 55.88 | 56.20 | * | * | 8.04 | 7.13 |
| EL14DL2 14 | 2.33 | 40.50 | 3.00 | 1.00 | 58.54 | 61.24 | 446.60 | 423.60 | 8.50 | 7.74 |
| EL14DL3 14 | 2.33 | 40.20 | 3.00 | 1.00 | 59.06 | 56.58 | 483.06 | 415.12 | 7.69 | 8.91 |
| EL28DL1 28 | 2.27 | 39.50 | 3.00 | 1.00 | 61.64 | 60.60 | 433.80 | 404.62 | 7.61 | 7.73 |
| EL28DL3 28 | 2.18 | 37.60 | 3.00 | 1.00 | 47.96 | 49.00 | 411.68 | 393.70 | 6.84 | 6.56 |
| EL99DL1 28 | 2.52 | 44.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL28DL2 28 | 2.26 | 39.00 | 3.00 | 1.00 | 53.12 | 53.64 | 407.82 | 402.86 | 7.47 | 7.04 |
| EL56DL2 56 | 1.87 | 32.70 | 3.00 | 1.00 | 56.34 | 59.22 | 428.16 | 441.04 | 8.25 | 8.05 |
| EL56DL3 56 | 1.89 | 32.80 | 3.01 | 1.00 | 59.26 | 60.16 | 426.70 | 397.12 | 8.26 | 7.54 |
| EL56DL1 56 | 2.24 | 39.20 | 3.00 | 1.00 | 58.46 | 61.88 | 420.04 | 407.24 | 8.85 | 8.30 |
| EL99DL2 136 | 2.54 | 44.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99DL3 233 | 2.53 | 44.50 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99DL4 366 | 2.53 | 44.40 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL99DL5 496 | 2.54 | 44.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99DL6 632 | 2.56 | 44.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL99DL7 731 | 2.53 | 44.80 | 3.02 | 1.01 | 62.93 | * | 879.75 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | |
| EH01DM1 1 | 2.06 | 35.30 | 3.04 | 1.00 | 57.10 | 58.56 | 430.98 | 413.10 | 8.08 | 7.59 |
| EH07DM1 7 | 2.24 | 38.30 | 3.03 | 1.00 | 57.70 | 60.98 | 441.04 | 430.02 | 8.58 | 7.22 |
| EH14DM1 14 | 2.46 | 41.60 | 3.00 | 1.01 | 56.88 | 55.26 | 489.58 | * | 6.61 | 8.02 |
| EH28DM1 28 | 2.51 | 41.80 | 3.05 | 1.01 | 48.48 | 49.90 | 440.08 | 421.06 | 7.03 | 5.85 |
| EH99DM1 28 | 2.58 | 43.90 | 3.03 | 1.01 | * | * | * | * | * | * |
| EH56DM1 56 | 2.39 | 40.70 | 3.02 | 1.01 | 56.34 | 55.08 | 433.54 | 397.38 | 7.91 | 7.78 |
| EH99DM3 245 | 2.69 | 44.60 | 3.07 | 1.02 | * | * | * | * | * | * |
| EH99DM4 365 | 2.65 | 44.70 | 3.07 | 1.02 | * | * | * | * | * | * |
| EH99DM5 496 | 2.67 | 44.60 | 3.07 | 1.02 | * | * | * | * | * | * |
| EH99DM6 630 | 2.70 | 45.10 | 3.08 | 1.02 | * | * | * | * | * | * |
| EH99DM7 735 | 2.70 | 45.00 | 3.09 | 1.03 | 59.38 | * | 717.00 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | |
| EL01DM3 1 | 2.31 | 39.30 | 3.02 | 1.01 | 55.60 | 57.78 | 468.28 | 448.88 | 8.54 | 7.52 |
| EL01DM2 1 | 1.93 | 32.90 | 3.02 | 1.01 | 52.20 | 53.32 | 445.04 | 410.00 | 7.77 | 7.01 |
| EL01DM1 1 | 1.96 | 33.10 | 3.03 | 1.01 | 51.88 | 50.84 | 409.82 | 379.50 | 7.46 | 7.59 |
| EL07DM2 7 | 2.27 | 38.60 | 3.01 | 1.01 | 53.82 | 56.08 | 413.42 | 409.86 | 7.77 | 7.50 |
| EL07DM3 7 | 2.31 | 41.10 | 3.01 | 1.01 | 53.24 | 57.44 | 409.16 | 400.62 | 7.64 | 6.99 |
| EL07DM1 7 | 2.29 | 38.90 | 3.03 | 1.01 | 56.30 | 55.36 | 412.92 | 391.94 | 7.99 | 7.94 |
| EL14DM3 14 | 1.95 | 33.30 | 3.00 | 1.01 | 55.08 | 57.22 | 427.80 | 404.92 | 7.29 | 6.92 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | |
| EL14DM2 14 | 2.33 | 39.60 | 3.02 | 1.01 | 57.00 | 61.72 | 426.74 | 407.28 | 8.03 | 7.06 |
| EL14DM1 14 | 2.41 | 41.40 | 3.00 | 1.01 | 51.68 | 55.90 | * | * | 7.45 | 6.29 |
| EL28DM1 28 | 2.41 | 41.70 | 3.03 | 1.01 | 48.32 | 50.62 | 419.00 | 432.48 | 7.16 | 6.04 |
| EL99DM1 28 | 2.57 | 44.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL28DM2 28 | 2.43 | 41.70 | 3.01 | 1.01 | 58.58 | 59.86 | 420.44 | 396.86 | 8.54 | 8.37 |
| EL28DM3 28 | 1.93 | 33.40 | 3.01 | 1.01 | 50.80 | 52.44 | 427.66 | 404.86 | 7.47 | 6.99 |
| EL56DM3 56 | 2.26 | 39.50 | 3.01 | 1.01 | 57.92 | 59.10 | 415.34 | 396.68 | 7.79 | 7.23 |
| EL56DM2 56 | 2.31 | 39.00 | 3.01 | 1.01 | 50.62 | 52.46 | 412.32 | 401.76 | 6.67 | 6.56 |
| EL56DM1 56 | 1.95 | 33.50 | 3.01 | 1.01 | 50.34 | 51.72 | 398.08 | 388.12 | 7.00 | 6.74 |
| EL99DM2 135 | 2.59 | 44.30 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99DM3 233 | 2.57 | 44.40 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99DM4 365 | 2.56 | 44.30 | 3.02 | 1.02 | * | * | * | * | * | * |
| EL99DM5 496 | 2.57 | 44.50 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL99DM6 631 | 2.59 | 44.50 | 3.03 | 1.00 | * | * | * | * | * | * |
| EL99DM7 730 | 2.64 | 44.60 | 3.04 | 1.01 | 63.27 | * | 880.92 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | |
| EH01FH1 1 | 2.42 | 41.70 | 3.01 | 1.00 | 63.30 | 63.76 | 443.00 | 398.40 | 12.68 | 12.04 |
| EH07FH1 7 | 2.30 | 39.00 | 3.02 | 1.01 | 56.56 | 62.96 | 504.40 | 487.20 | 9.92 | 8.38 |
| EH14FH1 14 | 2.25 | 38.50 | 3.03 | 1.01 | 55.12 | 56.56 | 463.20 | 460.80 | 7.54 | 8.52 |
| EH28FH1 28 | 2.35 | 39.50 | 3.03 | 1.01 | 60.64 | 59.76 | 456.40 | 423.20 | 8.18 | 8.68 |
| EH99FH1 28 | 2.11 | 35.10 | 3.03 | 1.01 | * | * | * | * | * | * |
| EH56FH1 56 | 2.46 | 41.50 | 3.03 | 1.01 | 62.88 | 66.96 | 461.60 | 479.20 | 8.70 | 8.65 |
| EH99FH2 117 | 2.38 | 38.60 | 3.17 | 1.05 | * | * | * | * | * | * |
| EH99FH3 236 | 3.02 | 42.80 | 3.41 | 1.12 | * | * | * | * | * | * |
| EH99FH4 350 | 3.35 | 45.20 | 3.57 | 1.18 | * | * | * | * | * | * |
| EH99FH5 485 | 3.49 | 45.10 | 4.15 | 1.19 | * | * | * | * | * | * |
| EH99FH6 616 | 3.79 | 47.00 | 3.72 | 1.22 | * | * | * | * | * | * |
| EH99FH7 721 | 3.96 | 48.50 | 3.76 | 1.23 | 34.85 | * | 343.75 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | |
| EL01FH3 1 | 2.30 | 40.10 | 3.01 | 1.00 | 68.74 | 68.12 | 442.88 | 410.24 | 12.01 | 13.95 |
| EL01FH2 1 | 2.23 | 39.40 | 3.00 | 1.00 | 69.02 | 72.20 | 455.68 | 432.08 | 12.57 | 13.88 |
| EL01FH1 1 | 2.30 | 39.50 | 3.01 | 1.00 | 66.30 | 69.80 | 445.00 | 421.20 | 12.79 | 16.38 |
| EL07FH2 7 | 2.27 | 38.80 | 3.01 | 1.01 | 64.30 | 66.34 | 482.80 | 423.20 | 10.46 | 10.11 |
| EL07FH3 7 | 2.33 | 39.90 | 3.01 | 1.01 | 60.32 | 62.16 | 452.00 | 444.00 | 10.41 | 10.79 |
| EL07FH1 7 | 2.23 | 38.20 | 3.02 | 1.01 | 58.76 | 62.20 | 463.20 | 455.20 | 9.74 | 10.06 |
| EL14FH1 14 | 2.66 | 46.10 | 3.01 | 1.01 | 58.48 | 61.92 | 468.80 | 464.80 | 8.48 | 8.14 |
| EL14FH3 14 | 2.33 | 39.90 | 3.01 | 1.01 | 51.92 | 57.60 | 439.20 | 440.80 | 8.10 | 6.78 |
| EL14FH2 14 | 2.45 | 41.80 | 3.01 | 1.01 | 55.60 | 59.84 | 470.40 | 469.60 | 7.61 | 7.83 |
| EL28FH1 28 | 2.65 | 45.20 | 3.01 | 1.01 | 54.44 | 58.12 | 480.00 | 446.40 | 8.14 | 7.42 |
| EL28FH3 28 | 2.24 | 38.20 | 3.02 | 1.01 | 56.64 | 60.56 | 468.80 | 454.40 | 8.40 | 7.54 |
| EL99FH1 28 | 2.12 | 36.70 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL28FH2 28 | 1.98 | 34.10 | 3.04 | 1.01 | 53.68 | 53.04 | 463.20 | 465.60 | 7.08 | 6.80 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 8.0% 23°C | | | | | | | | | | |
| EL56FH1 56 | 2.56 | 43.40 | 3.02 | 1.00 | 61.36 | 64.88 | 472.80 | 448.80 | 9.15 | 7.98 |
| EL56FH2 56 | 2.38 | 40.80 | 3.02 | 1.01 | 60.56 | 62.40 | 463.20 | 468.00 | 8.05 | 8.41 |
| EL56FH3 56 | 2.35 | 40.10 | 3.02 | 1.01 | 63.04 | 62.88 | 498.40 | 444.00 | 9.67 | 8.77 |
| EL99FH2 117 | 2.19 | 37.20 | 3.05 | 1.01 | * | * | * | * | * | * |
| EL99FH3 219 | 2.36 | 39.00 | 3.15 | 1.04 | * | * | * | * | * | * |
| EL99FH4 350 | 2.64 | 40.40 | 3.26 | 1.08 | * | * | * | * | * | * |
| EL99FH5 485 | 2.55 | 40.30 | 3.21 | 1.06 | * | * | * | * | * | * |
| EL99FH6 617 | 2.82 | 41.90 | 3.31 | 1.09 | * | * | * | * | * | * |
| EL99FH7 716 | 2.96 | 42.80 | 3.37 | 1.10 | 43.42 | * | 538.17 | * | * | * |
| FURFURAL 1.0% 50°C | | | | | | | | | | |
| EH01FL1 1 | 2.31 | 39.70 | 3.01 | 1.00 | 67.13 | 68.30 | 451.44 | 416.90 | 13.13 | 10.36 |
| EH07FL1 7 | 2.32 | 40.00 | 3.01 | 1.00 | 60.20 | 59.16 | 513.60 | 464.80 | 9.39 | 9.99 |
| EH14FL1 14 | 2.34 | 40.60 | 3.01 | 1.00 | 59.12 | 57.92 | 466.40 | 450.40 | 8.09 | 9.58 |
| EH28FL1 28 | 2.31 | 39.60 | 3.00 | 1.00 | 65.76 | 68.58 | 473.60 | 468.00 | 9.32 | 9.38 |
| EH99FL1 28 | 2.11 | 36.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH56FL1 56 | 2.37 | 40.90 | 3.02 | 1.01 | 59.76 | 59.76 | 472.00 | 441.60 | 8.82 | 7.63 |
| EH99FL2 123 | 2.15 | 36.70 | 3.03 | 1.01 | * | * | * | * | * | * |
| EH99FL3 241 | 2.32 | 38.40 | 3.10 | 1.03 | * | * | * | * | * | * |
| EH99FL4 355 | 2.32 | 38.50 | 3.11 | 1.03 | * | * | * | * | * | * |
| EH99FL5 489 | 2.37 | 38.10 | 3.17 | 1.03 | * | * | * | * | * | * |
| EH99FL6 621 | 2.42 | 39.10 | 3.14 | 1.04 | * | * | * | * | * | * |
| EH99FL7 726 | 2.43 | 39.30 | 3.15 | 1.04 | 52.66 | * | 666.60 | * | * | * |
| FURFURAL 1.0% 23°C | | | | | | | | | | |
| EL01FL2 1 | 2.30 | 39.60 | 3.00 | 1.00 | 64.52 | 65.27 | 405.92 | 448.80 | 13.24 | 14.37 |
| EL01FL3 1 | 2.26 | 40.00 | 3.00 | 1.00 | 69.51 | 68.22 | 396.08 | 432.25 | 11.68 | 14.81 |
| EL01FL1 1 | 2.29 | 39.70 | 3.00 | 1.00 | 58.70 | 62.89 | 422.56 | 417.92 | 10.94 | 15.50 |
| EL07FL2 7 | 2.46 | 42.40 | 3.00 | 1.00 | 67.48 | 68.96 | 482.00 | 470.40 | 10.88 | 10.24 |
| EL07FL3 7 | 2.30 | 39.60 | 3.00 | 1.00 | 64.68 | 69.12 | 470.40 | 460.40 | 10.53 | 11.33 |
| EL07FL1 7 | 2.27 | 39.50 | 3.00 | 1.00 | 52.96 | 56.08 | 512.00 | 440.80 | 9.24 | 8.06 |
| EL14FL3 14 | 2.19 | 37.50 | 3.00 | 1.00 | 55.08 | 57.60 | 484.00 | 423.20 | 8.70 | 7.70 |
| EL14FL2 14 | 2.20 | 37.80 | 3.00 | 1.00 | 58.72 | 58.40 | 480.00 | 458.40 | 8.16 | 8.64 |
| EL14FL1 14 | 2.33 | 40.50 | 3.00 | 1.00 | 58.48 | 62.50 | 456.80 | 456.00 | 9.64 | 8.72 |
| EL28FL2 28 | 2.20 | 37.70 | 3.00 | 1.00 | 62.56 | 62.96 | 450.40 | 428.00 | 7.93 | 8.44 |
| EL28FL3 28 | 2.25 | 38.20 | 3.00 | 1.00 | 58.96 | 58.96 | 432.80 | 417.60 | 7.48 | 8.16 |
| EL99FL1 28 | 2.52 | 44.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL28FL1 28 | 2.30 | 39.60 | 3.00 | 1.00 | 64.40 | 68.16 | 472.80 | 462.40 | 8.71 | 9.01 |
| EL56FL3 56 | 2.33 | 39.90 | 3.00 | 1.00 | 57.12 | 62.48 | 408.00 | 434.40 | 9.05 | 8.38 |
| EL56FL2 56 | 2.32 | 39.60 | 3.00 | 1.00 | 59.28 | 61.72 | 453.60 | 440.00 | 8.67 | 7.73 |
| EL56FL1 56 | 2.33 | 39.80 | 3.00 | 1.00 | 67.84 | 70.04 | 485.30 | 446.40 | 10.03 | 9.12 |
| EL99FL2 123 | 2.53 | 44.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99FL3 224 | 2.55 | 44.60 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99FL4 355 | 2.55 | 44.50 | 3.02 | 1.01 | * | * | * | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 23°C | | | | | | | | | | |
| EL99FL5 489 | 2.55 | 44.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99FL6 622 | 2.58 | 44.60 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99FL7 721 | 2.57 | 44.20 | 3.03 | 1.01 | 59.01 | * | 758.83 | * | * | * |
| FURFURAL 4.0% 50°C | | | | | | | | | | |
| EH01FM1 1 | 2.37 | 40.20 | 3.02 | 1.00 | 63.51 | 62.78 | 458.80 | 418.00 | 11.57 | 14.64 |
| EH07FM1 7 | 2.20 | 37.50 | 3.01 | 1.00 | 65.48 | 65.60 | 506.00 | 460.80 | 10.88 | 10.08 |
| EH14FM1 14 | 2.25 | 38.40 | 3.01 | 1.01 | 55.19 | 56.54 | 471.20 | 455.20 | 8.92 | 8.82 |
| EH28FM1 28 | 2.67 | 45.90 | 3.02 | 1.01 | 58.80 | 65.12 | 469.60 | 466.40 | 8.80 | 8.51 |
| EH99FM1 29 | 2.18 | 38.00 | 3.02 | 1.01 | * | * | * | * | * | * |
| EH56FM1 56 | 2.46 | 42.60 | 3.00 | 1.01 | 66.80 | 68.48 | 478.80 | 457.60 | 9.82 | 9.09 |
| EH99FM2 124 | 2.20 | 38.40 | 3.05 | 1.01 | * | * | * | * | * | * |
| EH99FM3 242 | 2.35 | 39.40 | 3.09 | 1.03 | * | * | * | * | * | * |
| EH99FM4 356 | 2.40 | 39.80 | 3.11 | 1.03 | * | * | * | * | * | * |
| EH99FM5 490 | 2.45 | 37.00 | 3.15 | 1.04 | * | * | * | * | * | * |
| EH99FM6 622 | 2.54 | 41.00 | 3.16 | 1.05 | * | * | * | * | * | * |
| EH99FM7 727 | 2.59 | 48.30 | 3.20 | 1.05 | 53.61 | * | 644.83 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | | | | | |
| EL01FM1 1 | 2.21 | 37.90 | 3.00 | 1.00 | 58.86 | 59.90 | 443.20 | 407.04 | 10.63 | 12.75 |
| EL01FM3 1 | 2.35 | 41.10 | 3.00 | 1.00 | 63.34 | 68.10 | 457.04 | 424.32 | 12.52 | 12.70 |
| EL01FM2 1 | 2.29 | 40.00 | 3.00 | 1.01 | 62.81 | 64.74 | 448.80 | 412.96 | 11.59 | 12.09 |
| EL07FM1 7 | 2.24 | 38.40 | 3.01 | 1.00 | 53.76 | 54.40 | 488.00 | 457.60 | 8.42 | 8.67 |
| EL07FM2 7 | 2.27 | 38.70 | 3.00 | 1.01 | 65.12 | 66.76 | 471.20 | 454.40 | 10.36 | 10.79 |
| EL07FM3 7 | 2.33 | 39.90 | 3.01 | 1.00 | 67.28 | 71.16 | 460.00 | 451.20 | 11.22 | 10.69 |
| EL14FM1 14 | 2.63 | 46.10 | 3.01 | 1.00 | 57.64 | 56.92 | 482.40 | 452.00 | 8.72 | 9.78 |
| EL14FM2 14 | 2.20 | 38.50 | 3.01 | 1.01 | 55.12 | 57.16 | 448.00 | 460.80 | 7.48 | 8.42 |
| EL14FM3 14 | 2.61 | 45.70 | 3.01 | 1.01 | 60.80 | 60.36 | 442.40 | 425.30 | 9.42 | 8.68 |
| EL28FM1 28 | 2.25 | 38.50 | 3.01 | 1.01 | 61.68 | 62.68 | 467.20 | 452.00 | 9.12 | 8.60 |
| EL28FM3 28 | 2.27 | 38.50 | 3.00 | 1.00 | 56.40 | 56.00 | 478.40 | 453.60 | 7.58 | 7.26 |
| EL28FM2 28 | 2.21 | 37.70 | 3.01 | 1.00 | 61.20 | 62.72 | 464.80 | 428.00 | 8.56 | 8.14 |
| EL99FM1 29 | 2.55 | 44.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL56FM1 56 | 2.31 | 38.80 | 3.01 | 1.00 | 63.28 | 64.50 | 466.40 | 428.00 | 8.90 | 8.23 |
| EL56FM2 56 | 2.36 | 40.40 | 3.00 | 1.00 | 65.12 | 65.76 | 485.60 | 449.60 | 9.09 | 8.88 |
| EL56FM3 56 | 2.46 | 42.00 | 3.01 | 1.01 | 60.24 | 62.96 | 460.80 | 458.40 | 8.55 | 8.78 |
| EL99FM2 124 | 2.57 | 44.10 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL99FM3 228 | 2.58 | 44.40 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99FM4 356 | 2.61 | 44.40 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99FM5 490 | 2.62 | 44.50 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99FM6 623 | 2.65 | 45.00 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99FM7 722 | 2.66 | 45.10 | 3.06 | 1.02 | 61.25 | * | 819.83 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | |
| EH01MH1 1 | 2.37 | 40.20 | 3.06 | 1.03 | 61.68 | 61.84 | 449.92 | 445.60 | 9.70 | 9.18 |
| EH07MH1 7 | 2.65 | 44.40 | 3.09 | 1.03 | 58.32 | 62.16 | 424.40 | 406.16 | 10.90 | 10.50 |
| EH14MH1 14 | 2.54 | 42.80 | 3.10 | 1.03 | 55.92 | 57.68 | 432.32 | 423.60 | 10.10 | 9.74 |
| EH28MH1 28 | 2.56 | 43.90 | 3.09 | 1.03 | 63.83 | 67.03 | 432.72 | 431.20 | 9.87 | 9.68 |
| EH99MH1 28 | 2.67 | 44.80 | 3.08 | 1.02 | * | * | * | * | * | * |
| EH56MH1 57 | 2.39 | 39.70 | 3.12 | 1.03 | 63.99 | 65.30 | 436.40 | 416.64 | 9.97 | 8.76 |
| EH99MH2 115 | 2.72 | 44.70 | 3.07 | 1.02 | * | * | * | * | * | * |
| EH99MH3 240 | 2.72 | 45.30 | 3.08 | 1.02 | * | * | * | * | * | * |
| EH99MH4 358 | 2.70 | 45.00 | 3.08 | 1.02 | * | * | * | * | * | * |
| EH99MH5 494 | 2.64 | 44.40 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99MH6 626 | 2.68 | 44.70 | 3.05 | 1.01 | * | * | * | * | * | * |
| EH99MH7 730 | 2.76 | 45.50 | 3.08 | 1.02 | 44.95 | * | 772.20 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | |
| EL01MH1 1 | 2.86 | 48.70 | 3.07 | 1.02 | 57.68 | 60.88 | 435.12 | 418.32 | 8.58 | 8.82 |
| EL01MH3 1 | 2.35 | 41.00 | 3.08 | 1.03 | 61.20 | 63.28 | 444.56 | 431.76 | 10.14 | 9.38 |
| EL01MH2 1 | 2.38 | 40.80 | 3.06 | 1.02 | 64.08 | 64.00 | 442.80 | 404.53 | 10.45 | 9.42 |
| EL07MH2 7 | 2.28 | 38.40 | 3.06 | 1.02 | 65.52 | 68.24 | 445.04 | 417.44 | 12.90 | 12.14 |
| EL07MH1 7 | 2.50 | 41.80 | 3.06 | 1.02 | 57.84 | 58.80 | 444.80 | 413.28 | 11.90 | 10.98 |
| EL07MH3 7 | 2.34 | 40.10 | 3.07 | 1.02 | 63.44 | 65.52 | 447.20 | 421.92 | 12.25 | 11.74 |
| EL14MH2 14 | 2.65 | 44.50 | 3.07 | 1.02 | 61.20 | 62.80 | 436.88 | 409.52 | 11.50 | 10.42 |
| EL14MH1 14 | 2.28 | 38.40 | 3.05 | 1.02 | 60.88 | 62.96 | 432.72 | 419.20 | 11.86 | 10.90 |
| EL14MH3 14 | 2.56 | 43.10 | 3.06 | 1.02 | 64.72 | 66.32 | 456.00 | 408.24 | 12.42 | 11.14 |
| EL28MH3 28 | 2.12 | 35.80 | 3.06 | 1.02 | 63.29 | 66.49 | 444.80 | 415.44 | 10.72 | 9.67 |
| EL99MH1 28 | 2.35 | 39.60 | 3.07 | 1.02 | * | * | * | * | * | * |
| EL28MH2 28 | 2.26 | 38.30 | 3.07 | 1.03 | 64.60 | 66.72 | 435.60 | 421.10 | 10.44 | 10.17 |
| EL28MH1 28 | 2.39 | 39.90 | 3.07 | 1.02 | 58.39 | 59.62 | 442.24 | 414.72 | 9.51 | 9.08 |
| EL56MH2 57 | 2.35 | 39.90 | 3.07 | 1.03 | 68.76 | 70.74 | 463.20 | 428.80 | 11.42 | 9.98 |
| EL56MH1 57 | 2.39 | 40.80 | 3.08 | 1.03 | 65.72 | 66.97 | 464.32 | 435.36 | 10.87 | 10.05 |
| EL56MH3 57 | 2.31 | 39.30 | 3.08 | 1.02 | 63.46 | 65.74 | 460.08 | 429.20 | 10.74 | 10.14 |
| EL99MH2 121 | 2.38 | 39.30 | 3.07 | 1.02 | * | * | * | * | * | * |
| EL99MH3 235 | 2.28 | 40.00 | 3.08 | 1.02 | * | * | * | * | * | * |
| EL99MH4 358 | 2.36 | 46.40 | 3.06 | 1.02 | * | * | * | * | * | * |
| EL99MH5 494 | 2.36 | 39.50 | 3.06 | 1.01 | * | * | * | * | * | * |
| EL99MH6 627 | 2.39 | 39.00 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99MH7 725 | 2.37 | 39.60 | 3.06 | 1.02 | 50.90 | * | 686.00 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | |
| EH01ML1 1 | 2.40 | 40.90 | 3.02 | 1.01 | 60.56 | 61.20 | 431.76 | 452.88 | 8.70 | 9.02 |
| EH07ML1 7 | 2.32 | 39.50 | 3.02 | 1.00 | 65.52 | 65.04 | 431.76 | 431.44 | 13.06 | 11.70 |
| EH14ML1 14 | 2.22 | 37.90 | 3.01 | 1.01 | 63.12 | 65.36 | 460.00 | 443.04 | 12.58 | 11.42 |
| EH28ML1 28 | 2.41 | 41.00 | 3.03 | 1.00 | 64.66 | 68.06 | 448.88 | 445.12 | 10.66 | 10.31 |
| EH99ML1 28 | 2.57 | 44.60 | 3.02 | 1.00 | * | * | * | * | * | * |
| EH56ML1 57 | 2.17 | 37.50 | 3.00 | 1.00 | 65.90 | 69.03 | 457.92 | 432.08 | 11.99 | 10.89 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | |
| EH99ML2 120 | 2.64 | 44.60 | 3.03 | 1.01 | * | * | * | * | * | * |
| EH99ML3 240 | 2.66 | 45.00 | 3.05 | 1.01 | * | * | * | * | * | * |
| EH99ML4 358 | 2.66 | 45.20 | 3.05 | 1.02 | * | * | * | * | * | * |
| EH99ML5 494 | 2.67 | 45.00 | 3.04 | 1.02 | * | * | * | * | * | * |
| EH99ML6 626 | 2.66 | 45.10 | 3.05 | 1.01 | * | * | * | * | * | * |
| EH99ML7 730 | 2.65 | 45.20 | 3.04 | 1.01 | 62.56 | * | 756.83 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | |
| EL01ML3 1 | 2.22 | 38.40 | 3.00 | 1.00 | 58.64 | 65.36 | 396.56 | 398.16 | 10.22 | 9.82 |
| EL01ML2 1 | 2.12 | 37.10 | 3.00 | 1.00 | 69.04 | 67.92 | 447.44 | 405.76 | 9.74 | 10.86 |
| EL01ML1 1 | 1.95 | 33.80 | 3.00 | 1.00 | 64.08 | 66.80 | 450.48 | 410.40 | 10.22 | 9.10 |
| EL07ML3 7 | 2.19 | 38.10 | 3.00 | 1.00 | 66.64 | 66.48 | 450.56 | 414.80 | 13.70 | 10.90 |
| EL07ML1 7 | 2.43 | 41.90 | 3.01 | 1.00 | 57.52 | 60.88 | 432.88 | 419.04 | 12.34 | 10.66 |
| EL07ML2 7 | 2.27 | 39.20 | 3.01 | 1.00 | 66.48 | 65.84 | 453.84 | 423.28 | 13.50 | 12.18 |
| EL14ML1 14 | 2.73 | 47.10 | 3.01 | 1.00 | 57.36 | 58.96 | 448.32 | 430.00 | 11.70 | 11.50 |
| EL14ML2 14 | 2.30 | 39.60 | 3.01 | 1.00 | 66.80 | 67.60 | 438.72 | 422.32 | 13.22 | 12.06 |
| EL14ML3 14 | 2.29 | 39.80 | 3.01 | 1.00 | 61.84 | 61.52 | 445.84 | 434.56 | 12.26 | 10.90 |
| EL28ML3 28 | 2.58 | 44.30 | 3.00 | 1.00 | 61.86 | 66.57 | 443.84 | 424.80 | 10.97 | 9.87 |
| EL28ML2 28 | 2.22 | 38.30 | 3.00 | 1.00 | 65.82 | 67.06 | 435.12 | 415.12 | 11.31 | 9.91 |
| EL28ML1 28 | 2.48 | 42.80 | 3.01 | 1.00 | 61.75 | 67.67 | 421.20 | 420.56 | 11.49 | 9.92 |
| EL99ML1 28 | 2.46 | 42.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL56ML1 57 | 2.26 | 39.50 | 3.01 | 1.00 | 63.50 | 62.18 | 440.24 | 419.60 | 10.95 | 9.94 |
| EL56ML2 57 | 2.26 | 39.00 | 3.00 | 1.00 | 64.12 | 66.41 | 445.04 | 419.76 | 11.10 | 10.56 |
| EL56ML3 57 | 2.33 | 38.70 | 3.01 | 1.00 | 68.30 | 68.49 | 437.36 | 413.60 | 12.03 | 11.13 |
| EL99ML2 120 | 2.50 | 42.80 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL99ML3 235 | 2.48 | 43.20 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99ML4 358 | 2.49 | 42.90 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99ML5 494 | 2.48 | 42.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99ML6 627 | 2.50 | 43.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL99ML7 725 | 2.49 | 43.20 | 3.03 | 1.01 | 59.99 | * | 835.58 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | |
| EH01MM1 1 | 2.32 | 39.70 | 3.05 | 1.02 | 59.44 | 59.44 | 431.12 | 401.04 | 9.14 | 9.02 |
| EH07MM1 7 | 2.65 | 45.20 | 3.06 | 1.02 | 57.04 | 60.56 | 438.72 | 434.64 | 11.38 | 10.62 |
| EH14MM1 14 | 2.46 | 41.70 | 3.05 | 1.01 | 66.16 | 67.28 | 451.20 | 409.76 | 12.34 | 10.62 |
| EH99MM1 28 | 2.60 | 44.90 | 3.03 | 1.01 | * | * | * | * | * | * |
| EH28MM1 28 | 2.46 | 41.50 | 3.09 | 1.02 | 65.50 | 66.74 | 440.72 | 417.04 | 10.69 | 9.42 |
| EH56MM1 57 | 2.38 | 41.50 | 3.05 | 1.02 | 60.76 | 66.97 | 439.84 | 434.72 | 11.77 | 10.26 |
| EH99MM2 120 | 2.70 | 45.10 | 3.05 | 1.02 | * | * | * | * | * | * |
| EH99MM3 239 | 2.75 | 45.80 | 3.07 | 1.03 | * | * | * | * | * | * |
| EH99MM4 357 | 2.74 | 45.50 | 3.07 | 1.03 | * | * | * | * | * | * |
| EH99MM5 493 | 2.72 | 45.20 | 3.06 | 1.02 | * | * | * | * | * | * |
| EH99MM6 625 | 2.72 | 45.40 | 3.05 | 1.02 | * | * | * | * | * | * |
| EH99MM7 729 | 2.76 | 45.80 | 3.07 | 1.03 | 55.82 | * | 783.58 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | |
| EL01MM2 1 | 2.20 | 37.80 | 3.03 | 1.01 | 63.76 | 62.00 | 440.32 | 390.72 | 10.14 | 9.14 |
| EL01MM3 1 | 2.18 | 37.20 | 3.03 | * | 60.08 | 58.64 | 435.68 | 400.40 | * | 9.02 |
| EL01MM1 1 | 2.13 | 36.70 | 3.04 | 1.01 | 64.24 | 65.68 | 433.52 | 423.04 | 9.58 | 9.66 |
| EL07MM2 7 | 2.34 | 40.00 | 3.03 | 1.01 | 60.24 | 59.76 | 438.48 | 406.56 | 12.10 | 11.58 |
| EL07MM3 7 | 2.31 | 39.50 | 3.03 | 1.01 | * | * | * | * | 13.66 | 12.46 |
| EL07MM1 7 | 2.61 | 45.00 | 3.04 | 1.01 | 66.64 | 69.36 | 431.68 | 427.84 | 14.02 | 12.10 |
| EL14MM1 14 | 2.29 | 39.10 | 3.02 | 1.01 | 60.88 | 61.84 | 434.48 | 403.36 | 12.62 | 11.70 |
| EL14MM2 14 | 2.32 | 39.50 | 3.02 | 1.01 | 56.72 | 57.36 | 451.84 | 418.00 | 12.26 | 10.50 |
| EL14MM3 14 | 2.49 | 43.10 | 3.03 | 1.01 | 60.08 | 60.08 | 441.92 | 403.36 | 11.90 | 11.18 |
| EL28MM2 28 | 2.17 | 37.30 | 3.03 | 1.01 | 57.58 | 62.82 | 450.88 | 421.84 | 9.96 | 9.13 |
| EL28MM3 28 | 2.35 | 40.50 | 3.04 | 1.01 | 65.35 | 66.55 | 442.56 | 408.56 | 10.91 | 10.03 |
| EL28MM1 28 | 2.29 | 39.40 | 3.04 | 1.01 | 61.46 | 63.37 | 459.92 | 433.36 | 10.16 | 9.20 |
| EL99MM1 28 | 2.17 | 37.10 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL56MM2 57 | 2.52 | 43.10 | 3.03 | 1.01 | 64.54 | 65.18 | 426.88 | 395.36 | 11.67 | 9.78 |
| EL56MM3 57 | 2.62 | 44.90 | 3.02 | 1.00 | 68.87 | 68.70 | 453.92 | 434.64 | 12.81 | 11.40 |
| EL56MM1 57 | 2.27 | 39.40 | 3.02 | 1.01 | 68.23 | 71.56 | 432.00 | 432.48 | 12.43 | 10.77 |
| EL99MM2 120 | 2.20 | 37.40 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99MM3 234 | 2.18 | 37.80 | 3.05 | 1.02 | * | * | * | * | * | * |
| EL99MM4 357 | 2.22 | 37.60 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99MM5 493 | 2.23 | 37.60 | 3.05 | 1.01 | * | * | * | * | * | * |
| EL99MM6 626 | 2.22 | 37.20 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99MM7 724 | 2.23 | 38.00 | 3.05 | 1.01 | 47.10 | * | 648.58 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | |
| EH01OM1 1 | 2.06 | 33.60 | 3.06 | 1.01 | 57.40 | 59.45 | 437.76 | 417.92 | 7.60 | 8.55 |
| EH07OM1 7 | 2.07 | 36.10 | 3.01 | 1.00 | 64.33 | 66.68 | 435.44 | 415.76 | 10.09 | 10.85 |
| EH14OM1 14 | 2.44 | 41.40 | 3.02 | 1.00 | 59.05 | 61.96 | 422.64 | 421.04 | 7.94 | 8.54 |
| EH99OM1 28 | 2.90 | 48.50 | 3.18 | 1.04 | * | * | * | * | * | * |
| EH28OM1 28 | 2.06 | 35.40 | 3.02 | 1.00 | 61.20 | 59.60 | 452.00 | 424.00 | 7.50 | 7.70 |
| EH56OM1 56 | 2.61 | 43.50 | 3.04 | 1.00 | 60.68 | 62.09 | 467.92 | 425.52 | 8.98 | 8.41 |
| EH99OM2 128 | 3.04 | * | 3.20 | 1.07 | * | * | * | * | * | * |
| EH99OM3 251 | 3.30 | 52.40 | 3.27 | 1.13 | * | * | * | * | * | * |
| EH99OM4 364 | 3.33 | 49.90 | 3.30 | 1.10 | * | * | * | * | * | * |
| EH99OM5 503 | 3.40 | 49.90 | 3.33 | 1.13 | * | * | * | * | * | * |
| EH99OM6 626 | 3.56 | 53.40 | 3.40 | 1.14 | * | * | * | * | * | * |
| EH99OM7 736 | 3.70 | 52.40 | 3.44 | 1.13 | 60.74 | * | 824.42 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | |
| EL01OM3 1 | 1.93 | 33.50 | 3.00 | 1.00 | 61.70 | 65.14 | 425.52 | 397.76 | 8.85 | 8.30 |
| EL01OM1 1 | 2.09 | 34.70 | 3.10 | 1.04 | 65.02 | 67.22 | 423.68 | 424.32 | 9.06 | 9.25 |
| EL01OM2 1 | 1.94 | 33.50 | 3.00 | 1.00 | 65.22 | 66.06 | 452.32 | 416.32 | 8.75 | 8.81 |
| EL07OM1 7 | 2.74 | 47.40 | 3.00 | 1.00 | 63.64 | 62.84 | 486.00 | 414.40 | 9.10 | 9.04 |
| EL07OM2 7 | 2.62 | 45.20 | 3.00 | 1.00 | 62.33 | 62.97 | 439.52 | 402.56 | 10.01 | 9.09 |
| EL07OM3 7 | 2.41 | 41.10 | 3.01 | 1.00 | 66.09 | 67.22 | 454.80 | 430.80 | 10.14 | 9.53 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | |
| EL140M2 14 | 2.73 | 47.50 | 3.00 | 1.00 | 64.23 | 66.30 | 440.20 | 426.88 | 8.80 | 8.71 |
| EL140M1 14 | 2.56 | 44.30 | 3.01 | 1.00 | 63.27 | 64.74 | 446.08 | 422.72 | 8.41 | 8.98 |
| EL140M3 14 | 2.48 | 42.00 | 3.01 | 1.01 | 52.58 | 56.84 | 413.28 | 418.32 | 7.39 | 7.62 |
| EL280M1 28 | 2.25 | 38.40 | 3.01 | 1.00 | 53.20 | 56.00 | 412.00 | 404.00 | 7.30 | 7.30 |
| EL280M2 28 | 2.28 | 39.00 | 3.00 | 1.00 | 65.62 | 67.62 | 431.84 | 414.56 | 9.55 | 9.00 |
| EL280M3 28 | 2.74 | 47.00 | 3.00 | 1.00 | 58.81 | 58.90 | 433.84 | 396.32 | 8.03 | 7.74 |
| EL990M1 28 | 2.70 | 45.50 | 3.05 | 1.01 | * | * | * | * | * | * |
| EL560M2 56 | 2.18 | 37.60 | 3.01 | 1.00 | 49.68 | 54.80 | 424.72 | 428.72 | 8.10 | 6.62 |
| EL560M1 56 | 2.64 | 46.00 | 3.01 | 1.00 | 66.55 | 76.39 | 427.92 | 437.52 | 10.09 | 8.70 |
| EL560M3 56 | 2.62 | 45.40 | 3.01 | 1.00 | 59.76 | 67.28 | 429.12 | 427.04 | 9.42 | 8.14 |
| EL990M2 128 | 2.74 | 46.60 | 3.07 | 1.04 | * | * | * | * | * | * |
| EL990M3 237 | 2.74 | 45.70 | 3.06 | 1.03 | * | * | * | * | * | * |
| EL990M4 364 | 2.78 | 45.70 | 3.09 | 1.04 | * | * | * | * | * | * |
| EL990M5 503 | 3.06 | 47.60 | 3.17 | 1.05 | * | * | * | * | * | * |
| EL990M6 626 | 3.13 | 47.90 | 2.70 | 1.08 | * | * | * | * | * | * |
| EL990M7 731 | 3.20 | 48.10 | 3.28 | 1.08 | 57.83 | * | 755.42 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | |
| EH010P1 1 | 3.52 | 51.90 | 3.30 | 1.11 | 46.33 | 44.07 | 345.92 | 351.20 | 5.83 | 7.20 |
| EH070P1 7 | 4.61 | 57.40 | 3.66 | 1.25 | 38.80 | 37.20 | 280.00 | 272.00 | 4.14 | 3.58 |
| EH140P1 14 | 4.93 | 61.10 | 3.66 | 1.25 | 38.80 | 39.20 | 276.00 | 248.00 | 4.72 | 4.28 |
| EH280P1 28 | 4.31 | 52.40 | 3.68 | 1.24 | 42.86 | 42.66 | 279.12 | 277.12 | 6.22 | 6.10 |
| EH990P1 28 | 4.11 | 54.30 | 3.69 | 1.19 | * | * | * | * | * | * |
| EH560P1 56 | 4.39 | 52.70 | 3.70 | 1.25 | 42.00 | 41.04 | 278.00 | 266.08 | 5.98 | 5.94 |
| EH990P2 141 | 4.48 | 55.50 | 3.79 | 1.23 | * | * | * | * | * | * |
| EH990P3 257 | 4.67 | 55.90 | 3.81 | 1.23 | * | * | * | * | * | * |
| EH990P4 385 | 4.61 | 55.50 | 3.81 | 1.24 | * | * | * | * | * | * |
| EH990P5 509 | 4.68 | 56.00 | 3.82 | 1.24 | * | * | * | * | * | * |
| EH990P6 627 | 4.71 | 55.90 | 3.84 | 1.25 | * | * | * | * | * | * |
| EH990P7 742 | 4.74 | 56.30 | 3.84 | 1.25 | 42.99 | * | 564.58 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | |
| EL010P1 1 | 2.60 | 42.60 | 3.07 | 1.02 | 66.04 | 68.38 | 429.20 | 418.56 | 11.01 | 10.43 |
| EL010P3 1 | 2.20 | 35.50 | 3.13 | 1.04 | 60.74 | 61.19 | 434.00 | 404.08 | 8.42 | 8.88 |
| EL010P2 1 | 2.42 | 39.40 | 3.09 | 1.04 | 60.92 | 59.53 | 421.20 | 370.56 | 8.63 | 8.93 |
| EL070P2 7 | 3.59 | 52.60 | 3.30 | 1.10 | 57.18 | 56.26 | 406.40 | 372.00 | 8.31 | 6.46 |
| EL070P3 7 | 3.69 | 54.30 | 3.30 | 1.13 | 54.73 | 55.13 | 379.28 | 376.40 | 7.12 | 6.41 |
| EL070P1 7 | 2.99 | 42.50 | 3.36 | 1.14 | 43.20 | 43.20 | 356.00 | 336.00 | 5.10 | 4.44 |
| EL140P2 14 | 3.41 | 45.70 | 3.49 | 1.29 | 36.74 | 35.77 | 312.64 | 294.72 | 5.40 | 6.30 |
| EL140P3 14 | 4.00 | 55.80 | 3.40 | 1.16 | 47.98 | 48.60 | 349.84 | 334.10 | 6.85 | 6.75 |
| EL140P1 14 | 4.00 | 56.50 | 3.41 | 1.16 | 54.80 | 52.40 | 360.00 | 340.00 | 5.56 | 6.02 |
| EL280P1 28 | 4.44 | 58.10 | 3.52 | 1.19 | 40.90 | 43.08 | 280.96 | 279.28 | 6.33 | 6.99 |
| EL280P3 28 | 4.38 | 57.30 | 3.53 | 1.20 | 35.96 | 36.14 | 285.93 | 274.80 | 6.63 | 5.43 |
| EL280P2 28 | 3.39 | 43.00 | 3.60 | 1.23 | 33.72 | 33.78 | 286.40 | 270.32 | 5.74 | 6.04 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | |
| EL990P1 28 | 4.17 | 54.30 | 3.69 | 1.18 | * | * | * | * | * | * |
| EL560P2 55 | 4.51 | 57.50 | 3.63 | 1.23 | 44.08 | 43.60 | 277.12 | 276.16 | 4.94 | 6.62 |
| EL560P3 55 | 4.77 | 60.50 | 3.60 | 1.23 | 43.12 | 40.56 | 273.60 | 245.28 | 5.02 | 5.98 |
| EL560P1 56 | 4.28 | 53.30 | 3.64 | 1.24 | 36.80 | 39.12 | 269.04 | 277.52 | 6.26 | 5.50 |
| EL990P2 141 | 4.70 | 56.20 | 3.81 | 1.23 | * | * | * | * | * | * |
| EL990P3 244 | 4.63 | 56.30 | 3.82 | 1.24 | * | * | * | * | * | * |
| EL990P4 385 | 4.65 | 56.10 | 3.81 | 1.23 | * | * | * | * | * | * |
| EL990P5 509 | 4.66 | 56.30 | 3.80 | 1.22 | * | * | * | * | * | * |
| EL990P6 627 | 4.64 | 56.00 | 3.82 | 1.24 | * | * | * | * | * | * |
| EL990P7 737 | 4.63 | 56.20 | 3.83 | 1.24 | 48.02 | * | 556.92 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | |
| EH01PH1 1 | 2.44 | 41.80 | 3.02 | 1.00 | 55.78 | 57.20 | 449.64 | 435.28 | 7.32 | 7.50 |
| EH07PH1 7 | 2.60 | 44.50 | 3.00 | 1.00 | 62.28 | 63.50 | 418.84 | 411.42 | 8.79 | 8.79 |
| EH14PH1 14 | 2.48 | 42.30 | 3.04 | 1.02 | 61.22 | 60.22 | 508.88 | 517.80 | 8.91 | 8.53 |
| EH28PH1 28 | 2.42 | 41.60 | 3.01 | 1.01 | 60.06 | 64.64 | 472.54 | 465.66 | 9.24 | 7.96 |
| EH99PH1 29 | 2.54 | 43.30 | 3.02 | 1.01 | * | * | * | * | * | * |
| EH56PH1 56 | 2.69 | 45.50 | 3.03 | 1.01 | 60.60 | 62.50 | 469.80 | 458.10 | 7.78 | 7.92 |
| EH99PH2 121 | 2.61 | 43.50 | 3.06 | 1.01 | * | * | * | * | * | * |
| EH99PH3 243 | 2.68 | 44.20 | 3.09 | 1.03 | * | * | * | * | * | * |
| EH99PH4 362 | 2.71 | 44.50 | 3.11 | 1.03 | * | * | * | * | * | * |
| EH99PH5 499 | 2.77 | 45.10 | 3.13 | 1.03 | * | * | * | * | * | * |
| EH99PH6 624 | 2.80 | 45.10 | 3.14 | 1.04 | * | * | * | * | * | * |
| EH99PH7 728 | 2.83 | 45.40 | 3.15 | 1.04 | 52.47 | * | 808.00 | * | * | * |
| PHENOL 8.0% 23°C | | | | | | | | | | |
| EL01PH1 1 | 2.33 | 39.20 | 3.00 | * | 47.32 | 48.34 | 449.34 | 414.74 | 6.71 | 6.57 |
| EL01PH2 1 | 1.96 | 33.70 | 3.00 | 1.00 | 45.08 | 45.78 | 461.48 | 416.74 | 6.34 | 6.01 |
| EL01PH3 1 | 1.81 | 31.70 | 3.01 | 1.00 | 63.40 | 66.84 | 445.44 | 422.58 | 9.14 | 8.17 |
| EL07PH1 7 | 2.61 | 45.00 | 3.00 | 1.01 | 54.30 | 56.62 | 427.86 | 414.00 | 8.09 | 7.36 |
| EL07PH2 7 | 2.39 | 41.40 | 3.01 | 1.00 | 50.18 | 49.18 | 454.12 | 410.46 | 7.39 | 6.23 |
| EL07PH3 7 | 2.38 | 41.30 | 3.02 | 1.01 | 64.03 | 66.76 | 450.27 | 430.16 | 9.74 | 8.95 |
| EL14PH2 14 | 2.46 | 42.20 | 3.03 | 1.01 | 63.34 | 65.56 | 438.36 | 420.92 | 9.07 | 8.30 |
| EL14PH1 14 | 2.60 | 45.20 | 3.01 | 1.00 | 51.68 | 52.68 | 467.78 | 443.16 | 7.85 | 7.06 |
| EL14PH3 14 | 2.44 | 42.10 | 3.01 | 1.01 | 65.44 | 67.82 | 443.78 | 428.50 | 9.37 | 8.79 |
| EL28PH2 28 | 1.93 | 33.00 | 3.02 | 1.00 | 54.02 | 53.68 | 458.42 | 427.04 | 6.98 | 6.83 |
| EL28PH3 28 | 1.91 | 32.90 | 3.02 | 1.01 | 48.88 | 50.82 | 457.58 | 422.74 | 7.48 | 6.24 |
| EL28PH1 28 | 2.41 | 41.00 | 3.01 | 1.00 | 58.12 | 58.80 | 447.80 | 437.36 | 6.80 | 8.69 |
| EL99PH1 29 | 2.34 | 40.80 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL56PH1 56 | 2.43 | 41.20 | 3.02 | 1.01 | 62.26 | 61.62 | 484.00 | 429.64 | 8.92 | 8.09 |
| EL56PH2 56 | 2.27 | 38.90 | 3.02 | 1.01 | 61.08 | 66.92 | 455.88 | 442.44 | 8.92 | 8.15 |
| EL56PH3 56 | 2.26 | 38.70 | 3.01 | 1.01 | 56.26 | 61.24 | 476.94 | 439.24 | 8.33 | 7.85 |
| EL99PH2 121 | 2.37 | 40.80 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PH3 230 | 2.40 | 41.10 | 3.04 | 1.01 | * | * | * | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 8.0% 23°C | | | | | | | | | | |
| EL99PH4 362 | 2.42 | 41.20 | 3.05 | 1.02 | * | * | * | * | * | * |
| EL99PH5 499 | 2.45 | 41.30 | 3.06 | 1.01 | * | * | * | * | * | * |
| EL99PH6 625 | 2.48 | 41.50 | 3.07 | 1.02 | * | * | * | * | * | * |
| EL99PH7 723 | 2.50 | 41.90 | 3.09 | 1.02 | 52.73 | * | 710.50 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | | | | | |
| EH01PL1 1 | 2.41 | 41.50 | 3.00 | 1.00 | 59.60 | 61.72 | 469.94 | 464.72 | 9.47 | 8.33 |
| EH07PL1 7 | 2.36 | 40.90 | 3.00 | 1.00 | 58.14 | 56.18 | 466.78 | 423.04 | 8.14 | 8.42 |
| EH14PL1 14 | 2.63 | 45.60 | 3.01 | 1.00 | 50.92 | 52.52 | 434.12 | 408.88 | 7.45 | 7.50 |
| EH99PL1 28 | 2.54 | 44.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH28PL1 28 | 2.36 | 40.40 | 3.00 | 1.00 | 60.20 | 61.74 | 476.44 | 477.30 | 9.68 | 8.92 |
| EH56PL1 56 | 2.59 | 44.60 | 3.00 | 1.00 | 59.62 | 62.38 | 492.24 | 458.00 | 8.76 | 7.91 |
| EH99PL2 122 | 2.57 | 44.50 | 3.02 | 1.01 | * | * | * | * | * | * |
| EH99PL3 245 | 2.61 | 44.80 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99PL4 363 | 2.62 | 44.80 | 3.05 | 1.01 | * | * | * | * | * | * |
| EH99PL5 499 | 2.62 | 44.60 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99PL6 625 | 2.65 | 45.10 | 3.03 | 1.02 | * | * | * | * | * | * |
| EH99PL7 729 | 2.63 | 45.40 | 3.05 | 1.01 | 59.42 | * | 741.25 | * | * | * |
| PHENOL 1.0% 23°C | | | | | | | | | | |
| EL01PL2 1 | 2.46 | 41.90 | 3.00 | 1.00 | 54.32 | 59.98 | 447.24 | 402.64 | 9.16 | 6.19 |
| EL01PL3 1 | 2.50 | 43.70 | 3.00 | 1.00 | 63.24 | 64.66 | 435.04 | 411.72 | 9.04 | 7.95 |
| EL01PL1 1 | 2.38 | 40.90 | 3.00 | 1.00 | 60.64 | 64.78 | 422.20 | 412.24 | 9.34 | 8.89 |
| EL07PL2 7 | 2.54 | 44.20 | 3.00 | 1.00 | 65.20 | 68.12 | 419.26 | 413.96 | 9.60 | 9.07 |
| EL07PL1 7 | 2.59 | 45.20 | 2.99 | 1.00 | 57.98 | 60.36 | 454.04 | 444.90 | 9.42 | 7.51 |
| EL07PL3 7 | 2.40 | 41.90 | 3.00 | 1.00 | 63.92 | 64.40 | 432.22 | 426.30 | 9.74 | 8.84 |
| EL14PL2 14 | 2.36 | 41.20 | 3.00 | 1.00 | 64.18 | 65.66 | 470.50 | 429.00 | 8.97 | 8.99 |
| EL14PL3 14 | 2.34 | 40.80 | 3.00 | 1.00 | 62.54 | 64.96 | 459.66 | 432.82 | 9.24 | 8.76 |
| EL14PL1 14 | 2.41 | 41.50 | 3.01 | 1.00 | 57.94 | 54.46 | 446.26 | 415.62 | 7.30 | 9.04 |
| EL28PL1 28 | 2.38 | 41.10 | 3.00 | 1.00 | 58.18 | 62.70 | 469.06 | 461.56 | 9.55 | 8.72 |
| EL28PL3 28 | 1.83 | 31.90 | 3.01 | 1.33 | 59.92 | 62.30 | 446.70 | 420.20 | 8.67 | 8.28 |
| EL28PL2 28 | 2.48 | 43.10 | 3.00 | 1.00 | 65.90 | 67.10 | 446.76 | 432.02 | 9.45 | 8.85 |
| EL99PL1 28 | 2.54 | 43.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL56PL3 56 | 2.42 | 41.70 | 3.01 | 1.00 | 62.14 | 65.02 | 437.72 | 424.72 | 8.86 | 8.79 |
| EL56PL1 56 | 2.37 | 41.30 | 3.00 | 1.00 | 53.70 | 57.36 | 456.70 | 428.06 | 8.39 | 7.38 |
| EL56PL2 56 | 2.40 | 41.60 | 3.02 | 1.00 | 64.46 | 62.78 | 469.10 | 451.12 | 8.44 | 8.30 |
| EL99PL2 122 | 2.58 | 44.20 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PL3 233 | 2.57 | 44.50 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PL4 363 | 2.59 | 44.30 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PL5 499 | 2.58 | 44.30 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PL6 626 | 2.60 | 44.30 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PL7 724 | 2.59 | 44.60 | 3.04 | 1.01 | 61.56 | * | 848.08 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 50°C | | | | | | | | | | |
| EH01PM1 1 | 2.41 | 41.60 | 3.00 | 1.00 | 48.36 | 51.14 | 509.42 | 483.84 | 7.84 | 6.99 |
| EH07PM1 7 | 2.64 | 45.60 | 3.00 | 1.01 | 48.86 | 50.06 | 421.18 | 409.74 | 7.61 | 7.17 |
| EH14PM1 14 | 2.42 | 41.40 | 3.03 | 1.01 | 52.16 | 56.82 | 439.54 | 426.58 | 8.97 | 7.76 |
| EH28PM1 28 | 2.39 | 41.30 | 3.01 | 1.01 | 45.32 | 48.44 | 445.36 | 434.62 | 6.90 | 5.81 |
| EH99PM1 29 | 2.62 | 45.30 | 3.02 | 1.00 | * | * | * | * | * | * |
| EH56PM1 56 | 2.61 | 44.60 | 3.00 | 1.01 | 50.24 | 56.52 | 474.74 | 471.82 | 7.09 | 5.96 |
| EH99PM2 121 | 2.67 | 45.60 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99PM3 244 | 2.73 | 46.60 | 3.07 | 1.02 | * | * | * | * | * | * |
| EH99PM4 362 | 2.75 | 46.50 | 3.08 | 1.03 | * | * | * | * | * | * |
| EH99PM5 499 | 2.81 | 46.80 | 3.09 | 1.03 | * | * | * | * | * | * |
| EH99PM6 624 | 2.82 | 46.90 | 3.09 | 1.03 | * | * | * | * | * | * |
| EH99PM7 728 | 2.83 | 47.00 | 3.10 | 1.03 | 57.34 | * | 742.60 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | | | | | |
| EL01PM2 1 | 1.87 | 32.80 | 3.00 | 1.00 | 47.04 | 48.42 | 449.24 | 412.98 | 6.48 | 6.45 |
| EL01PM1 1 | 2.41 | 42.40 | 3.00 | 1.00 | 51.42 | 52.36 | 490.88 | 472.44 | 7.74 | 8.20 |
| EL01PM3 1 | 1.99 | 34.30 | 3.01 | 1.00 | 55.42 | 58.44 | 447.66 | 408.06 | 8.68 | 7.31 |
| EL07PM2 7 | 2.38 | 41.50 | 3.01 | 1.00 | 63.20 | 63.12 | 447.28 | 420.66 | 9.07 | 8.02 |
| EL07PM1 7 | 2.41 | 41.70 | 3.00 | 1.00 | 55.16 | 57.14 | 471.82 | 442.88 | 9.30 | 6.90 |
| EL07PM3 7 | 2.36 | 41.20 | 3.01 | 1.00 | 52.40 | 53.82 | 438.60 | 405.58 | 8.37 | 7.29 |
| EL14PM3 14 | 2.42 | 41.80 | 3.00 | 1.00 | 61.74 | 62.70 | 468.22 | 429.98 | 8.71 | 8.69 |
| EL14PM2 14 | 2.22 | 38.70 | 3.00 | 1.00 | 61.46 | 65.38 | 437.80 | 441.82 | 9.20 | 8.26 |
| EL14PM1 14 | 2.43 | 42.00 | 3.02 | 1.01 | 61.70 | 62.34 | 453.24 | 450.30 | 9.46 | 8.29 |
| EL28PM1 28 | 2.40 | 41.50 | 3.00 | 1.00 | 54.92 | 56.64 | 448.50 | 435.26 | 9.10 | 7.10 |
| EL28PM3 28 | 2.40 | 41.10 | 3.02 | 1.00 | 59.04 | 64.38 | 451.30 | 432.48 | 8.64 | 7.60 |
| EL28PM2 28 | 2.49 | 42.90 | 3.01 | 1.00 | 67.84 | 66.84 | 436.22 | 458.88 | 10.02 | 8.38 |
| EL99PM1 29 | 2.55 | 44.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL56PM2 56 | 2.27 | 39.40 | 3.01 | 1.01 | 68.16 | 66.68 | 465.52 | 427.08 | 9.02 | 8.40 |
| EL56PM3 56 | 2.37 | 40.40 | 3.00 | 1.01 | 63.30 | 62.88 | 451.78 | 425.64 | 8.86 | 8.42 |
| EL56PM1 56 | 2.58 | 44.60 | 3.01 | 1.00 | 46.78 | 50.16 | 439.28 | 425.56 | 6.63 | 5.94 |
| EL99PM2 121 | 2.57 | 44.30 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99PM3 231 | 2.57 | 44.90 | 3.02 | 1.01 | * | * | * | * | * | * |
| EL99PM4 362 | 2.59 | 45.60 | 3.03 | 1.01 | * | * | * | * | * | * |
| EL99PM5 499 | 2.61 | 44.60 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99PM6 625 | 2.62 | 44.80 | 3.04 | 1.01 | * | * | * | * | * | * |
| EL99PM7 723 | 2.62 | 44.50 | 3.05 | 1.01 | 53.48 | * | 678.17 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | |
| EH01SH1 1 | 1.90 | 33.10 | 3.01 | 1.00 | 55.85 | 55.29 | 443.92 | 431.76 | 6.59 | 6.94 |
| EH07SH1 7 | 2.68 | 37.10 | 3.00 | 1.00 | 72.44 | 75.85 | 438.24 | 434.40 | 9.51 | 9.39 |
| EH14SH1 14 | 2.23 | 39.10 | 3.00 | 1.00 | 53.29 | 56.73 | 413.60 | 383.76 | 8.91 | 8.10 |
| EH28SH1 28 | 2.23 | 39.20 | 3.01 | 1.00 | 62.70 | 75.53 | 389.12 | 452.50 | 8.12 | 8.71 |
| EH56SH1 56 | 2.05 | 36.50 | 3.00 | 1.00 | 71.38 | 66.73 | 468.56 | 438.96 | 9.05 | 9.37 |
| EH99SH2 131 | 2.50 | 44.10 | 2.99 | 0.99 | * | * | * | * | * | * |
| EH99SH3 253 | 2.51 | 44.00 | 2.99 | 0.99 | * | * | * | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| EH99SH4 379 | 2.52 | 43.90 | 2.99 | 1.00 | * | * | * | * | * | * |
| EH99SH5 510 | 2.56 | 44.40 | 2.99 | 0.99 | * | * | * | * | * | * |
| EH99SH1 630 | 2.53 | 44.30 | 2.99 | 1.00 | * | * | * | * | * | * |
| EH99SH6 630 | 2.49 | 44.10 | 2.99 | 1.00 | * | * | * | * | * | * |
| EH99SH7 742 | 2.48 | 44.00 | 2.99 | 0.99 | 67.31 | * | 797.25 | * | * | * |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | |
| EL01SH1 1 | 2.74 | 47.50 | 3.00 | 1.00 | 61.51 | 64.23 | 430.16 | 401.76 | 8.46 | 8.80 |
| EL01SH2 1 | 2.70 | 47.00 | 3.00 | 1.00 | 72.40 | 74.40 | 428.00 | 408.00 | 9.60 | 9.36 |
| EL01SH3 1 | 2.44 | 42.30 | 3.01 | 1.00 | 71.60 | 72.00 | 452.00 | 416.00 | 8.92 | 9.76 |
| EL07SH2 7 | 2.47 | 42.80 | 3.00 | 1.00 | 62.86 | 65.53 | 459.60 | 450.16 | 9.07 | 7.80 |
| EL07SH1 7 | * | 46.70 | 3.00 | 1.00 | 66.38 | 71.50 | 431.04 | 421.92 | 9.09 | 8.93 |
| EL07SH3 7 | 2.19 | 37.60 | 3.00 | 1.00 | 55.06 | 58.66 | 447.92 | 422.00 | 7.13 | 7.60 |
| EL14SH3 14 | 2.56 | 44.40 | 3.01 | 1.00 | 67.64 | 66.82 | 461.60 | 398.80 | 8.50 | 8.82 |
| EL14SH1 14 | 2.21 | 38.90 | 3.00 | 1.00 | 61.64 | 55.32 | 436.24 | 388.88 | 7.49 | 8.54 |
| EL14SH2 14 | 2.70 | 47.00 | 3.00 | 1.00 | 73.61 | 74.66 | 463.92 | 452.08 | 8.73 | 9.25 |
| EL28SH2 28 | 2.15 | 37.10 | 3.00 | 1.00 | 70.17 | 67.54 | 422.08 | 441.36 | 8.67 | 7.69 |
| EL28SH3 28 | 2.58 | 44.80 | 3.00 | 1.00 | 68.63 | 70.31 | 462.80 | 446.08 | 8.69 | 8.52 |
| EL99SH1 28 | 2.50 | 44.20 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL28SH1 28 | 2.25 | 39.40 | 3.00 | 1.00 | 70.18 | 71.21 | 408.72 | 454.08 | 8.11 | 9.61 |
| EL56SH1 56 | 2.49 | 44.20 | 3.00 | 1.00 | 75.43 | 64.57 | 489.84 | 371.36 | 9.44 | 8.68 |
| EL56SH3 56 | 2.51 | 43.30 | 3.01 | 1.00 | 67.20 | 67.60 | 396.00 | 428.00 | 8.36 | 7.98 |
| EL56SH2 56 | 2.38 | 40.90 | 3.01 | 1.00 | 61.20 | 60.00 | 412.00 | 412.00 | 6.84 | 7.50 |
| EL99SH2 131 | 2.51 | 44.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SH3 246 | 2.51 | 43.90 | 3.00 | 1.01 | * | * | * | * | * | * |
| EL99SH4 379 | 2.50 | 43.80 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SH5 510 | 2.50 | 43.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SH6 630 | 2.49 | 43.80 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SH7 737 | 2.48 | 43.70 | 3.00 | 1.00 | 63.02 | * | 841.83 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | |
| EH01SM1 1 | 2.21 | 39.30 | 3.01 | 1.00 | 57.52 | 53.84 | 392.80 | 398.88 | 6.70 | 7.90 |
| EH07SM1 7 | 2.22 | 39.10 | 2.99 | 1.00 | 57.53 | 54.63 | 458.64 | 480.00 | 7.59 | 7.21 |
| EH14SM1 14 | 38.10 | 39.50 | 7.30 | 6.92 | 62.64 | 62.64 | 432.70 | 420.16 | 7.17 | 7.22 |
| EH28SM1 28 | 37.17 | 38.50 | 7.38 | 6.90 | 60.24 | 53.52 | 448.88 | 412.08 | 7.66 | 6.86 |
| EH99SM1 28 | 2.47 | 42.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH56SM1 61 | 40.41 | 41.50 | 7.39 | 6.92 | 64.24 | 62.80 | 455.76 | 419.84 | 9.82 | 9.42 |
| EH99SM2 132 | 2.47 | 42.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99SM3 254 | 2.47 | 42.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99SM4 370 | 2.46 | 42.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH99SM5 511 | 2.48 | 42.60 | 2.99 | 1.00 | * | * | * | * | * | * |
| EH99SM6 624 | 2.45 | 42.60 | 2.98 | 1.00 | * | * | * | * | * | * |
| EH99SM7 743 | 2.46 | 43.00 | 2.99 | 1.00 | 62.88 | * | 744.83 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | |
| EL01SM2 1 | 2.21 | 39.60 | 3.00 | 1.00 | 66.32 | 64.72 | 403.92 | 418.16 | 8.66 | 7.70 |
| EL01SM3 1 | 2.19 | 39.30 | 3.00 | 1.00 | 63.44 | 65.00 | 449.04 | 419.00 | 8.50 | 8.86 |
| EL01SM1 1 | 2.19 | 39.40 | 3.00 | 1.00 | 67.10 | 64.72 | 428.50 | 418.40 | 9.02 | 8.78 |
| EL07SM2 7 | 2.23 | 39.10 | 3.00 | 1.00 | 58.04 | 52.47 | 436.40 | 434.16 | 8.28 | 7.70 |
| EL07SM3 7 | 2.23 | 39.20 | 3.00 | 1.00 | 57.14 | 53.13 | 404.48 | 442.80 | 8.40 | 7.61 |
| EL07SM1 7 | 2.27 | 40.40 | 3.00 | 1.00 | 52.95 | 60.87 | 441.04 | 431.76 | 8.12 | 7.65 |
| EL14SM1 14 | 38.59 | 39.70 | 7.40 | 6.95 | 62.40 | 61.84 | 406.80 | 404.40 | 7.42 | 7.70 |
| EL14SM3 15 | 2.25 | 39.90 | 3.00 | 1.00 | 55.42 | 60.82 | 398.00 | 381.12 | 8.34 | 8.31 |
| EL14SM2 15 | 2.15 | 38.90 | 3.01 | 1.01 | 56.14 | 62.58 | 390.96 | 417.52 | 8.88 | 8.71 |
| EL99SM1 28 | 2.42 | 42.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL28SM3 28 | 39.61 | 40.10 | 7.41 | 6.93 | 65.04 | 58.32 | 401.84 | 401.12 | 7.46 | 8.06 |
| EL28SM2 28 | 39.82 | 40.40 | 7.42 | 6.96 | 63.76 | 65.36 | 423.92 | 482.56 | 7.98 | 7.30 |
| EL28SM1 28 | 38.75 | 39.60 | 7.43 | 6.92 | 60.56 | 57.04 | 449.44 | 430.48 | 8.10 | 7.86 |
| EL56SM2 56 | 36.80 | 37.20 | 7.43 | 6.97 | 59.44 | 65.52 | 423.28 | 421.12 | 8.06 | 9.14 |
| EL56SM3 56 | 38.39 | 39.00 | 7.35 | 6.99 | 62.80 | 64.40 | 441.76 | 404.88 | 7.74 | 8.42 |
| EL56SM1 61 | 42.31 | 43.20 | 7.46 | 6.94 | 64.88 | 67.28 | 432.80 | 428.56 | 8.94 | 8.30 |
| EL99SM2 132 | 2.42 | 42.10 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SM3 246 | 2.42 | 41.90 | 3.00 | 1.01 | * | * | * | * | * | * |
| EL99SM4 370 | 2.43 | 42.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SM5 511 | 2.44 | 42.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99SM6 624 | 2.41 | 41.90 | 2.99 | 1.00 | * | * | * | * | * | * |
| EL99SM7 738 | 2.41 | 42.00 | 3.00 | 1.00 | 59.20 | * | 809.75 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | | |
| EH01WP1 1 | 2.04 | 36.40 | 2.96 | 1.00 | 66.10 | 71.60 | 352.60 | 364.08 | 8.62 | 8.50 |
| EH07WP1 7 | 2.38 | 41.00 | 3.01 | 1.00 | 58.96 | 65.20 | 436.60 | 413.10 | 8.54 | 8.34 |
| EH14WP1 14 | 36.00 | 37.50 | 7.45 | 6.92 | 56.40 | 58.70 | 448.00 | 429.70 | 6.65 | 8.54 |
| EH28WP1 28 | 2.35 | 40.50 | 3.00 | 1.00 | 65.52 | 64.72 | 438.64 | 412.96 | 8.70 | 8.06 |
| EH99WP1 28 | 2.54 | 43.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH56WP1 56 | 40.57 | 41.20 | 7 44 | 6.95 | 62.16 | 60.08 | 446.00 | 424.48 | 8.18 | 7.14 |
| EH99WP2 133 | 2.57 | 43.90 | 3.02 | 1.00 | * | * | * | * | * | * |
| EH99WP3 254 | 2.62 | 44.40 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99WP4 370 | 2.61 | 44.60 | 3.04 | 1.01 | * | * | * | * | * | * |
| EH99WP5 503 | 2.62 | 44.40 | 3.05 | 1.01 | * | * | * | * | * | * |
| EH99WP6 622 | 2.63 | 44.50 | 3.04 | 1.02 | * | * | * | * | * | * |
| EH99WP7 743 | 2.63 | 44.60 | 3.05 | 1.02 | 62.75 | * | 704.92 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | | |
| EL01WP2 1 | 2.05 | 36.50 | 3.00 | 1.00 | 69.70 | 65.04 | 436.10 | 422.24 | 8.46 | 8.38 |
| EL01WP1 1 | 1.93 | 34.20 | 3.00 | 1.00 | 66.64 | 65.36 | 424.88 | 406.80 | 8.42 | 8.02 |
| EL01WP3 1 | 2.09 | 37.40 | 3.00 | 1.00 | 69.04 | 66.64 | 435.28 | 433.44 | 8.42 | 7.78 |
| EL07WP2 7 | 2.27 | 40.00 | 2.94 | 1.00 | 61.04 | 64.40 | 447.90 | 420.16 | 9.06 | 8.00 |
| EL07WP1 7 | 2.34 | 40.30 | 3.01 | 1.00 | 61.40 | 59.60 | 435.60 | 412.60 | 8.22 | 8.62 |
| EL07WP3 7 | 2.31 | 39.80 | 3.00 | 1.00 | 61.50 | 58.32 | 423.00 | 398.32 | 8.78 | 6.60 |
| EL14WP1 14 | 35.41 | 40.70 | 7.41 | 6.94 | 53.90 | 54.90 | 426.00 | 407.00 | 8.60 | 6.60 |
| EL14WP2 14 | 2.49 | 43.50 | 3.00 | 1.00 | 64.56 | 70.32 | 420.00 | 334.96 | 9.02 | 9.10 |

ETHYLENE PROPYLENE DIENE MONOMER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 23°C | | | | | | | | | | |
| EL14WP3 14 | 2.50 | 43.60 | 3.00 | 1.00 | 68.88 | 70.80 | 436.48 | 399.20 | 9.14 | 9.06 |
| EL28WP1 28 | 2.26 | 39.20 | 3.00 | 1.00 | 66.48 | 70.48 | 433.28 | 408.88 | 9.06 | 8.34 |
| EL99WP1 28 | 2.49 | 43.20 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL28WP2 28 | 1.98 | 34.90 | 3.00 | 1.00 | 65.52 | 61.68 | 422.80 | 422.72 | 9.50 | 8.86 |
| EL28WP3 28 | 2.00 | 35.30 | 3.00 | 1.00 | 65.84 | 64.88 | 452.72 | 421.04 | 9.74 | 8.18 |
| EL56WP3 56 | 2.49 | 43.20 | 3.01 | 1.00 | 66.26 | 65.66 | 427.76 | 396.80 | 9.22 | 8.89 |
| EL56WP2 56 | 2.53 | 43.70 | 3.01 | 1.00 | 61.35 | 61.13 | 450.88 | 416.08 | 9.31 | 9.15 |
| EL56WP1 56 | 45.29 | 46.40 | 7.36 | 6.98 | 72.08 | 71.92 | 440.08 | 436.40 | 9.50 | 9.50 |
| EL99WP2 132 | 2.51 | 43.00 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99WP3 246 | 2.48 | 43.30 | 3.04 | 1.03 | * | * | * | * | * | * |
| EL99WP4 370 | 2.52 | 43.30 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL99WP5 503 | 2.51 | 43.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| EL99WP6 622 | 2.51 | 43.40 | 3.01 | 1.01 | * | * | * | * | * | * |
| EL99WP7 738 | 2.51 | 43.60 | 3.02 | 1.01 | 57.90 | * | 747.83 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | |
| EH01XM1 1 | 2.00 | 34.90 | 3.00 | 1.00 | 70.33 | 57.74 | 468.08 | 434.48 | 8.47 | 9.65 |
| EH07XM1 7 | 2.77 | 48.20 | 2.99 | 1.00 | 62.14 | 67.75 | 442.64 | 424.96 | 8.83 | 6.73 |
| EH14XM1 14 | 2.52 | 44.10 | 3.01 | 1.00 | 69.37 | 73.94 | 451.60 | 428.40 | 7.75 | 9.33 |
| EH99XM1 28 | 2.49 | 43.10 | 3.00 | 1.00 | * | * | * | * | * | * |
| EH28XM1 28 | 2.30 | 40.30 | 3.00 | 1.00 | 73.58 | 72.02 | 417.76 | 446.80 | 8.23 | 9.31 |
| EH56XM1 56 | 2.30 | 40.20 | 3.01 | 1.01 | 51.78 | 60.52 | 462.80 | 442.64 | 8.33 | 7.13 |
| EH99XM2 118 | 2.48 | 43.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH99XM3 231 | 2.52 | 43.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH99XM4 363 | 2.53 | 43.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH99XM5 489 | 2.53 | 43.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH99XM6 609 | 2.53 | 43.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| EH99XM7 720 | 2.54 | 43.50 | 3.01 | 1.00 | 64.86 | * | 724.67 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | |
| EL01XM2 1 | 1.94 | 33.60 | 3.01 | 1.00 | 70.74 | 75.53 | 437.28 | 446.88 | 9.13 | 8.58 |
| EL01XM1 1 | 2.07 | 36.20 | 3.00 | 1.00 | 76.46 | 64.66 | 474.32 | 393.52 | 9.75 | 7.84 |
| EL01XM3 1 | 2.06 | 35.90 | 3.00 | 1.01 | 74.89 | 74.25 | 457.12 | 428.08 | 9.27 | 8.67 |
| EL07XM3 7 | 2.69 | 46.70 | 3.01 | 1.00 | 70.23 | 69.37 | 460.64 | 418.72 | 8.13 | 9.06 |
| EL07XM1 7 | 2.07 | 35.70 | 3.00 | 1.00 | 66.30 | 68.38 | 441.20 | 440.24 | 8.82 | 6.94 |
| EL07XM2 7 | 2.25 | 39.00 | 3.00 | 1.00 | 59.00 | 61.11 | 452.56 | 417.12 | 7.36 | 7.84 |
| EL14XM3 14 | 1.93 | 33.60 | 3.00 | 1.00 | 71.21 | 63.74 | 450.16 | 455.68 | 7.30 | 8.69 |
| EL14XM1 14 | 2.19 | 39.10 | 3.00 | 1.00 | 66.62 | 69.46 | 426.88 | 435.28 | 8.88 | 9.65 |
| EL14XM2 14 | 2.11 | 36.40 | 3.00 | 1.00 | 76.41 | 74.31 | 458.32 | 479.12 | 7.58 | 9.62 |
| EL28XM2 28 | 2.29 | 39.60 | 3.00 | 1.00 | 69.43 | 65.88 | 485.04 | 489.40 | 8.28 | 8.81 |
| EL28XM3 28 | 2.46 | 42.40 | 3.00 | 1.00 | 64.06 | 65.04 | 467.28 | 489.20 | 8.75 | 7.91 |
| EL99XM1 28 | 2.17 | 37.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL28XM1 28 | 2.18 | 38.80 | 3.00 | 1.00 | 74.74 | 74.12 | 430.40 | 448.80 | 8.44 | 8.76 |
| EL56XM3 56 | * | 40.40 | 3.01 | 1.00 | 63.02 | 59.51 | 461.76 | 435.92 | 9.05 | 8.75 |
| EL56XM2 56 | * | 35.30 | 3.00 | 1.00 | 60.98 | 68.65 | 455.04 | 428.48 | 8.86 | 7.88 |
| EL56XM1 56 | 2.53 | 44.40 | 3.01 | 1.00 | 67.77 | 59.61 | 444.64 | 445.04 | 7.70 | 8.65 |
| EL99XM2 118 | 2.17 | 37.50 | 3.00 | 1.00 | * | * | * | * | * | * |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| EL99XM3 223 | 2.16 | 37.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99XM4 363 | 2.17 | 37.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99XM5 489 | 2.16 | 37.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| EL99XM6 609 | 2.16 | 37.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| EL99XM7 715 | 2.16 | 37.70 | 3.00 | 1.00 | 53.78 | * | 828.42 | * | * | * |

# EPDM : STATISTICS

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| EH01AM1 1 | 5 | 1.430 | 5 | 2.710 | 5 | 15.170 | 5 | 36.430 | 5 | 0.420 | 5 | 0.330 |
| EH07AM1 7 | 5 | 1.090 | 5 | 1.510 | 5 | 12.130 | 5 | 8.520 | 5 | 0.440 | 5 | 0.480 |
| EH14AM1 14 | 5 | 1.490 | 5 | 2.260 | 5 | 15.480 | 5 | 15.140 | 5 | 0.570 | 5 | 0.400 |
| EH28AM1 27 | 5 | 1.700 | 5 | 0.790 | 5 | 12.800 | 5 | 6.280 | 5 | 0.450 | 5 | 0.530 |
| EH56AM1 56 | 5 | 1.070 | 5 | 2.070 | 5 | 5.170 | 5 | 9.980 | 5 | * | 5 | 0.550 |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| EL01AM1 1 | 5 | 5.890 | 5 | 5.170 | 5 | 0.510 | 5 | 42.660 | 5 | 0.460 | 5 | 0.580 |
| EL01AM2 1 | 5 | 1.660 | 5 | 1.040 | 5 | 5.680 | 5 | 32.500 | 5 | 0.670 | 5 | 0.420 |
| EL01AM3 1 | 5 | 1.260 | 5 | 1.730 | 5 | 12.540 | 5 | 17.200 | 5 | 0.110 | 5 | 0.240 |
| EL07AM2 7 | 5 | 1.530 | 5 | 1.492 | 5 | 7.420 | 5 | 14.540 | 5 | 0.460 | 5 | 0.390 |
| EL07AM3 7 | 5 | 2.160 | 5 | 1.310 | 5 | 26.400 | 5 | 10.720 | 5 | 0.340 | 5 | 0.530 |
| EL07AM1 7 | 5 | 1.330 | 5 | 4.800 | 5 | 15.720 | 5 | 35.600 | 5 | 0.460 | 5 | 0.250 |
| EL14AM1 14 | 5 | 1.340 | 5 | 1.510 | 5 | 12.000 | 5 | 18.050 | 5 | 0.520 | 5 | 0.290 |
| EL14AM2 14 | 5 | 4.310 | 5 | 2.090 | 5 | 38.950 | 5 | 10.500 | 5 | 0.220 | 5 | 0.280 |
| EL14AM3 14 | 5 | 6.790 | 5 | 1.800 | 5 | 68.640 | 5 | 11.920 | 5 | 0.150 | 5 | 0.400 |
| EL28AM1 27 | 4 | 2.891 | 5 | 2.960 | 4 | 24.867 | 5 | 23.310 | 5 | 0.420 | 5 | 0.350 |
| EL28AM2 27 | 5 | 1.840 | 5 | 1.070 | 5 | 11.280 | 5 | 9.400 | 5 | 0.220 | 5 | 0.500 |
| EL28AM3 27 | 5 | 1.140 | 5 | 1.340 | 5 | 9.270 | 5 | 17.460 | 5 | 0.190 | 5 | 0.180 |
| EL56AM2 56 | 5 | 0.670 | 5 | 1.340 | 5 | 10.910 | 5 | 8.900 | 5 | 0.270 | 5 | 0.370 |
| EL56AM3 56 | 5 | 2.850 | 5 | 1.340 | 5 | 16.660 | 5 | 17.420 | 5 | 0.580 | 5 | 0.300 |
| EL56AM1 56 | 4 | 0.924 | 5 | 3.500 | 4 | 18.965 | 5 | 25.600 | 5 | 0.560 | 5 | 0.360 |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| EH01BM1 1 | 5 | 0.233 | 5 | 1.341 | 5 | 5.295 | 5 | 14.897 | 5 | 0.267 | 5 | 0.199 |
| EH07BM1 7 | 5 | 1.622 | 5 | 2.584 | 5 | 5.394 | 5 | 23.838 | 5 | 0.615 | 5 | 0.195 |
| EH14BM1 14 | 5 | 1.884 | 5 | 2.209 | 5 | 16.919 | 5 | 15.647 | 5 | 0.140 | 5 | 0.145 |
| EH28BM1 28 | 5 | 1.501 | 5 | 1.973 | 5 | 15.230 | 5 | 6.912 | 5 | 0.165 | 5 | 0.331 |
| EH56BM1 56 | 5 | 0.788 | 5 | 2.397 | 5 | 7.255 | 5 | 18.863 | 5 | 0.462 | 5 | 0.164 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| EL01BM2 1 | 5 | 7.860 | 5 | 2.261 | 5 | 66.481 | 5 | 23.665 | 5 | 0.541 | 5 | 0.199 |
| EL01BM3 1 | 5 | 3.744 | 5 | 2.270 | 5 | 15.270 | 5 | 3.607 | 5 | 0.305 | 5 | 0.264 |
| EL01BM1 1 | 5 | 3.636 | 5 | 3.848 | 5 | 20.888 | 5 | 5.599 | 5 | 0.442 | 5 | 0.487 |
| EL07BM2 7 | 5 | 1.440 | 5 | 4.091 | 5 | 10.932 | 5 | 24.932 | 5 | 0.089 | 5 | 0.256 |
| EL07BM1 7 | 5 | 0.758 | 5 | 1.912 | 5 | 9.795 | 5 | 12.903 | 5 | 0.473 | 5 | 0.373 |
| EL07BM3 7 | 5 | 4.243 | 5 | 1.552 | 5 | 39.601 | 5 | 10.315 | 5 | 0.191 | 5 | 0.068 |
| EL14BM1 14 | 5 | 1.311 | 5 | 1.860 | 5 | 14.878 | 5 | 20.130 | 5 | 0.125 | 5 | 0.207 |
| EL14BM2 14 | 5 | 4.373 | 5 | 4.502 | 5 | 48.380 | 5 | 30.578 | 5 | 0.074 | 5 | 0.530 |
| EL14BM3 14 | 5 | 1.434 | 5 | 2.475 | 5 | 50.995 | 5 | 21.452 | 5 | 0.063 | 5 | 0.162 |
| EL28BM1 28 | 5 | 1.302 | 5 | 2.695 | 5 | 9.894 | 5 | 29.491 | 5 | 0.268 | 5 | 0.243 |
| EL28BM2 28 | 5 | 1.199 | 5 | 1.419 | 5 | 9.207 | 5 | 7.965 | 5 | 0.649 | 5 | 0.778 |
| EL28BM3 28 | 5 | 3.351 | 5 | 1.329 | 5 | 20.586 | 5 | 10.946 | 5 | 0.471 | 5 | 0.119 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| EL56BM3 56 | 5 | 1.430 | 5 | 1.243 | 5 | 12.632 | 5 | 15.447 | 5 | 0.381 | 5 | 0.152 |
| EL56BM2 56 | 5 | 1.252 | 5 | 1.599 | 5 | 10.984 | 5 | 13.481 | 5 | 0.097 | 5 | 0.255 |
| EL56BM1 56 | 5 | 1.280 | 5 | 4.526 | 5 | 7.801 | 5 | 29.997 | 5 | 0.229 | 5 | 0.191 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| EH01DH1 1 | 5 | 1.325 | 5 | 1.013 | 5 | 14.391 | 5 | 15.144 | 5 | 0.343 | 5 | 0.205 |
| EH07DH1 7 | 5 | 1.960 | 5 | 1.860 | 5 | 13.380 | 5 | 16.830 | 5 | 0.380 | 5 | 0.250 |
| EH14DH1 14 | 5 | 1.610 | 5 | 1.730 | 5 | 20.380 | 5 | 6.030 | 5 | 0.270 | 5 | 0.230 |
| EH28DH1 28 | 5 | 1.913 | 5 | 2.931 | 5 | 7.512 | 5 | 10.406 | 5 | 0.239 | 5 | 0.170 |
| EH56DH1 56 | 5 | 4.322 | 5 | 5.173 | 5 | 10.449 | 5 | 10.549 | 5 | 0.168 | 5 | 0.251 |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| EL01DH2 1 | 5 | 1.289 | 5 | 3.254 | 5 | 29.019 | 5 | 26.410 | 5 | 0.162 | 5 | 0.117 |
| EL01DH3 1 | 5 | 3.279 | 5 | 1.809 | 5 | 19.227 | 5 | 9.355 | 5 | 0.176 | 5 | 0.176 |
| EL01DH1 1 | 5 | 3.341 | 5 | 1.957 | 5 | 19.916 | 5 | 23.919 | 5 | 0.178 | 5 | 0.120 |
| EL07DH1 7 | 5 | 1.850 | 5 | 1.320 | 5 | 10.380 | 5 | 23.500 | 5 | 0.590 | 5 | 0.570 |
| EL07DH3 7 | 5 | 3.150 | 0 | * | 5 | 22.500 | 0 | * | 5 | 0.210 | 5 | 0.380 |
| EL07DH2 7 | 5 | 3.700 | 5 | 1.510 | 5 | 41.000 | 5 | 20.200 | 5 | 0.600 | 5 | 0.120 |
| EL14DH1 14 | 5 | 1.940 | 5 | 1.680 | 0 | * | 0 | * | 5 | 0.240 | 5 | 0.250 |
| EL14DH3 14 | 5 | 2.970 | 5 | 1.950 | 5 | 9.130 | 5 | 19.200 | 5 | 0.160 | 5 | 0.190 |
| EL14DH2 14 | 5 | 0.940 | 5 | 1.900 | 5 | 11.550 | 5 | 13.900 | 5 | 0.180 | 5 | 0.210 |
| EL28DH1 28 | 5 | 0.318 | 5 | 1.033 | 5 | 13.156 | 5 | 6.083 | 5 | 0.096 | 5 | 0.054 |
| EL28DH2 28 | 5 | 2.644 | 5 | 2.060 | 5 | 35.408 | 5 | 28.355 | 5 | 0.206 | 5 | 0.327 |
| EL28DH3 28 | 5 | 8.737 | 5 | 8.550 | 5 | 16.016 | 5 | 14.938 | 5 | 0.463 | 5 | 0.291 |
| EL56DH2 56 | 5 | 1.802 | 5 | 1.317 | 5 | 23.583 | 5 | 11.040 | 5 | 0.328 | 5 | 0.338 |
| EL56DH3 56 | 5 | 3.659 | 5 | 3.798 | 5 | 17.263 | 5 | 18.396 | 5 | 0.406 | 5 | 0.337 |
| EL56DH1 56 | 5 | 4.394 | 5 | 2.529 | 5 | 38.550 | 5 | 6.387 | 5 | 0.287 | 5 | 0.125 |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| EH01DL1 1 | 5 | 2.293 | 5 | 1.434 | 5 | 25.717 | 5 | 12.886 | 5 | 0.306 | 5 | 0.129 |
| EH07DL1 7 | 5 | 2.230 | 5 | 1.180 | 5 | 16.730 | 5 | 11.340 | 5 | 0.170 | 5 | 0.490 |
| EH14DL1 14 | 5 | 2.460 | 5 | 3.910 | 0 | * | 0 | * | 5 | 0.230 | 5 | 0.070 |
| EH28DL1 28 | 5 | 3.546 | 5 | 1.331 | 5 | 16.809 | 5 | 18.151 | 5 | 0.201 | 5 | 0.123 |
| EH56DL1 56 | 5 | 0.689 | 5 | 1.927 | 5 | 17.301 | 5 | 8.032 | 5 | 0.300 | 5 | 0.286 |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| EL01DL3 1 | 5 | 3.128 | 5 | 3.206 | 5 | 14.447 | 5 | 14.897 | 5 | 0.101 | 5 | 0.179 |
| EL01DL2 1 | 5 | 1.308 | 5 | 2.139 | 5 | 10.936 | 5 | 11.501 | 5 | 0.221 | 5 | 0.535 |
| EL01DL1 1 | 5 | 1.666 | 5 | 0.993 | 5 | 39.123 | 5 | 7.272 | 5 | 0.190 | 5 | 0.104 |
| EL07DL2 7 | 5 | 1.810 | 5 | 3.100 | 5 | 10.370 | 5 | 16.740 | 5 | 0.100 | 5 | 0.250 |
| EL07DL1 7 | 5 | 1.130 | 5 | 1.090 | 5 | 8.580 | 5 | 14.430 | 5 | 0.340 | 5 | 0.330 |
| EL07DL3 7 | 5 | 1.520 | 5 | 2.010 | 5 | 12.270 | 5 | 44.560 | 5 | 0.230 | 5 | 0.460 |
| EL14DL2 14 | 5 | 2.400 | 5 | 2.460 | 5 | 30.100 | 5 | 18.500 | 5 | 0.238 | 5 | 0.179 |
| EL14DL1 14 | 5 | 1.400 | 5 | 2.200 | 0 | * | 0 | * | 5 | 0.280 | 5 | 0.300 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| EL14DL3 14 | 5 | 6.000 | 5 | 3.590 | 5 | 30.910 | 5 | 19.480 | 5 | 0.210 | 5 | 0.230 |
| EL28DL1 28 | 5 | 1.199 | 5 | 2.856 | 5 | 9.036 | 5 | 19.230 | 5 | 0.273 | 5 | 0.174 |
| EL28DL2 28 | 5 | 3.634 | 5 | 1.452 | 5 | 18.286 | 5 | 5.214 | 5 | 0.234 | 5 | 0.217 |
| EL28DL3 28 | 5 | 1.100 | 5 | 1.209 | 5 | 9.916 | 5 | 19.297 | 5 | 0.065 | 5 | 0.178 |
| EL56DL1 56 | 5 | 1.088 | 5 | 1.837 | 5 | 21.942 | 5 | 7.883 | 5 | 0.342 | 5 | 0.462 |
| EL56DL2 56 | 5 | 4.652 | 5 | 1.375 | 5 | 47.094 | 5 | 28.878 | 5 | 0.216 | 5 | 0.275 |
| EL56DL3 56 | 5 | 1.046 | 5 | 1.111 | 5 | 22.817 | 5 | 15.291 | 5 | 0.479 | 5 | 0.229 |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| EH01DM1 1 | 5 | 1.256 | 5 | 1.485 | 5 | 18.566 | 5 | 9.215 | 5 | 0.090 | 5 | 0.138 |
| EH07DM1 7 | 5 | 1.440 | 5 | 1.690 | 5 | 17.800 | 5 | 12.920 | 5 | 0.290 | 5 | 0.290 |
| EH14DM1 14 | 5 | 5.860 | 5 | 5.240 | 5 | 37.100 | 0 | * | 5 | 0.150 | 5 | 0.250 |
| EH28DM1 28 | 5 | 1.417 | 5 | 2.654 | 5 | 18.522 | 5 | 22.637 | 5 | 0.142 | 5 | 0.129 |
| EH56DM1 56 | 5 | 0.452 | 5 | 2.078 | 5 | 8.618 | 5 | 15.405 | 5 | 0.376 | 5 | 0.215 |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| EL01DM3 1 | 5 | 1.955 | 5 | 0.883 | 5 | 27.333 | 5 | 24.715 | 5 | 1.197 | 5 | 0.303 |
| EL01DM2 1 | 5 | 0.905 | 5 | 2.329 | 5 | 19.487 | 5 | 18.540 | 5 | 0.153 | 5 | 0.220 |
| EL01DM1 1 | 5 | 4.864 | 5 | 1.824 | 5 | 45.210 | 5 | 23.072 | 5 | 0.286 | 5 | 0.197 |
| EL07DM2 7 | 5 | 3.360 | 5 | 0.740 | 5 | 29.500 | 5 | 10.000 | 5 | 0.320 | 5 | 0.590 |
| EL07DM1 7 | 5 | 3.710 | 5 | 3.270 | 5 | 9.660 | 5 | 33.430 | 5 | 0.230 | 5 | 0.150 |
| EL07DM3 7 | 5 | 3.470 | 5 | 1.040 | 5 | 31.840 | 5 | 20.900 | 5 | 0.150 | 5 | 0.250 |
| EL14DM2 14 | 5 | 1.690 | 5 | 0.910 | 5 | 19.400 | 5 | 8.100 | 5 | 0.100 | 5 | 0.190 |
| EL14DM3 14 | 5 | 2.510 | 5 | 2.400 | 5 | 18.700 | 5 | 6.800 | 5 | 0.170 | 5 | 0.230 |
| EL14DM1 14 | 5 | 2.080 | 5 | 2.470 | 0 | * | 0 | * | 5 | 0.200 | 5 | 0.216 |
| EL28DM2 28 | 5 | 1.511 | 5 | 2.103 | 5 | 10.716 | 5 | 20.304 | 5 | 0.186 | 5 | 0.276 |
| EL28DM1 28 | 5 | 1.486 | 5 | 1.332 | 5 | 18.109 | 5 | 23.916 | 5 | 0.337 | 5 | 0.249 |
| EL28DM3 28 | 5 | 2.116 | 5 | 0.790 | 5 | 34.877 | 5 | 9.924 | 5 | 0.091 | 5 | 0.149 |
| EL56DM3 56 | 5 | 0.809 | 5 | 1.023 | 5 | 12.501 | 5 | 14.555 | 5 | 0.141 | 5 | 0.170 |
| EL56DM2 56 | 5 | 1.299 | 5 | 1.320 | 5 | 17.411 | 5 | 14.256 | 5 | 0.193 | 5 | 0.232 |
| EL56DM1 56 | 5 | 0.755 | 5 | 0.858 | 5 | 19.791 | 5 | 8.547 | 5 | 0.150 | 5 | 0.188 |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| EH01FH1 1 | 5 | 4.097 | 5 | 5.320 | 5 | 31.560 | 5 | 48.710 | 5 | 0.239 | 5 | 0.277 |
| EH07FH1 7 | 5 | 3.067 | 5 | 1.851 | 5 | 26.400 | 5 | 8.200 | 5 | 0.370 | 5 | 0.402 |
| EH14FH1 14 | 5 | 1.906 | 5 | 4.182 | 5 | 43.490 | 5 | 39.740 | 5 | 0.321 | 5 | 0.084 |
| EH28FH1 28 | 5 | 3.694 | 5 | 2.056 | 5 | 32.140 | 5 | 26.890 | 5 | 0.396 | 5 | 0.259 |
| EH56FH1 56 | 5 | 2.958 | 5 | 1.459 | 5 | 28.230 | 5 | 8.200 | 5 | 0.120 | 5 | 0.332 |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| EL01FH3 1 | 5 | 3.146 | 5 | 2.489 | 5 | 13.201 | 5 | 8.167 | 5 | 1.083 | 5 | 0.782 |
| EL01FH1 1 | 5 | 0.870 | 5 | 1.356 | 5 | 10.000 | 5 | 15.070 | 5 | 0.839 | 5 | 0.949 |
| EL01FH2 1 | 5 | 3.226 | 5 | 0.829 | 5 | 21.584 | 5 | 9.887 | 5 | 0.622 | 5 | 0.200 |
| EL07FH2 7 | 5 | 0.890 | 5 | 0.963 | 5 | 10.920 | 5 | 4.380 | 5 | 0.552 | 5 | 0.611 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| EL07FH3 7 | 5 | 2.270 | 5 | 0.358 | 5 | 26.830 | 5 | 8.940 | 5 | 0.624 | 5 | 1.657 |
| EL07FH1 7 | 5 | 2.418 | 5 | 1.918 | 5 | 33.750 | 5 | 50.230 | 5 | 0.631 | 5 | 0.730 |
| EL14FH2 14 | 5 | 3.633 | 5 | 1.711 | 5 | 20.510 | 5 | 23.080 | 5 | 0.216 | 5 | 0.044 |
| EL14FH1 14 | 5 | 2.704 | 5 | 2.748 | 5 | 39.940 | 5 | 21.240 | 5 | 0.192 | 5 | 0.152 |
| EL14FH3 14 | 5 | 4.320 | 5 | 2.870 | 5 | 27.330 | 5 | 1.790 | 5 | 0.245 | 5 | 0.126 |
| EL28FH3 28 | 5 | 2.809 | 5 | 0.669 | 5 | 46.850 | 5 | 16.400 | 5 | 0.212 | 5 | 0.195 |
| EL28FH1 28 | 5 | 1.080 | 5 | 2.440 | 5 | 7.500 | 5 | 30.800 | 5 | 0.243 | 5 | 0.329 |
| EL28FH2 28 | 5 | 1.775 | 5 | 1.403 | 5 | 12.460 | 5 | 32.200 | 5 | 0.179 | 5 | 0.187 |
| EL56FH2 56 | 5 | 5.356 | 5 | 3.622 | 5 | 25.980 | 5 | 25.610 | 5 | 0.371 | 5 | 0.332 |
| EL56FH1 56 | 5 | 3.041 | 5 | 2.390 | 5 | 9.960 | 5 | 29.180 | 5 | 0.200 | 5 | 0.182 |
| EL56FH3 56 | 5 | 2.308 | 5 | 4.112 | 5 | 33.660 | 5 | 36.220 | 5 | 0.186 | 5 | 0.217 |
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| EH01FL1 1 | 5 | 3.470 | 5 | 2.366 | 5 | 1.510 | 5 | 7.100 | 5 | 0.542 | 5 | 2.163 |
| EH07FL1 7 | 5 | 2.498 | 5 | 5.228 | 5 | 10.430 | 5 | 47.780 | 5 | 0.297 | 5 | 0.799 |
| EH14FL1 14 | 5 | 5.847 | 5 | 4.358 | 5 | 11.870 | 5 | 12.840 | 5 | 0.297 | 5 | 1.489 |
| EH28FL1 28 | 5 | 2.347 | 5 | 1.478 | 5 | 29.750 | 5 | 16.490 | 5 | 0.135 | 5 | 0.065 |
| EH56FL1 56 | 5 | 2.147 | 5 | 2.377 | 5 | 18.550 | 5 | 33.060 | 5 | 0.160 | 5 | 0.471 |
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| EL01FL3 1 | 5 | 2.628 | 5 | 4.325 | 5 | 19.335 | 5 | 14.330 | 5 | 0.472 | 5 | 1.794 |
| EL01FL2 1 | 5 | 3.414 | 5 | 0.495 | 5 | 28.792 | 5 | 11.155 | 5 | 0.117 | 5 | 2.994 |
| EL01FL1 1 | 5 | 3.262 | 5 | 1.978 | 5 | 18.365 | 5 | 13.027 | 5 | 0.353 | 5 | 0.838 |
| EL07FL2 7 | 5 | 1.324 | 5 | 0.829 | 5 | 4.480 | 5 | 19.920 | 5 | 0.084 | 5 | 0.658 |
| EL07FL1 7 | 5 | 1.489 | 5 | 2.265 | 5 | 33.820 | 5 | 5.930 | 5 | 0.611 | 5 | 0.607 |
| EL07FL3 7 | 5 | 3.638 | 5 | 2.143 | 5 | 29.200 | 5 | 15.770 | 5 | 0.359 | 5 | 0.977 |
| EL14FL2 14 | 5 | 2.390 | 5 | 2.608 | 5 | 4.900 | 5 | 15.650 | 5 | 0.297 | 5 | 0.261 |
| EL14FL3 14 | 5 | 2.972 | 5 | 1.720 | 5 | 65.480 | 5 | 13.680 | 5 | 0.245 | 5 | 0.245 |
| EL14FL1 14 | 5 | 3.893 | 5 | 3.700 | 5 | 21.430 | 5 | 5.660 | 5 | 0.171 | 5 | 0.806 |
| EL28FL2 28 | 5 | 1.931 | 5 | 1.951 | 5 | 17.570 | 5 | 20.780 | 5 | 0.126 | 5 | 0.114 |
| EL28FL1 28 | 5 | 2.514 | 5 | 2.291 | 5 | 20.860 | 5 | 15.900 | 5 | 0.342 | 5 | 0.195 |
| EL28FL3 28 | 5 | 2.780 | 5 | 2.238 | 5 | 11.800 | 5 | 22.380 | 5 | 0.148 | 5 | 0.152 |
| EL56FL3 56 | 5 | 6.167 | 5 | 1.035 | 5 | 68.060 | 5 | 13.450 | 5 | 0.262 | 5 | 0.179 |
| EL56FL2 56 | 5 | 3.142 | 5 | 2.305 | 5 | 45.130 | 5 | 23.660 | 5 | 0.254 | 5 | 0.217 |
| EL56FL1 56 | 5 | 2.393 | 5 | 1.857 | 5 | 17.340 | 5 | 24.430 | 5 | 0.286 | 5 | 0.249 |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| EH01FM1 1 | 5 | 1.851 | 5 | 1.953 | 5 | 8.602 | 5 | 22.925 | 5 | 0.590 | 5 | 1.342 |
| EH07FM1 7 | 5 | 2.013 | 5 | 3.131 | 5 | 11.400 | 5 | 23.900 | 5 | 0.342 | 5 | 0.683 |
| EH14FM1 14 | 5 | 2.179 | 5 | 2.455 | 5 | 11.100 | 5 | 12.130 | 5 | 0.557 | 5 | 0.898 |
| EH28FM1 28 | 5 | 4.040 | 5 | 2.806 | 5 | 52.730 | 5 | 17.800 | 5 | 0.411 | 5 | 0.182 |
| EH56FM1 56 | 5 | 2.653 | 5 | 1.753 | 5 | 26.520 | 5 | 12.840 | 5 | 0.144 | 5 | 0.074 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| EL01FM1 1 | 5 | 1.625 | 5 | 2.265 | 5 | 11.828 | 5 | 9.235 | 5 | 0.445 | 5 | 1.578 |
| EL01FM2 1 | 5 | 0.974 | 5 | 1.290 | 5 | 6.447 | 5 | 10.283 | 5 | 0.850 | 5 | 0.921 |
| EL01FM3 1 | 5 | 3.520 | 5 | 3.273 | 5 | 17.410 | 5 | 24.692 | 5 | 1.310 | 5 | 1.310 |
| EL07FM3 7 | 5 | 2.257 | 5 | 1.117 | 5 | 18.710 | 5 | 13.970 | 5 | 0.327 | 5 | 0.681 |
| EL07FM2 7 | 5 | 2.305 | 5 | 1.990 | 5 | 17.530 | 5 | 16.150 | 5 | 0.217 | 5 | 1.426 |
| EL07FM1 7 | 5 | 1.757 | 5 | 0.548 | 5 | 10.950 | 5 | 25.080 | 5 | 0.328 | 5 | 1.234 |
| EL14FM1 14 | 5 | 2.787 | 5 | 1.604 | 5 | 19.920 | 5 | 32.000 | 5 | 0.589 | 5 | 1.330 |
| EL14FM2 14 | 5 | 2.567 | 5 | 3.615 | 5 | 10.950 | 5 | 51.410 | 5 | 0.130 | 5 | 0.110 |
| EL14FM3 14 | 5 | 1.980 | 5 | 2.165 | 5 | 24.750 | 5 | 16.170 | 5 | 0.192 | 5 | 0.303 |
| EL28FM2 28 | 5 | 1.020 | 5 | 1.425 | 5 | 16.590 | 5 | 16.730 | 5 | 0.152 | 5 | 0.279 |
| EL28FM3 28 | 5 | 1.265 | 5 | 1.720 | 5 | 3.580 | 5 | 10.810 | 5 | 0.192 | 5 | 0.207 |
| EL28FM1 28 | 5 | 2.373 | 5 | 1.487 | 5 | 22.160 | 5 | 16.490 | 5 | 0.161 | 5 | 0.230 |
| EL56FM1 56 | 5 | 1.277 | 5 | 3.400 | 5 | 13.740 | 5 | 36.220 | 5 | 0.320 | 5 | 0.404 |
| EL56FM2 56 | 5 | 1.368 | 5 | 3.378 | 5 | 15.390 | 5 | 30.540 | 5 | 0.285 | 5 | 0.266 |
| EL56FM3 56 | 5 | 4.036 | 5 | 2.865 | 5 | 51.410 | 5 | 27.940 | 5 | 0.371 | 5 | 0.480 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| EH01MH1 1 | 5 | 1.840 | 5 | 3.810 | 5 | 9.260 | 5 | 60.370 | 5 | 0.510 | 5 | 0.660 |
| EH07MH1 7 | 5 | 2.373 | 5 | 3.118 | 5 | 12.010 | 5 | 7.473 | 5 | 0.447 | 5 | 0.748 |
| EH14MH1 14 | 5 | 2.086 | 5 | 2.162 | 5 | 12.540 | 5 | 17.680 | 5 | 0.583 | 5 | 0.910 |
| EH28MH1 28 | 5 | 1.361 | 5 | 0.802 | 5 | 18.102 | 5 | 10.325 | 5 | 0.474 | 5 | 0.408 |
| EH56MH1 57 | 5 | 1.440 | 5 | 1.307 | 5 | 11.770 | 5 | 7.910 | 5 | 0.310 | 5 | 0.574 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| EL01MH1 1 | 5 | 2.370 | 5 | 3.128 | 5 | 10.310 | 5 | 21.158 | 5 | 0.179 | 5 | 0.303 |
| EL01MH3 1 | 5 | 1.129 | 5 | 2.566 | 5 | 9.535 | 5 | 13.493 | 5 | 0.219 | 5 | 0.335 |
| EL01MH2 1 | 5 | 1.338 | 5 | 3.422 | 5 | 13.466 | 5 | 24.350 | 5 | 0.252 | 5 | 0.179 |
| EL07MH3 7 | 5 | 1.042 | 5 | 0.911 | 5 | 14.490 | 5 | 15.410 | 5 | 0.681 | 5 | 0.555 |
| EL07MH1 7 | 5 | 1.315 | 5 | 1.960 | 5 | 12.995 | 5 | 18.280 | 5 | 0.447 | 5 | 0.460 |
| EL07MH2 7 | 5 | 2.007 | 5 | 2.359 | 5 | 12.640 | 5 | 8.130 | 5 | 0.374 | 5 | 0.607 |
| EL14MH1 14 | 5 | 2.084 | 5 | 1.909 | 5 | 14.026 | 5 | 8.859 | 5 | 0.841 | 5 | 0.400 |
| EL14MH2 14 | 5 | 2.652 | 5 | 2.591 | 5 | 25.240 | 5 | 19.970 | 5 | 0.490 | 5 | 0.890 |
| EL14MH3 14 | 5 | 1.658 | 5 | 3.861 | 5 | 8.235 | 5 | 23.869 | 5 | 0.540 | 5 | 0.623 |
| EL28MH2 28 | 5 | 3.156 | 4 | 1.030 | 5 | 24.169 | 4 | 11.048 | 5 | 0.312 | 5 | 0.378 |
| EL28MH3 28 | 5 | 1.217 | 5 | 0.752 | 5 | 17.114 | 5 | 10.273 | 5 | 0.579 | 5 | 0.249 |
| EL28MH1 28 | 5 | 2.390 | 5 | 2.383 | 5 | 32.098 | 5 | 26.901 | 5 | 0.557 | 5 | 0.549 |
| EL56MH1 57 | 5 | 2.480 | 5 | 1.950 | 5 | 12.890 | 5 | 9.690 | 5 | 0.236 | 5 | 0.375 |
| EL56MH2 57 | 5 | 2.070 | 5 | 1.065 | 5 | 31.368 | 5 | 14.764 | 5 | 0.237 | 5 | 0.227 |
| EL56MH3 57 | 5 | 1.679 | 5 | 2.290 | 5 | 11.191 | 5 | 11.113 | 5 | 0.368 | 5 | 0.403 |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| EH01ML1 1 | 5 | 3.316 | 5 | 1.260 | 5 | 39.050 | 5 | 31.860 | 5 | 0.383 | 5 | 0.230 |
| EH07ML1 7 | 5 | 3.077 | 5 | 3.726 | 5 | 21.183 | 5 | 18.997 | 5 | 0.694 | 5 | 0.424 |
| EH14ML1 14 | 5 | 1.071 | 5 | 3.118 | 5 | 15.810 | 5 | 7.210 | 5 | 0.228 | 5 | 0.576 |
| EH28ML1 28 | 5 | 2.890 | 5 | 1.411 | 5 | 25.584 | 5 | 10.224 | 5 | 0.263 | 5 | 0.184 |
| EH56ML1 57 | 5 | 2.420 | 5 | 3.140 | 5 | 5.210 | 5 | 15.870 | 5 | 0.326 | 5 | 0.602 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| EL01ML2 1 | 5 | 2.620 | 5 | 3.100 | 5 | 16.300 | 5 | 29.100 | 5 | 0.330 | 5 | 0.434 |
| EL01ML3 1 | 5 | 4.210 | 5 | 3.270 | 5 | 18.560 | 5 | 28.300 | 5 | 0.300 | 5 | 0.360 |
| EL01ML1 1 | 5 | 1.750 | 5 | 2.650 | 5 | 4.450 | 5 | 17.900 | 5 | 0.580 | 5 | 0.240 |
| EL07ML1 7 | 5 | 1.753 | 5 | 2.160 | 5 | 20.940 | 5 | 20.410 | 5 | 0.358 | 5 | 0.261 |
| EL07ML3 7 | 5 | 1.919 | 5 | 3.327 | 5 | 10.663 | 5 | 20.108 | 5 | 0.800 | 5 | 0.400 |
| EL07ML2 7 | 5 | 2.373 | 5 | 1.438 | 5 | 6.630 | 5 | 25.108 | 5 | 0.748 | 5 | 0.363 |
| EL14ML2 14 | 5 | 1.131 | 5 | 1.876 | 5 | 10.510 | 5 | 17.202 | 5 | 0.473 | 5 | 0.385 |
| EL14ML3 14 | 5 | 2.425 | 5 | 2.303 | 5 | 21.498 | 5 | 8.680 | 5 | 0.456 | 5 | 0.490 |
| EL14ML1 14 | 5 | 1.315 | 5 | 1.992 | 5 | 9.155 | 5 | 19.049 | 5 | 0.529 | 5 | 0.490 |
| EL28ML3 28 | 5 | 2.879 | 5 | 3.532 | 5 | 16.817 | 5 | 10.850 | 5 | 0.156 | 5 | 0.497 |
| EL28ML2 28 | 5 | 3.049 | 5 | 2.124 | 5 | 25.552 | 5 | 20.287 | 5 | 0.333 | 5 | 0.331 |
| EL28ML1 28 | 5 | 5.953 | 5 | 3.519 | 5 | 63.711 | 5 | 29.333 | 5 | 0.199 | 5 | 0.312 |
| EL56ML1 57 | 5 | 1.790 | 5 | 1.770 | 5 | 23.730 | 5 | 18.398 | 5 | 0.360 | 5 | 0.272 |
| EL56ML3 57 | 5 | 1.530 | 5 | 3.930 | 5 | 28.860 | 5 | 35.300 | 5 | 0.398 | 5 | 0.570 |
| EL56ML2 57 | 5 | 3.320 | 5 | 2.160 | 5 | 21.560 | 5 | 17.024 | 5 | 0.350 | 5 | 0.404 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| EH01MM1 1 | 5 | 3.320 | 5 | 2.430 | 5 | 15.200 | 5 | 10.550 | 5 | 0.170 | 5 | 0.410 |
| EH07MM1 7 | 5 | 1.910 | 5 | 1.310 | 5 | 21.420 | 5 | 5.760 | 5 | 0.464 | 5 | 0.502 |
| EH14MM1 14 | 5 | 1.910 | 5 | 2.690 | 5 | 10.046 | 5 | 33.350 | 5 | 1.220 | 5 | 0.576 |
| EH28MM1 28 | 5 | 2.436 | 5 | 2.872 | 5 | 19.850 | 5 | 22.312 | 5 | 0.215 | 5 | 0.108 |
| EH56MM1 57 | 5 | 4.450 | 5 | 3.630 | 5 | 23.480 | 5 | 14.070 | 5 | 0.310 | 5 | 0.170 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| EL01MM3 1 | 5 | 2.750 | 5 | 2.850 | 5 | 27.150 | 5 | 29.290 | 5 | 0.300 | 5 | 0.330 |
| EL01MM2 1 | 5 | 2.930 | 5 | 4.560 | 5 | 9.420 | 5 | 44.040 | 5 | 0.260 | 5 | 0.410 |
| EL01MM1 1 | 5 | 0.670 | 5 | 0.710 | 5 | 7.220 | 5 | 10.160 | 5 | 0.300 | 5 | 0.330 |
| EL07MM1 7 | 5 | 3.269 | 5 | 0.353 | 5 | 31.780 | 5 | 6.870 | 5 | 0.677 | 5 | 0.548 |
| EL07MM2 7 | 5 | 2.069 | 5 | 2.737 | 5 | 15.950 | 5 | 18.230 | 5 | 0.400 | 5 | 0.179 |
| EL07MM3 7 | 0 | * | 0 | * | 0 | * | 0 | * | 5 | 0.329 | 5 | 0.713 |
| EL14MM3 14 | 5 | 3.374 | 5 | 2.160 | 5 | 13.900 | 5 | 21.390 | 5 | 1.170 | 5 | 1.213 |
| EL14MM1 14 | 5 | 2.160 | 5 | 2.358 | 5 | 13.218 | 5 | 24.276 | 5 | 0.576 | 5 | 0.447 |
| EL14MM2 14 | 5 | 1.454 | 5 | 1.640 | 5 | 9.260 | 5 | 22.147 | 5 | 0.261 | 5 | 0.280 |
| EL28MM2 28 | 5 | 7.544 | 5 | 2.759 | 5 | ****** | 5 | 18.398 | 5 | 0.282 | 5 | 0.699 |
| EL28MM1 28 | 5 | 1.000 | 5 | 1.115 | 5 | 9.847 | 5 | 9.653 | 5 | 0.218 | 5 | 0.381 |
| EL28MM3 28 | 5 | 0.780 | 5 | 6.030 | 5 | 11.332 | 5 | 50.397 | 5 | 0.351 | 5 | 0.207 |
| EL56MM1 57 | 5 | 3.059 | 5 | 0.936 | 5 | 22.508 | 5 | 4.880 | 5 | 0.243 | 5 | 0.355 |
| EL56MM2 57 | 5 | 4.144 | 5 | 3.740 | 5 | 26.910 | 5 | 29.960 | 5 | 0.437 | 5 | 0.330 |
| EL56MM3 57 | 5 | 0.860 | 5 | 4.370 | 5 | 4.880 | 5 | 11.410 | 5 | 0.420 | 5 | 0.593 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| EH01OM1 1 | 5 | 3.613 | 5 | 3.585 | 5 | 14.283 | 5 | 16.046 | 5 | 0.338 | 5 | 0.518 |
| EH07OM1 7 | 5 | 1.193 | 5 | 1.352 | 5 | 14.290 | 5 | 15.083 | 5 | 0.624 | 5 | 0.765 |
| EH14OM1 14 | 5 | 4.320 | 5 | 4.761 | 5 | 33.520 | 5 | 10.007 | 5 | 0.334 | 5 | 0.515 |
| EH28OM1 28 | 5 | 4.400 | 5 | 2.800 | 5 | 20.000 | 5 | 20.000 | 5 | 0.100 | 5 | 0.300 |
| EH56OM1 56 | 5 | 1.151 | 5 | 1.118 | 5 | 10.801 | 5 | 14.783 | 5 | 0.248 | 5 | 0.348 |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| EL01OM3 1 | 5 | 0.925 | 5 | 1.965 | 5 | 18.584 | 5 | 10.980 | 5 | 0.195 | 5 | 0.151 |
| EL01OM1 1 | 5 | 4.419 | 5 | 4.280 | 5 | 27.944 | 5 | 25.976 | 5 | 0.495 | 5 | 0.717 |
| EL01OM2 1 | 5 | 1.114 | 5 | 2.697 | 5 | 5.058 | 5 | 18.360 | 5 | 0.197 | 5 | 0.246 |
| EL07OM2 7 | 5 | 1.396 | 5 | 2.500 | 5 | 7.704 | 5 | 24.241 | 5 | 0.162 | 5 | 0.409 |
| EL07OM3 7 | 5 | 2.298 | 5 | 2.292 | 5 | 25.225 | 5 | 21.071 | 5 | 0.432 | 5 | 1.272 |
| EL07OM1 7 | 5 | 1.134 | 5 | 0.601 | 5 | 72.356 | 5 | 11.819 | 5 | 0.838 | 5 | 0.453 |
| EL14OM1 14 | 5 | 4.634 | 5 | 4.143 | 5 | 15.434 | 5 | 12.390 | 5 | 0.161 | 5 | 0.291 |
| EL14OM2 14 | 5 | 0.451 | 5 | 0.722 | 5 | 7.600 | 5 | 9.885 | 5 | 0.467 | 5 | 0.617 |
| EL14OM3 14 | 5 | 2.278 | 5 | 0.705 | 5 | 21.171 | 5 | 15.382 | 5 | 0.242 | 5 | 0.217 |
| EL28OM2 28 | 5 | 1.199 | 5 | 2.491 | 5 | 11.957 | 5 | 11.068 | 5 | 0.968 | 5 | 0.225 |
| EL28OM1 28 | 5 | 5.200 | 5 | 3.200 | 5 | 52.000 | 5 | 28.000 | 5 | 0.300 | 5 | 0.300 |
| EL28OM3 28 | 5 | 2.969 | 5 | 2.546 | 5 | 12.933 | 5 | 10.010 | 5 | 0.531 | 5 | 0.395 |
| EL56OM2 56 | 5 | 3.649 | 5 | 2.263 | 5 | 59.126 | 5 | 9.564 | 5 | 0.283 | 5 | 0.228 |
| EL56OM3 56 | 5 | 5.408 | 5 | 3.025 | 5 | 8.157 | 5 | 3.425 | 5 | 0.303 | 5 | 0.219 |
| EL56OM1 56 | 5 | 5.978 | 5 | 1.096 | 5 | 35.696 | 5 | 7.155 | 5 | 0.127 | 5 | 0.259 |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| EH01OP1 1 | 5 | 3.974 | 5 | 2.286 | 5 | 19.955 | 5 | 23.833 | 5 | 1.103 | 5 | 0.305 |
| EH07OP1 7 | 5 | 1.200 | 5 | 1.200 | 5 | 7.500 | 8 | 7.500 | 5 | 0.220 | 5 | 0.290 |
| EH14OP1 14 | 5 | 0.800 | 5 | 0.640 | 5 | 7.500 | 5 | 7.000 | 5 | 0.110 | 5 | 0.280 |
| EH28OP1 28 | 5 | 1.101 | 5 | 1.072 | 5 | 8.273 | 5 | 18.660 | 5 | 0.669 | 5 | 0.825 |
| EH56OP1 56 | 5 | 0.800 | 5 | 1.000 | 5 | 9.637 | 5 | 13.776 | 5 | 5.980 | 5 | 0.931 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| EL01OP1 1 | 5 | 3.599 | 5 | 1.880 | 5 | 29.332 | 5 | 16.142 | 5 | 11.010 | 5 | 0.483 |
| EL01OP3 1 | 5 | 1.577 | 5 | 1.361 | 5 | 18.140 | 5 | 9.080 | 5 | 8.418 | 5 | 8.882 |
| EL01OP2 1 | 5 | 0.847 | 5 | 9.361 | 5 | 16.431 | 5 | 69.747 | 5 | 0.459 | 5 | 0.433 |
| EL07OP2 7 | 5 | 1.228 | 5 | 1.228 | 5 | 11.242 | 5 | 11.242 | 5 | 3.310 | 5 | 3.310 |
| EL07OP3 7 | 5 | 1.499 | 5 | 1.086 | 5 | 15.340 | 5 | 15.612 | 5 | 7.122 | 5 | 0.353 |
| EL07OP1 7 | 5 | 4.800 | 5 | 4.400 | 5 | 25.000 | 5 | 35.000 | 5 | 0.700 | 5 | 0.250 |
| EL14OP1 14 | 5 | 2.000 | 5 | 2.000 | 5 | 10.000 | 5 | 7.500 | 5 | 0.200 | 5 | 0.110 |
| EL14OP2 14 | 5 | 3.966 | 5 | 2.010 | 5 | 17.220 | 5 | 9.581 | 5 | 0.990 | 5 | 0.990 |
| EL14OP3 14 | 5 | 3.831 | 5 | 1.900 | 5 | 20.836 | 5 | 10.600 | 5 | 1.850 | 5 | 1.273 |
| EL28OP1 28 | 5 | 2.034 | 5 | 3.224 | 5 | 22.444 | 5 | 24.861 | 5 | 6.334 | 5 | 0.540 |
| EL28OP2 28 | 5 | 0.480 | 5 | 1.036 | 5 | 6.693 | 5 | 7.276 | 5 | 1.284 | 5 | 0.960 |
| EL28OP3 28 | 5 | 0.578 | 4 | 0.796 | 5 | 56.254 | 4 | 7.470 | 5 | 0.243 | 5 | 0.230 |
| EL56OP3 55 | 5 | 0.912 | 5 | 3.640 | 5 | 7.310 | 5 | 26.863 | 5 | 0.303 | 5 | 0.363 |
| EL56OP2 55 | 5 | 0.716 | 5 | 0.800 | 5 | 7.086 | 5 | 7.403 | 5 | 0.219 | 5 | 0.415 |
| EL56OP1 56 | 5 | 0.912 | 5 | 0.912 | 5 | 6.912 | 5 | 6.912 | 5 | 0.510 | 5 | 0.510 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PHENOL 8.0% 50°C | | | | | | | | |
| EH01PH1 1 | 5 | 3.460 | 5 | 4.100 | 5 | 12.220 | 5 | 19.590 | 5 | 0.250 | 5 | 0.050 |
| EH07PH1 7 | 5 | 1.330 | 5 | 2.340 | 5 | 9.630 | 5 | 11.440 | 5 | 0.340 | 5 | 0.170 |
| EH14PH1 14 | 5 | 2.010 | 5 | 1.140 | 5 | 18.200 | 5 | 19.240 | 5 | 0.120 | 5 | 0.290 |
| EH28PH1 28 | 5 | 2.159 | 5 | 2.802 | 5 | 5.196 | 5 | 12.007 | 5 | 0.216 | 5 | 0.129 |
| EH56PH1 56 | 5 | 3.518 | 5 | 3.110 | 5 | 21.932 | 5 | 7.050 | 5 | 0.151 | 5 | 0.251 |
| | | | | PHENOL 8.0% 23°C | | | | | | | | |
| EL01PH3 1 | 5 | 2.393 | 5 | 2.082 | 5 | 8.662 | 5 | 7.360 | 5 | 0.168 | 5 | 0.433 |
| EL01PH1 1 | 5 | 0.818 | 5 | 1.697 | 5 | 6.124 | 5 | 11.155 | 5 | 0.204 | 5 | 0.188 |
| EL01PH2 1 | 5 | 0.748 | 5 | 0.909 | 5 | 11.726 | 5 | 15.999 | 5 | 0.191 | 5 | 0.149 |
| EL07PH2 7 | 5 | 2.039 | 5 | 1.551 | 5 | 7.510 | 5 | 12.034 | 5 | 0.281 | 5 | 0.163 |
| EL07PH3 7 | 5 | 1.059 | 5 | 1.055 | 5 | 8.433 | 5 | 9.373 | 5 | 0.117 | 5 | 0.231 |
| EL07PH1 7 | 5 | 2.820 | 5 | 4.300 | 5 | 17.530 | 5 | 8.550 | 5 | 0.157 | 5 | 0.276 |
| EL14PH1 14 | 5 | 1.130 | 5 | 1.910 | 5 | 15.680 | 5 | 24.360 | 5 | 0.151 | 5 | 0.180 |
| EL14PH3 14 | 5 | 1.929 | 5 | 1.675 | 5 | 12.859 | 5 | 8.932 | 5 | 0.095 | 5 | 0.269 |
| EL14PH2 14 | 5 | 1.425 | 5 | 1.808 | 5 | 13.595 | 5 | 14.448 | 5 | 0.118 | 5 | 0.341 |
| EL28PH3 28 | 5 | 3.410 | 5 | 2.670 | 5 | 14.714 | 5 | 13.865 | 5 | 0.141 | 5 | 0.186 |
| EL28PH1 28 | 5 | 9.378 | 5 | 7.919 | 5 | 25.137 | 5 | 12.742 | 5 | 0.238 | 5 | 0.266 |
| EL28PH2 28 | 5 | 1.714 | 5 | 3.024 | 5 | 14.127 | 5 | 34.615 | 5 | 0.214 | 5 | 0.180 |
| EL56PH1 56 | 5 | 3.673 | 5 | 2.346 | 5 | 16.030 | 5 | 8.248 | 5 | 0.268 | 5 | 0.170 |
| EL56PH2 56 | 5 | 1.274 | 5 | 2.397 | 5 | 20.968 | 5 | 11.035 | 5 | 0.384 | 5 | 0.151 |
| EL56PH3 56 | 5 | 2.020 | 5 | 1.640 | 5 | 26.650 | 5 | 17.450 | 5 | 0.294 | 5 | 0.278 |
| | | | | PHENOL 1.0% 50°C | | | | | | | | |
| EH01PL1 1 | 5 | 2.900 | 5 | 2.000 | 5 | 13.420 | 5 | 15.320 | 5 | 0.103 | 5 | 0.110 |
| EH07PL1 7 | 5 | 4.313 | 5 | 3.675 | 5 | 12.402 | 5 | 13.984 | 5 | 0.167 | 5 | 0.228 |
| EH14PL1 14 | 5 | 0.445 | 5 | 1.930 | 5 | 17.280 | 5 | 26.480 | 5 | 0.270 | 5 | 0.450 |
| EH28PL1 28 | 5 | 3.272 | 5 | 1.212 | 5 | 41.967 | 5 | 15.721 | 5 | 0.131 | 5 | 0.176 |
| EH56PL1 56 | 5 | 2.455 | 5 | 2.310 | 5 | 7.379 | 5 | 14.610 | 5 | 0.167 | 5 | 0.453 |
| | | | | PHENOL 1.0% 23°C | | | | | | | | |
| EL01PL1 1 | 5 | 5.900 | 5 | 2.891 | 5 | 41.600 | 5 | 4.889 | 5 | 0.250 | 5 | 0.203 |
| EL01PL3 1 | 5 | 2.717 | 5 | 2.565 | 5 | 10.296 | 5 | 12.322 | 5 | 0.134 | 5 | 0.280 |
| EL01PL2 1 | 5 | 11.472 | 5 | 13.325 | 5 | 34.133 | 5 | 40.608 | 5 | 0.144 | 5 | 0.314 |
| EL07PL2 7 | 5 | 2.701 | 5 | 1.922 | 5 | 31.784 | 5 | 22.673 | 5 | 0.237 | 5 | 0.250 |
| EL07PL1 7 | 5 | 4.860 | 5 | 5.130 | 5 | 10.810 | 5 | 8.970 | 5 | 0.148 | 5 | 0.140 |
| EL07PL3 7 | 5 | 1.182 | 5 | 2.288 | 5 | 20.576 | 5 | 8.207 | 5 | 0.315 | 5 | 0.076 |
| EL14PL2 14 | 5 | 3.684 | 5 | 2.027 | 5 | 28.212 | 5 | 19.745 | 5 | 0.221 | 5 | 0.279 |
| EL14PL1 14 | 5 | 7.870 | 5 | 3.010 | 5 | 20.920 | 5 | 6.000 | 5 | 0.320 | 5 | 0.390 |
| EL14PL3 14 | 5 | 0.777 | 5 | 2.524 | 5 | 20.453 | 5 | 34.111 | 5 | 0.199 | 5 | 0.168 |
| EL28PL2 28 | 5 | 1.762 | 5 | 1.407 | 5 | 20.543 | 5 | 18.585 | 5 | 0.290 | 5 | 0.147 |
| EL28PL3 28 | 5 | 1.232 | 5 | 2.203 | 5 | 17.935 | 5 | 6.344 | 5 | 0.165 | 5 | 0.133 |
| EL28PL1 28 | 5 | 1.350 | 5 | 3.501 | 5 | 18.277 | 5 | 40.166 | 5 | 0.238 | 5 | 0.145 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| EL56PL3 56 | 5 | 0.994 | 5 | 3.510 | 5 | 11.990 | 5 | 17.730 | 5 | 0.159 | 5 | 0.275 |
| EL56PL1 56 | 5 | 1.943 | 5 | 3.626 | 5 | 10.916 | 5 | 15.806 | 5 | 0.397 | 5 | 0.208 |
| EL56PL2 56 | 5 | 0.673 | 5 | 3.460 | 5 | 10.710 | 5 | 18.660 | 5 | 0.102 | 5 | 0.340 |
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| EH01PM1 1 | 5 | 1.690 | 5 | 1.420 | 5 | 6.460 | 5 | 19.460 | 5 | 0.180 | 5 | 0.203 |
| EH07PM1 7 | 5 | 1.281 | 5 | 1.426 | 5 | 21.376 | 5 | 21.247 | 5 | 0.173 | 5 | 0.244 |
| EH14PM1 14 | 5 | 2.050 | 5 | 2.150 | 5 | 10.480 | 5 | 14.690 | 5 | 0.210 | 5 | 0.280 |
| EH28PM1 28 | 5 | 0.936 | 5 | 1.411 | 5 | 8.132 | 5 | 15.212 | 5 | 0.251 | 5 | 0.130 |
| EH56PM1 56 | 5 | 0.681 | 5 | 2.484 | 5 | 16.861 | 5 | 12.342 | 5 | 0.106 | 5 | 0.101 |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| EL01PM1 1 | 5 | 3.023 | 5 | 3.324 | 5 | 21.264 | 5 | 20.400 | 5 | 0.057 | 5 | 0.200 |
| EL01PM2 1 | 5 | 1.333 | 5 | 1.395 | 5 | 9.907 | 5 | 10.384 | 5 | 0.422 | 5 | 0.093 |
| EL01PM3 1 | 5 | 4.135 | 5 | 3.825 | 5 | 15.816 | 5 | 6.996 | 5 | 0.411 | 5 | 0.469 |
| EL07PM1 7 | 5 | 4.280 | 5 | 4.690 | 5 | 26.890 | 5 | 35.100 | 5 | 0.130 | 5 | 0.212 |
| EL07PM3 7 | 5 | 1.400 | 5 | 2.330 | 5 | 16.600 | 5 | 10.740 | 5 | 0.102 | 5 | 0.163 |
| EL07PM2 7 | 5 | 2.710 | 5 | 2.078 | 5 | 15.380 | 5 | 16.616 | 5 | 0.165 | 5 | 0.232 |
| EL14PM2 14 | 5 | 0.370 | 5 | 1.001 | 5 | 24.410 | 5 | 20.560 | 5 | 0.103 | 5 | 0.054 |
| EL14PM1 14 | 5 | 2.096 | 5 | 2.690 | 5 | 13.470 | 5 | 7.660 | 5 | 0.233 | 5 | 0.290 |
| EL14PM3 14 | 5 | 2.610 | 5 | 3.404 | 5 | 36.585 | 5 | 12.049 | 5 | 0.158 | 5 | 0.270 |
| EL28PM2 28 | 5 | 2.175 | 5 | 3.273 | 5 | 19.139 | 5 | 25.599 | 5 | 0.181 | 5 | 0.208 |
| EL28PM3 28 | 5 | 1.047 | 5 | 3.189 | 5 | 11.618 | 5 | 8.609 | 5 | 0.295 | 5 | 0.157 |
| EL28PM1 28 | 5 | 3.681 | 5 | 4.267 | 5 | 30.421 | 5 | 40.393 | 5 | 0.267 | 5 | 0.105 |
| EL56PM3 56 | 5 | 1.290 | 5 | 1.080 | 5 | 15.390 | 5 | 10.150 | 5 | 0.307 | 5 | 0.070 |
| EL56PM2 56 | 5 | 1.830 | 5 | 1.230 | 5 | 11.450 | 5 | 14.520 | 5 | 0.230 | 5 | 0.220 |
| EL56PM1 56 | 5 | 1.708 | 5 | 0.441 | 5 | 14.356 | 5 | 8.213 | 5 | 0.227 | 5 | 0.131 |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| EH01SH1 1 | 5 | 4.307 | 5 | 2.113 | 5 | 20.332 | 5 | 13.413 | 5 | 0.320 | 5 | 0.089 |
| EH07SH1 7 | 5 | 1.222 | 5 | 0.788 | 5 | 17.010 | 5 | 6.850 | 5 | 0.250 | 5 | 0.170 |
| EH14SH1 14 | 5 | 3.800 | 5 | 3.990 | 5 | 35.000 | 5 | 7.660 | 5 | 0.228 | 5 | 0.670 |
| EH28SH1 28 | 5 | 1.725 | 5 | 2.694 | 5 | 17.100 | 5 | 18.620 | 5 | 0.348 | 5 | 0.415 |
| EH56SH1 56 | 5 | 1.763 | 5 | 2.528 | 5 | 9.721 | 5 | 11.678 | 5 | 0.166 | 5 | 0.499 |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| EL01SH1 1 | 5 | 1.020 | 5 | 1.234 | 5 | 12.329 | 5 | 17.926 | 5 | 0.290 | 5 | 0.478 |
| EL01SH2 1 | 5 | 4.400 | 5 | 4.400 | 5 | 28.000 | 5 | 7.500 | 5 | 0.250 | 5 | 0.250 |
| EL01SH3 1 | 5 | 3.600 | 5 | 1.600 | 5 | 28.000 | 5 | 20.000 | 5 | 0.310 | 5 | 0.200 |
| EL07SH1 7 | 5 | 2.239 | 5 | 0.947 | 5 | 8.023 | 5 | 10.606 | 5 | 0.256 | 5 | 0.225 |
| EL07SH3 7 | 5 | 3.227 | 5 | 2.922 | 5 | 10.479 | 5 | 8.147 | 5 | 0.204 | 5 | 0.280 |
| EL07SH2 7 | 5 | 6.565 | 5 | 4.998 | 5 | 40.805 | 5 | 27.284 | 5 | 0.090 | 5 | 0.257 |
| EL14SH3 14 | 5 | 3.367 | 5 | 2.752 | 5 | 10.989 | 5 | 22.197 | 5 | 0.135 | 5 | 0.023 |
| EL14SH2 14 | 5 | 2.693 | 5 | 1.241 | 5 | 28.052 | 5 | 18.930 | 5 | 0.257 | 5 | 0.572 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| EL14SH1 14 | 5 | 3.061 | 5 | 0.457 | 5 | 44.031 | 5 | 5.205 | 5 | 0.196 | 5 | 0.592 |
| EL28SH2 28 | 5 | 3.325 | 5 | 5.790 | 5 | 10.157 | 5 | 16.770 | 5 | 0.104 | 5 | 0.273 |
| EL28SH3 28 | 5 | 3.030 | 5 | 3.329 | 5 | 25.617 | 5 | 19.067 | 5 | 0.236 | 5 | 0.222 |
| EL28SH1 28 | 5 | 0.997 | 5 | 1.354 | 5 | 6.225 | 5 | 23.805 | 5 | 0.231 | 6 | 0.295 |
| EL56SH3 56 | 2 | * | 5 | 1.600 | 2 | * | 5 | 20.000 | 5 | 0.900 | 5 | 0.290 |
| EL56SH2 56 | 5 | 2.000 | 5 | 4.000 | 5 | 40.000 | 5 | 20.000 | 5 | 0.550 | 5 | 0.250 |
| EL56SH1 56 | 5 | 3.479 | 5 | 1.150 | 5 | 14.651 | 5 | ****** | 5 | 0.437 | 5 | 0.346 |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| EH01SM1 1 | 5 | 2.090 | 5 | 1.190 | 5 | 20.430 | 5 | 16.610 | 5 | 0.200 | 5 | 0.170 |
| EH07SM1 7 | 5 | 1.260 | 5 | 1.950 | 5 | 8.830 | 5 | ****** | 5 | 0.510 | 5 | 0.510 |
| EH14SM1 14 | 5 | 1.040 | 5 | 2.220 | 5 | 12.700 | 5 | 19.700 | 3 | 0.115 | 5 | 0.180 |
| EH28SM1 28 | 5 | 2.220 | 5 | 1.070 | 5 | 10.280 | 5 | 10.930 | 5 | 0.170 | 5 | 0.360 |
| EH56SM1 61 | 5 | 1.185 | 5 | 2.190 | 5 | 13.847 | 5 | 17.060 | 5 | 0.303 | 5 | 0.268 |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| EL01SM1 1 | 5 | 1.210 | 5 | 1.660 | 5 | 6.060 | 5 | 19.230 | 5 | 0.228 | 5 | 0.363 |
| EL01SM3 1 | 5 | 1.310 | 5 | 0.880 | 5 | 11.490 | 5 | 7.600 | 5 | 0.240 | 5 | 0.380 |
| EL01SM2 1 | 5 | 1.840 | 5 | 2.160 | 5 | 14.640 | 5 | 18.430 | 5 | 0.170 | 5 | 0.320 |
| EL07SM1 7 | 5 | 1.530 | 5 | 2.230 | 5 | 23.440 | 5 | 17.190 | 5 | 0.320 | 5 | 0.790 |
| EL07SM3 7 | 5 | 1.380 | 5 | 1.420 | 5 | 19.010 | 5 | 10.970 | 5 | 0.620 | 5 | 0.500 |
| EL07SM2 7 | 5 | 1.340 | 5 | 0.690 | 5 | 12.390 | 5 | 12.230 | 5 | 0.250 | 5 | 0.390 |
| EL14SM1 14 | 5 | 0.440 | 5 | 1.040 | 5 | 5.700 | 5 | 23.400 | 5 | 0.270 | 5 | 0.370 |
| EL14SM3 15 | 5 | 1.580 | 5 | 0.780 | 5 | 10.220 | 5 | 7.070 | 5 | 0.250 | 5 | 0.710 |
| EL14SM2 15 | 5 | 0.630 | 5 | 1.180 | 5 | 6.570 | 5 | 10.800 | 5 | 0.449 | 5 | 0.237 |
| EL28SM3 28 | 5 | 1.540 | 5 | 0.720 | 5 | 13.470 | 5 | 12.770 | 5 | 0.220 | 5 | 0.300 |
| EL28SM2 28 | 5 | 2.150 | 5 | 2.490 | 5 | 19.300 | 5 | ****** | 5 | 0.334 | 5 | 0.141 |
| EL28SM1 28 | 5 | 1.430 | 5 | 1.320 | 5 | 15.000 | 5 | 10.830 | 5 | 0.240 | 5 | 0.360 |
| EL56SM3 56 | 5 | 1.380 | 5 | 1.130 | 5 | 5.830 | 5 | 6.900 | 5 | 0.434 | 5 | 0.832 |
| EL56SM2 56 | 5 | 1.993 | 5 | 0.440 | 5 | 12.450 | 5 | 5.151 | 5 | 0.817 | 5 | 0.477 |
| EL56SM1 61 | 5 | 0.710 | 5 | 3.180 | 5 | 6.020 | 5 | 19.720 | 5 | 0.090 | 5 | 0.420 |
| WATER 100.0% 50°C | | | | | | | | | | | | |
| EH01WP1 1 | 5 | 1.850 | 5 | 0.980 | 5 | 13.800 | 5 | 13.020 | 5 | 0.415 | 5 | 0.400 |
| EH07WP1 7 | 5 | 2.400 | 5 | 1.260 | 5 | 27.000 | 5 | 14.600 | 5 | 0.330 | 5 | 0.261 |
| EH14WP1 14 | 7 | 1.410 | 6 | 3.000 | 7 | 14.100 | 6 | 30.900 | 6 | 0.140 | 5 | 0.180 |
| EH28WP1 28 | 5 | 1.070 | 5 | 1.660 | 5 | 8.680 | 5 | 27.090 | 5 | 0.244 | 5 | 0.220 |
| EH56WP1 56 | 5 | 1.040 | 5 | 1.660 | 5 | 10.620 | 5 | 18.070 | 5 | 0.390 | 5 | 0.330 |
| WATER 100.0% 23°C | | | | | | | | | | | | |
| EL01WP1 1 | 5 | 1.040 | 5 | 12.980 | 5 | 2.290 | 5 | 19.290 | 5 | 0.460 | 5 | 0.660 |
| EL01WP2 1 | 6 | 1.730 | 5 | 1.640 | 6 | 9.250 | 5 | 9.460 | 5 | 0.297 | 5 | 0.460 |
| EL01WP3 1 | 5 | 2.220 | 5 | 1.040 | 5 | 8.490 | 5 | 66.780 | 5 | 0.520 | 5 | 0.300 |
| EL07WP1 7 | 5 | 1.540 | 5 | 1.390 | 5 | 20.600 | 5 | 7.900 | 5 | 0.300 | 5 | 0.360 |

ETHYLENE PROPYLENE DIENE MONOMER: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 23°C | | | | | | | | | | | | |
| EL07WP3 7 | 5 | 2.370 | 5 | 1.450 | 5 | 25.200 | 5 | 14.900 | 5 | 0.228 | 5 | 0.240 |
| EL07WP2 7 | 5 | 1.820 | 5 | 1.870 | 5 | 16.500 | 1 | 11.200 | 5 | 0.220 | 5 | 0.550 |
| EL14WP3 14 | 5 | 1.450 | 5 | 2.590 | 5 | 13.770 | 5 | 19.890 | 5 | 0.430 | 5 | 0.456 |
| EL14WP1 14 | 5 | 1.200 | 5 | 1.900 | 5 | 21.000 | 5 | 20.000 | 5 | 0.130 | 5 | 0.200 |
| EL14WP2 14 | 5 | 1.540 | 5 | 1.450 | 5 | 14.260 | 5 | * | 5 | 0.390 | 5 | 0.680 |
| EL28WP2 28 | 5 | 1.750 | 5 | 1.560 | 5 | 17.300 | 5 | 11.100 | 5 | 0.370 | 5 | 0.300 |
| EL28WP3 28 | 5 | 1.040 | 5 | 0.911 | 5 | 11.500 | 5 | 5.700 | 5 | 0.167 | 5 | 0.390 |
| EL28WP1 28 | 5 | 0.910 | 5 | 2.370 | 5 | 11.990 | 5 | 19.630 | 5 | 0.520 | 5 | 0.170 |
| EL56WP1 56 | 5 | 1.340 | 5 | 1.660 | 5 | 22.110 | 5 | 29.530 | 5 | 0.370 | 5 | 0.400 |
| EL56WP2 56 | 5 | 4.800 | 5 | 2.160 | 5 | 25.950 | 5 | 9.700 | 5 | 0.780 | 5 | 0.490 |
| EL56WP3 56 | 5 | 2.360 | 5 | 1.580 | 5 | 12.590 | 5 | 9.000 | 5 | 0.590 | 5 | 1.020 |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| EH01XM1 1 | 5 | 2.714 | 5 | 1.210 | 5 | 26.863 | 5 | 16.250 | 5 | 0.184 | 5 | 0.065 |
| EH07XM1 7 | 5 | 6.111 | 5 | 8.709 | 5 | 26.658 | 5 | 4.438 | 5 | 0.212 | 5 | 0.089 |
| EH14XM1 14 | 5 | 0.359 | 5 | 2.254 | 5 | 9.394 | 5 | 12.208 | 5 | 0.485 | 5 | 0.419 |
| EH28XM1 28 | 5 | 2.371 | 5 | 1.385 | 5 | 20.809 | 5 | 18.004 | 5 | 0.333 | 5 | 0.362 |
| EH56XM1 56 | 5 | 1.599 | 5 | 2.523 | 5 | 23.146 | 5 | 26.436 | 5 | 0.075 | 5 | 0.221 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| EL01XM3 1 | 5 | 1.350 | 5 | 3.297 | 5 | 5.725 | 5 | 19.307 | 5 | 0.468 | 5 | 0.384 |
| EL01XM2 1 | 5 | 4.453 | 5 | 1.952 | 5 | 46.663 | 5 | 8.201 | 5 | 0.393 | 5 | 0.168 |
| EL01XM1 1 | 5 | 3.730 | 5 | 1.540 | 5 | 28.117 | 5 | 85.812 | 5 | 0.184 | 5 | 0.130 |
| EL07XM3 7 | 5 | 2.103 | 5 | 1.802 | 5 | 12.963 | 5 | 19.968 | 5 | 0.430 | 5 | 0.305 |
| EL07XM1 7 | 5 | 7.397 | 5 | 6.931 | 5 | 10.334 | 5 | 18.201 | 5 | 0.821 | 5 | 0.092 |
| EL07XM2 7 | 5 | 4.330 | 5 | 4.564 | 5 | 17.860 | 5 | 26.171 | 5 | 0.313 | 5 | 0.305 |
| EL14XM1 14 | 5 | 3.752 | 5 | 1.069 | 5 | 28.968 | 5 | 7.227 | 5 | 0.486 | 5 | 0.603 |
| EL14XM3 14 | 5 | 3.996 | 5 | 6.124 | 5 | 15.224 | 5 | 31.141 | 5 | 0.121 | 5 | 0.234 |
| EL14XM2 14 | 5 | 4.716 | 5 | 7.783 | 5 | 8.661 | 5 | 11.561 | 5 | 0.236 | 5 | 0.443 |
| EL28XM2 28 | 5 | 4.124 | 4 | 1.888 | 5 | 30.853 | 4 | 21.086 | 5 | 0.104 | 5 | 0.152 |
| EL28XM1 28 | 5 | 2.281 | 5 | 2.051 | 5 | 17.881 | 5 | 15.393 | 5 | 0.420 | 5 | 0.193 |
| EL28XM3 28 | 5 | 1.806 | 4 | 1.274 | 5 | 42.674 | 4 | 9.404 | 5 | 0.109 | 5 | 0.349 |
| EL56XM3 56 | 5 | 1.559 | 5 | 3.204 | 5 | 13.314 | 5 | 25.272 | 5 | 0.180 | 5 | 0.252 |
| EL56XM2 56 | 5 | 1.992 | 5 | 2.413 | 5 | 24.178 | 5 | 22.213 | 5 | 0.249 | 5 | 0.117 |
| EL56XM1 56 | 5 | 2.217 | 5 | 0.633 | 5 | 64.423 | 5 | 6.924 | 5 | 0.072 | 5 | 0.079 |

# EPDM : RETENTION OF PROPERTIES

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | |
| EH01AM1 1 | 1.8 | 1.4 | 1.8 | 132 | 140 | 124 | 113 | 105 | 111 |
| EH07AM1 7 | 4.9 | 3.3 | 6.2 | 114 | 118 | 110 | 106 | 102 | 103 |
| EH14AM1 14 | 6.7 | 3.7 | 6.8 | 111 | 104 | 105 | 100 | 84 | 88 |
| EH28AM1 27 | 8.3 | 5.4 | 9.0 | 101 | 106 | 91 | 95 | 90 | 96 |
| EH99AM1 28 | 12.1 | 7.2 | 14.4 | * | * | * | * | * | * |
| EH56AM1 56 | 16.1 | 9.1 | 19.3 | 90 | 94 | 85 | 80 | 85 | 101 |
| EH99AM2 144 | 48.8 | 18.4 | 53.3 | * | * | * | * | * | * |
| EH99AM3 252 | 79.3 | 24.7 | 90.1 | * | * | * | * | * | * |
| EH99AM4 368 | 93.3 | 27.9 | 100.9 | * | * | * | * | * | * |
| EH99AM5 511 | 112.5 | 31.6 | 122.9 | * | * | * | * | * | * |
| EH99AM6 621 | 118.3 | 32.8 | 132.8 | * | * | * | * | * | * |
| EH99AM7 741 | 106.0 | 32.1 | 118.9 | 50 | * | 29 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | |
| EL01AM2 1 | 2.4 | .5 | .4 | 87 | 92 | 113 | 107 | 71 | 82 |
| EL01AM1 1 | .7 | .3 | .3 | * | * | 108 | 95 | * | * |
| EL01AM3 1 | .6 | 1.2 | 1.5 | 137 | 107 | 109 | 110 | 108 | 101 |
| EL07AM1 7 | 1.0 | .4 | .3 | 79 | 88 | 119 | 100 | 74 | 73 |
| EL07AM3 7 | 1.9 | .3 | .3 | 97 | 131 | 112 | 108 | 104 | 120 |
| EL07AM2 7 | 1.2 | .4 | .6 | 97 | 80 | 110 | 108 | 93 | 77 |
| EL14AM3 14 | 1.8 | .6 | 1.2 | 120 | 151 | 102 | 109 | 121 | 138 |
| EL14AM1 14 | 1.4 | .3 | .3 | 152 | 153 | 120 | 113 | 143 | 144 |
| EL14AM2 14 | 1.1 | * | .9 | 130 | 133 | 104 | 107 | 129 | 126 |
| EL28AM1 27 | 1.1 | .7 | .3 | * | * | 110 | 110 | * | * |
| EL28AM2 27 | 1.3 | .9 | .6 | * | * | 108 | 113 | * | * |
| EL28AM3 27 | 1.6 | * | .7 | * | * | 106 | 115 | * | * |
| EL99AM1 28 | .7 | * | .5 | * | * | * | * | * | * |
| EL56AM2 56 | 1.9 | 1.9 | 3.0 | 105 | 96 | 109 | 102 | 101 | 82 |
| EL56AM1 56 | 1.6 | 1.2 | 3.1 | 88 | 93 | 108 | 98 | 94 | 92 |
| EL56AM3 56 | 2.5 | 1.9 | 3.2 | 100 | 106 | 107 | 106 | 106 | 96 |
| EL99AM2 144 | 2.1 | .5 | 1.6 | * | * | * | * | * | * |
| EL99AM3 238 | 2.1 | .5 | 1.9 | * | * | * | * | * | * |
| EL99AM4 368 | 2.9 | .9 | 2.2 | * | * | * | * | * | * |
| EL99AM5 511 | 4.6 | 1.6 | 3.6 | * | * | * | * | * | * |
| EL99AM6 621 | 4.3 | 1.4 | 4.2 | * | * | * | * | * | * |
| EL99AM7 736 | 5.0 | 2.5 | 5.5 | 98 | * | 91 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | |
| EH01BM1 1 | .3 | .4 | .7 | 106 | 101 | 108 | 111 | 85 | 83 |
| EH07BM1 7 | .3 | .3 | * | 109 | 108 | 115 | 108 | 90 | 86 |
| EH14BM1 14 | .7 | * | .1 | 98 | 106 | 105 | 106 | 94 | 106 |
| EH28BM1 28 | .1 | .3 | .6 | 107 | 102 | 107 | 101 | 88 | 80 |
| EH99BM1 29 | .6 | .2 | .3 | * | * | * | * | * | * |
| EH56BM1 56 | 1.4 | * | .4 | 114 | 119 | 111 | 108 | 82 | 93 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| EH99BM2 144 | .4 | .5 | .9 | * | * | * | * | * | * |
| EH99BM3 252 | .5 | .2 | .4 | * | * | * | * | * | * |
| EH99BM4 368 | .9 | .2 | .7 | * | * | * | * | * | * |
| EH99BM5 510 | .7 | .2 | .9 | * | * | * | * | * | * |
| EH99BM6 622 | .4 | .2 | * | * | * | * | * | * | * |
| EH99BM7 741 | 2.7 | 1.4 | 1.2 | 117 | * | 95 | * | * | * |
| | | | SODIUM HYDROXIDE 10.0% 23°C | | | | | | |
| EL01BM3 1 | .2 | * | * | 96 | 105 | 107 | 104 | 89 | 84 |
| EL01BM1 1 | .1 | .7 | .5 | 111 | 102 | 108 | 107 | 88 | 77 |
| EL01BM2 1 | .2 | .5 | .7 | 95 | 109 | 101 | 108 | 94 | 88 |
| EL07BM3 7 | .4 | * | .1 | 99 | 105 | 114 | 115 | 86 | 85 |
| EL07BM2 7 | .2 | .8 | 1.1 | 103 | 105 | 114 | 104 | 90 | 81 |
| EL07BM1 7 | * | * | .6 | 107 | 111 | 112 | 108 | 88 | 91 |
| EL14BM2 14 | .4 | .9 | 1.0 | 96 | 101 | 110 | 102 | 90 | 83 |
| EL14BM1 14 | .3 | .5 | .2 | 105 | 111 | 110 | 108 | 80 | 100 |
| EL14BM3 14 | 1.0 | .2 | .3 | 97 | 102 | 109 | 113 | 81 | 81 |
| EL28BM2 28 | .2 | .6 | .7 | 105 | 111 | 120 | 103 | 89 | 87 |
| EL99BM1 28 | .9 | .2 | .2 | * | * | * | * | * | * |
| EL28BM1 28 | .4 | .3 | * | 110 | 136 | 110 | 97 | 81 | 102 |
| EL28BM3 28 | .4 | * | * | 103 | 111 | 113 | 108 | 91 | 99 |
| EL56BM3 56 | .8 | .3 | .6 | 96 | 100 | 124 | 112 | 81 | 75 |
| EL56BM1 56 | .6 | .3 | .5 | 100 | 116 | 124 | 110 | 91 | 94 |
| EL56BM2 56 | .3 | .2 | .1 | 96 | 109 | 118 | * | 94 | 94 |
| EL99BM2 144 | .6 | .7 | .6 | * | * | * | * | * | * |
| EL99BM3 238 | .2 | .7 | * | * | * | * | * | * | * |
| EL99BM4 368 | .2 | .7 | .5 | * | * | * | * | * | * |
| EL99BM5 510 | .4 | .7 | .6 | * | * | * | * | * | * |
| EL99BM6 622 | .2 | .9 | .8 | * | * | * | * | * | * |
| EL99BM7 736 | * | .5 | .3 | 102 | * | 95 | * | * | * |
| | | | 1 2 DICHLOROETHANE .8% 50°C | | | | | | |
| EH01DH1 1 | 8.3 | 2.0 | 5.7 | 92 | 97 | 102 | 98 | 89 | 84 |
| EH07DH1 7 | 8.2 | 1.8 | 5.0 | 90 | 94 | 109 | 104 | 84 | 78 |
| EH14DH1 14 | 10.0 | 2.3 | 5.8 | 89 | 92 | 118 | 117 | 84 | 72 |
| EH99DH1 28 | 6.1 | 3.8 | 6.6 | * | * | * | * | * | * |
| EH28DH1 28 | 9.7 | 2.4 | 6.7 | 95 | 93 | 107 | 103 | 75 | 77 |
| EH56DH1 56 | 7.5 | 2.1 | 6.1 | 91 | 97 | 109 | 109 | 97 | 80 |
| EH99DH2 133 | 5.6 | 3.1 | 5.7 | * | * | * | * | * | * |
| EH99DH3 244 | 12.9 | 4.5 | 8.9 | * | * | * | * | * | * |
| EH99DH4 364 | 10.7 | 4.9 | 12.1 | * | * | * | * | * | * |
| EH99DH5 495 | 10.5 | 5.6 | 11.8 | * | * | * | * | * | * |
| EH99DH6 629 | 12.5 | 6.3 | 12.7 | * | * | * | * | * | * |
| EH99DH7 734 | 9.9 | 6.1 | 12.8 | 88 | * | 100 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 2 DICHLOROETHANE .8% 23°C | | | | | | |
| EL01DH3 1 | 5.3 | .5 | 2.0 | 94 | 99 | 103 | 96 | 88 | 85 |
| EL01DH2 1 | 4.7 | .3 | 1.4 | 99 | 98 | 114 | 100 | 84 | 86 |
| EL01DH1 1 | 7.1 | .9 | 3.1 | 95 | 94 | 106 | 97 | 91 | 76 |
| EL07DH1 7 | 6.5 | 1.6 | 3.8 | 93 | 93 | 115 | 104 | 86 | 80 |
| EL07DH2 7 | 5.3 | .7 | 2.2 | 91 | 98 | 115 | 109 | 83 | 77 |
| EL07DH3 7 | 4.3 | .8 | 2.2 | 91 | * | 123 | * | 93 | 82 |
| EL14DH2 14 | 7.2 | 1.5 | 4.5 | 93 | 98 | 108 | 103 | 77 | 75 |
| EL14DH1 14 | 9.0 | 1.8 | 5.6 | 90 | 91 | * | * | 80 | 75 |
| EL14DH3 14 | 8.9 | 2.3 | 5.1 | 94 | 94 | 110 | 108 | 82 | 72 |
| EL28DH1 28 | 9.4 | 3.2 | 7.5 | 91 | 94 | 107 | 99 | 75 | 74 |
| EL28DH2 28 | 7.4 | 2.4 | 5.4 | 91 | 94 | 106 | 101 | 85 | 74 |
| EL28DH3 28 | 6.0 | 2.2 | 5.1 | 90 | 98 | 103 | 97 | 98 | 68 |
| EL99DH1 28 | 3.0 | .2 | 5.1 | * | * | * | * | * | * |
| EL56DH1 56 | 4.4 | 1.2 | 3.5 | 86 | 98 | 98 | 103 | 93 | 82 |
| EL56DH2 56 | 7.4 | 1.6 | 4.6 | 91 | 93 | 108 | 100 | 80 | 76 |
| EL56DH3 56 | 7.9 | 2.1 | 5.0 | 90 | 90 | 107 | 101 | 73 | 84 |
| EL99DH2 134 | 6.4 | 1.0 | 3.2 | * | * | * | * | * | * |
| EL99DH3 231 | 4.6 | 2.0 | 6.5 | * | * | * | * | * | * |
| EL99DH4 364 | 5.0 | 6.2 | 3.6 | * | * | * | * | * | * |
| EL99DH5 495 | 4.7 | .7 | 2.9 | * | * | * | * | * | * |
| EL99DH6 630 | 6.5 | 9.5 | 12.2 | * | * | * | * | * | * |
| EL99DH7 729 | 7.1 | 2.5 | 6.5 | 115 | * | 91 | * | * | * |
| | | | 1 2 DICHLOROETHANE .1% 50°C | | | | | | |
| EH01DL1 1 | 1.1 | * | .6 | 94 | 98 | 104 | 98 | 88 | 86 |
| EH07DL1 7 | 2.2 | .3 | 1.0 | 95 | 95 | 107 | 101 | 80 | 83 |
| EH14DL1 14 | 3.1 | * | .7 | 93 | 94 | * | * | 80 | 85 |
| EH28DL1 28 | 3.1 | .8 | 1.2 | 98 | 94 | 107 | 99 | 77 | 76 |
| EH99DL1 28 | 2.2 | 2.0 | 2.8 | * | * | * | * | * | * |
| EH56DL1 56 | 2.5 | .8 | 1.5 | 89 | 90 | 103 | 97 | 93 | 83 |
| EH99DL2 139 | 3.5 | 1.1 | 2.3 | * | * | * | * | * | * |
| EH99DL3 246 | 5.2 | 2.3 | 4.8 | * | * | * | * | * | * |
| EH99DL4 366 | 5.4 | 1.8 | 4.6 | * | * | * | * | * | * |
| EH99DL5 496 | 5.5 | 2.5 | 6.0 | * | * | * | * | * | * |
| EH99DL6 631 | 5.9 | 3.2 | 5.3 | * | * | * | * | * | * |
| EH99DL7 736 | 5.5 | 2.7 | 5.8 | 107 | * | 96 | * | * | * |
| | | | 1 2 DICHLOROETHANE .1% 23°C | | | | | | |
| EL01DL3 1 | 1.1 | * | .5 | 94 | 98 | 106 | 100 | 91 | 80 |
| EL01DL2 1 | 1.3 | .3 | .4 | 99 | 100 | 106 | 101 | 89 | 81 |
| EL01DL1 1 | .9 | .5 | .3 | 96 | 98 | 102 | 100 | 93 | 84 |
| EL07DL1 7 | 1.4 | .6 | .7 | 94 | 93 | 108 | 100 | 85 | 81 |
| EL07DL2 7 | 1.7 | .8 | .7 | 92 | 98 | 107 | 102 | 87 | 81 |
| EL07DL3 7 | 1.7 | * | * | 92 | 95 | 108 | 111 | 88 | 82 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | |
| EL14DL1 14 | 1.7 | .3 | .5 | 95 | 96 | * | * | 90 | 80 |
| EL14DL2 14 | 1.8 | .2 | .4 | 92 | 96 | 112 | 106 | 87 | 79 |
| EL14DL3 14 | 1.4 | * | .3 | 98 | 94 | 121 | 104 | 84 | 97 |
| EL28DL1 28 | 1.7 | .3 | * | 96 | 95 | 108 | 101 | 78 | 79 |
| EL28DL3 28 | 1.7 | .5 | .8 | 96 | 98 | 103 | 98 | 90 | 86 |
| EL99DL1 28 | 1.1 | 1.1 | .8 | * | * | * | * | * | * |
| EL28DL2 28 | 1.5 | .5 | .5 | 95 | 96 | 102 | 101 | 87 | 82 |
| EL56DL2 56 | 2.0 | .6 | 1.0 | 86 | 90 | 107 | 110 | 82 | 80 |
| EL56DL3 56 | 1.6 | .6 | 1.0 | 95 | 96 | 107 | 99 | 86 | 79 |
| EL56DL1 56 | 1.4 | .3 | .5 | 91 | 97 | 105 | 102 | 90 | 85 |
| EL99DL2 136 | 2.0 | .9 | .2 | * | * | * | * | * | * |
| EL99DL3 233 | 1.7 | .4 | 1.2 | * | * | * | * | * | * |
| EL99DL4 366 | 1.7 | .7 | .3 | * | * | * | * | * | * |
| EL99DL5 496 | 2.0 | .4 | .2 | * | * | * | * | * | * |
| EL99DL6 632 | 2.5 | .7 | .3 | * | * | * | * | * | * |
| EL99DL7 731 | 1.6 | .2 | 1.4 | 100 | * | 108 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | |
| EH01DM1 1 | 4.7 | .9 | 2.6 | 96 | 98 | 108 | 103 | 88 | 83 |
| EH07DM1 7 | 3.9 | .8 | 2.0 | 89 | 94 | 110 | 108 | 87 | 73 |
| EH14DM1 14 | 5.5 | 1.2 | 1.8 | 95 | 93 | 122 | * | 72 | 88 |
| EH28DM1 28 | 6.8 | 1.7 | 4.5 | 92 | 95 | 110 | 105 | 87 | 72 |
| EH99DM1 28 | 4.7 | 1.2 | 2.9 | * | * | * | * | * | * |
| EH56DM1 56 | 4.2 | 2.0 | 3.1 | 96 | 94 | 108 | 99 | 88 | 87 |
| EH99DM3 245 | 9.5 | 2.8 | 7.2 | * | * | * | * | * | * |
| EH99DM4 365 | 7.9 | 3.0 | 7.5 | * | * | * | * | * | * |
| EH99DM5 496 | 8.4 | 2.8 | 7.3 | * | * | * | * | * | * |
| EH99DM6 630 | 9.8 | 3.9 | 8.9 | * | * | * | * | * | * |
| EH99DM7 735 | 9.9 | 3.7 | 9.4 | 97 | * | 88 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | |
| EL01DM3 1 | 3.9 | .8 | 2.1 | 94 | 98 | 117 | 112 | 95 | 83 |
| EL01DM2 1 | 4.2 | .3 | 1.5 | 96 | 98 | 111 | 103 | 94 | 85 |
| EL01DM1 1 | 5.9 | 1.5 | 3.8 | 92 | 90 | 102 | 95 | 86 | 87 |
| EL07DM2 7 | 4.0 | .3 | 1.2 | 88 | 91 | 103 | 102 | 83 | 80 |
| EL07DM3 7 | 3.2 | 2.5 | 3.7 | 90 | 97 | 102 | 100 | 85 | 78 |
| EL07DM1 7 | 4.5 | .5 | 2.6 | 90 | 89 | 103 | 98 | 84 | 83 |
| EL14DM3 14 | 4.9 | .6 | 1.6 | 95 | 99 | 107 | 101 | 83 | 78 |
| EL14DM2 14 | 4.9 | 1.3 | 2.7 | 92 | 100 | 107 | 102 | 85 | 75 |
| EL14DM1 14 | 4.7 | 1.0 | 1.6 | 92 | 99 | * | * | 86 | 73 |
| EL28DM1 28 | 3.8 | .7 | 2.5 | 87 | 91 | 105 | 108 | 84 | 71 |
| EL99DM1 28 | 2.8 | .5 | 1.3 | * | * | * | * | * | * |
| EL28DM2 28 | 4.0 | .2 | .9 | 92 | 94 | 105 | 99 | 88 | 86 |
| EL28DM3 28 | 3.3 | 1.2 | 1.8 | 92 | 95 | 107 | 101 | 88 | 83 |
| EL56DM3 56 | 3.7 | 1.5 | 2.2 | 93 | 95 | 104 | 99 | 82 | 76 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | |
| EL56DM2 56 | 3.1 | 1.6 | 2.4 | 94 | 98 | 103 | 100 | 81 | 80 |
| EL56DM1 56 | 4.0 | 1.5 | 2.8 | 93 | 95 | 100 | 97 | 85 | 81 |
| EL99DM2 135 | 3.4 | .2 | 1.6 | * | * | * | * | * | * |
| EL99DM3 233 | 2.5 | .5 | 2.2 | * | * | * | * | * | * |
| EL99DM4 365 | 2.2 | .2 | 2.5 | * | * | * | * | * | * |
| EL99DM5 496 | 2.5 | .7 | 1.9 | * | * | * | * | * | * |
| EL99DM6 631 | 3.5 | .7 | 1.8 | * | * | * | * | * | * |
| EL99DM7 730 | 5.3 | .9 | 3.1 | 102 | * | 108 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | |
| EH01FH1 1 | .8 | .2 | .8 | 97 | 98 | 111 | 100 | 128 | 121 |
| EH07FH1 7 | 3.6 | 1.0 | 2.6 | 95 | 106 | 126 | 122 | 109 | 92 |
| EH14FH1 14 | 3.6 | 1.3 | 3.5 | 91 | 93 | 116 | 115 | 81 | 92 |
| EH28FH1 28 | 5.4 | 2.1 | 4.4 | 96 | 94 | 114 | 106 | 84 | 90 |
| EH99FH1 28 | 1.8 | | 2.5 | * | * | | * | * | * |
| EH56FH1 56 | 5.0 | 3.2 | 5.2 | 93 | 99 | 115 | 120 | 84 | 83 |
| EH99FH2 117 | 14.7 | 10.0 | 21.6 | * | * | * | * | * | * |
| EH99FH3 236 | 45.7 | 21.9 | 55.7 | * | * | * | * | * | * |
| EH99FH4 350 | 61.8 | 28.8 | 80.4 | * | * | * | * | * | * |
| EH99FH5 485 | 68.5 | 28.5 | 111.0 | * | * | * | * | * | * |
| EH99FH6 616 | 82.7 | 33.9 | 102.1 | * | * | * | * | * | * |
| EH99FH7 721 | 90.9 | 38.2 | 112.3 | 71 | * | 42 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | |
| EL01FH3 1 | * | 1.0 | 1.8 | 96 | 95 | 111 | 103 | 110 | 127 |
| EL01FH2 1 | .1 | .5 | .8 | 94 | 99 | 114 | 108 | 112 | 124 |
| EL01FH1 1 | .3 | .3 | .1 | 95 | 100 | 111 | 105 | 120 | 153 |
| EL07FH2 7 | 1.7 | .3 | 1.0 | 95 | 98 | 121 | 106 | 100 | 97 |
| EL07FH3 7 | 1.9 | .5 | 1.4 | 93 | 95 | 113 | 111 | 104 | 108 |
| EL07FH1 7 | 2.0 | .8 | 2.0 | 94 | 99 | 116 | 114 | 101 | 105 |
| EL14FH1 14 | 2.4 | .2 | .9 | 91 | 96 | 117 | 116 | 86 | 82 |
| EL14FH3 14 | 2.4 | .5 | 1.7 | 90 | 99 | 110 | 110 | 91 | 76 |
| EL14FH2 14 | 2.3 | .5 | 1.8 | 91 | 98 | 118 | 117 | 81 | 83 |
| EL28FH1 28 | 3.0 | .9 | 2.2 | 94 | 101 | 120 | 112 | 92 | 84 |
| EL28FH3 28 | 2.8 | 1.3 | 3.3 | 91 | 97 | 117 | 114 | 88 | 79 |
| EL99FH1 28 | 6.5 | .8 | 1.7 | * | * | * | * | * | * |
| EL28FH2 28 | 2.9 | .3 | 2.9 | 97 | 96 | 116 | 116 | 83 | 80 |
| EL56FH1 56 | 3.3 | * | .8 | 93 | 98 | 118 | 112 | 90 | 79 |
| EL56FH2 56 | 3.4 | 1.2 | 2.5 | 95 | 98 | 116 | 117 | 82 | 86 |
| EL56FH3 56 | 3.5 | 1.8 | 3.2 | 95 | 94 | 125 | 111 | 95 | 86 |
| EL99FH2 117 | 9.8 | 2.2 | 5.4 | * | * | * | * | * | * |
| EL99FH3 219 | 18.2 | 7.1 | 17.0 | * | * | * | * | * | * |
| EL99FH4 350 | 32.2 | 11.0 | 30.0 | * | * | * | * | * | * |
| EL99FH5 485 | 27.7 | 10.7 | 25.1 | * | * | * | * | * | * |
| EL99FH6 617 | 41.2 | 15.1 | 38.0 | * | * | * | * | * | * |
| EL99FH7 716 | 48.3 | 17.6 | 45.4 | 85 | * | 66 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | FURFURAL 1.0% 50°C | | | | | | |
| EH01FL1 1 | .7 | .5 | .5 | 98 | 99 | 113 | 104 | 125 | 98 |
| EH07FL1 7 | 1.4 | .8 | 1.5 | 99 | 97 | 128 | 116 | 100 | 107 |
| EH14FL1 14 | 1.6 | .7 | 1.3 | 96 | 94 | 117 | 113 | 86 | 101 |
| EH28FL1 28 | 1.9 | 1.3 | 2.0 | 95 | 99 | 118 | 117 | 88 | 88 |
| EH99FL1 28 | 1.6 | 1.1 | 1.8 | * | * | * | * | * | * |
| EH56FL1 56 | 3.2 | 1.5 | 2.4 | 96 | 96 | 118 | 110 | 93 | 80 |
| EH99FL2 123 | 3.4 | .8 | 2.9 | * | * | * | * | * | * |
| EH99FL3 241 | 11.4 | 5.5 | 11.9 | * | * | * | * | * | * |
| EH99FL4 355 | 11.4 | 5.8 | 13.1 | * | * | * | * | * | * |
| EH99FL5 489 | 13.7 | 4.7 | 13.7 | * | * | * | * | * | * |
| EH99FL6 621 | 16.3 | 7.4 | 17.0 | * | * | * | * | * | * |
| EH99FL7 726 | 16.7 | 8.0 | 18.3 | 103 | * | 82 | * | * | * |
| | | | FURFURAL 1.0% 23°C | | | | | | |
| EL01FL2 1 | .4 | .3 | .3 | 100 | 101 | 101 | 112 | 133 | 144 |
| EL01FL3 1 | .4 | 1.0 | 1.0 | 97 | 95 | 99 | 108 | 106 | 135 |
| EL01FL1 1 | .3 | .5 | .7 | 95 | 101 | 106 | 104 | 115 | 163 |
| EL07FL2 7 | .9 | .2 | .5 | 98 | 101 | 121 | 118 | 104 | 97 |
| EL07FL3 7 | 1.2 | * | * | 95 | 101 | 118 | 115 | 100 | 108 |
| EL07FL1 7 | .9 | .3 | .1 | 96 | 101 | 128 | 110 | 109 | 95 |
| EL14FL3 14 | 1.6 | .3 | .4 | 95 | 100 | 121 | 106 | 98 | 87 |
| EL14FL2 14 | 1.0 | .3 | .1 | 97 | 97 | 120 | 115 | 88 | 94 |
| EL14FL1 14 | 1.0 | .2 | .6 | 93 | 99 | 114 | 114 | 100 | 90 |
| EL28FL2 28 | 1.5 | .5 | .5 | 96 | 97 | 113 | 107 | 80 | 85 |
| EL28FL3 28 | 2.2 | * | * | 94 | 94 | 108 | 104 | 78 | 85 |
| EL99FL1 28 | .7 | .7 | 1.0 | * | * | * | * | * | * |
| EL28FL1 28 | 1.1 | .3 | .6 | 96 | 101 | 118 | 116 | 85 | 88 |
| EL56FL3 56 | 1.3 | .3 | .6 | 91 | 99 | 102 | 109 | 94 | 87 |
| EL56FL2 56 | 1.8 | .3 | .7 | 93 | 97 | 113 | 110 | 89 | 79 |
| EL56FL1 56 | 1.5 | .5 | .5 | 95 | 98 | 121 | 112 | 92 | 84 |
| EL99FL2 123 | 1.1 | .5 | 1.2 | * | * | * | * | * | * |
| EL99FL3 224 | 1.9 | 1.4 | 2.9 | * | * | * | * | * | * |
| EL99FL4 355 | 2.1 | 1.1 | 2.8 | * | * | * | * | * | * |
| EL99FL5 489 | 2.1 | .7 | 1.1 | * | * | * | * | * | * |
| EL99FL6 622 | 3.1 | 1.4 | 2.9 | * | * | * | * | * | * |
| EL99FL7 721 | 2.7 | .5 | 2.3 | 95 | * | 93 | * | * | * |
| | | | FURFURAL 4.0% 50°C | | | | | | |
| EH01FM1 1 | 2.0 | .5 | 1.7 | 97 | 96 | 115 | 105 | 115 | 145 |
| EH07FM1 7 | 2.5 | .8 | 1.5 | 97 | 97 | 127 | 115 | 105 | 97 |
| EH14FM1 14 | 2.7 | .5 | 1.4 | 93 | 95 | 118 | 114 | 97 | 97 |
| EH28FM1 28 | 3.4 | 1.3 | 2.7 | 89 | 98 | 117 | 117 | 87 | 84 |
| EH99FM1 29 | 1.9 | 1.3 | 2.7 | * | * | * | * | * | * |
| EH56FM1 56 | 4.6 | 2.2 | 3.2 | 94 | 96 | 120 | 114 | 90 | 84 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | FURFURAL 4.0% 50°C | | | | | | |
| EH99FM2 124 | 2.9 | 2.4 | 5.3 | * | * | * | * | * | * |
| EH99FM3 242 | 9.8 | 5.1 | 10.9 | * | * | * | * | * | * |
| EH99FM4 356 | 12.3 | 6.1 | 13.4 | * | * | * | * | * | * |
| EH99FM5 490 | 14.8 | 1.3 | 7.7 | * | * | * | * | * | * |
| EH99FM6 622 | 19.1 | 9.3 | 21.1 | * | * | * | * | * | * |
| EH99FM7 727 | 21.1 | 28.8 | 44.5 | 102 | * | 79 | * | * | * |
| | | | FURFURAL 4.0% 23°C | | | | | | |
| EL01FM1 1 | .9 | .3 | 20.0 | 94 | 96 | 111 | 102 | 110 | 133 |
| EL01FM3 1 | * | 1.5 | 1.8 | 94 | 101 | 114 | 106 | 121 | 123 |
| EL01FM2 1 | * | 1.5 | 1.9 | 94 | 97 | 112 | 103 | 113 | 118 |
| EL07FM1 7 | 2.1 | 1.1 | 1.7 | 98 | 99 | 122 | 114 | 100 | 103 |
| EL07FM2 7 | 1.8 | * | 1.2 | 99 | 101 | 118 | 114 | 103 | 107 |
| EL07FM3 7 | 1.8 | .5 | 1.0 | 95 | 100 | 115 | 113 | 103 | 98 |
| EL14FM1 14 | 1.8 | .7 | 1.1 | 94 | 93 | 121 | 113 | 93 | 105 |
| EL14FM2 14 | 1.4 | .5 | 1.3 | 93 | 97 | 112 | 115 | 83 | 93 |
| EL14FM3 14 | 1.5 | .2 | .9 | 93 | 92 | 111 | 106 | 94 | 87 |
| EL28FM1 28 | 2.9 | .8 | .6 | 92 | 93 | 117 | 113 | 88 | 83 |
| EL28FM3 28 | 2.8 | * | .3 | 95 | 94 | 120 | 113 | 83 | 80 |
| EL28FM2 28 | 2.2 | .3 | 1.1 | 94 | 96 | 116 | 107 | 86 | 82 |
| EL99FM1 29 | 2.2 | .2 | .2 | * | * | * | * | * | * |
| EL56FM1 56 | 3.4 | .3 | .7 | 95 | 97 | 117 | 107 | 87 | 81 |
| EL56FM2 56 | 2.8 | 1.0 | 1.2 | 94 | 95 | 121 | 112 | 85 | 84 |
| EL56FM3 56 | 2.6 | .7 | 1.3 | 90 | 94 | 115 | 115 | 84 | 86 |
| EL99FM2 124 | 2.9 | .5 | 1.5 | * | * | * | * | * | * |
| EL99FM3 228 | 3.3 | 1.1 | 3.2 | * | * | * | * | * | * |
| EL99FM4 356 | 4.2 | 1.1 | 3.5 | * | * | * | * | * | * |
| EL99FM5 490 | 4.9 | 1.4 | 3.3 | * | * | * | * | * | * |
| EL99FM6 623 | 6.1 | 2.5 | 5.1 | * | * | * | * | * | * |
| EL99FM7 722 | 6.4 | 2.7 | 6.5 | 99 | * | 101 | * | * | * |
| | | | METHYL ETHYL KETONE 26.0% 50°C | | | | | | |
| EH01MH1 1 | 6.1 | 2.6 | 8.3 | 92 | 92 | 112 | 111 | 94 | 89 |
| EH07MH1 7 | 9.2 | 4.2 | 10.4 | 88 | 94 | 106 | 102 | 108 | 103 |
| EH14MH1 14 | 9.9 | 4.6 | 10.8 | 89 | 92 | 108 | 106 | 105 | 101 |
| EH28MH1 28 | 9.0 | 5.3 | 12.3 | 95 | 99 | 108 | 108 | 95 | 94 |
| EH99MH1 28 | 8.4 | 3.7 | 8.7 | * | * | * | * | * | * |
| EH56MH1 57 | 11.5 | 6.1 | 14.2 | 96 | 98 | 109 | 104 | 97 | 86 |
| EH99MH2 115 | 10.4 | 3.5 | 8.1 | * | * | * | * | * | * |
| EH99MH3 240 | 10.3 | 4.9 | 9.9 | * | * | * | * | * | * |
| EH99MH4 358 | 9.6 | 4.2 | 9.8 | * | * | * | * | * | * |
| EH99MH5 494 | 6.9 | 2.8 | 5.3 | * | * | * | * | * | * |
| EH99MH6 626 | 8.7 | 3.5 | 6.7 | * | * | * | * | * | * |
| EH99MH7 730 | 12.0 | 5.3 | 11.0 | 74 | * | 95 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | |
| EL01MH1 1 | 5.3 | 3.0 | 8.1 | 89 | 94 | 109 | 105 | 87 | 89 |
| EL01MH3 1 | 4.8 | 1.5 | 7.0 | 89 | 92 | 111 | 108 | 96 | 89 |
| EL01MH2 1 | 4.5 | 2.3 | 6.8 | 95 | 95 | 111 | 101 | 101 | 91 |
| EL07MH2 7 | 5.9 | 2.1 | 6.4 | 92 | 96 | 111 | 104 | 118 | 111 |
| EL07MH1 7 | 5.8 | 2.7 | 6.8 | 95 | 96 | 111 | 103 | 127 | 118 |
| EL07MH3 7 | 6.1 | 3.1 | 7.9 | 92 | 95 | 112 | 105 | 116 | 111 |
| EL14MH2 14 | 5.7 | 2.3 | 5.9 | 93 | 95 | 109 | 102 | 113 | 103 |
| EL14MH1 14 | 5.1 | 1.3 | 4.7 | 92 | 96 | 108 | 105 | 118 | 108 |
| EL14MH3 14 | 6.1 | 2.9 | 7.1 | 94 | 96 | 114 | 102 | 117 | 105 |
| EL28MH3 28 | 6.2 | 2.6 | 7.0 | 93 | 97 | 111 | 104 | 103 | 92 |
| EL99MH1 28 | 7.0 | 12.5 | 17.7 | * | * | * | * | * | * |
| EL28MH2 28 | 6.4 | 3.0 | 7.9 | 94 | 97 | 109 | 105 | 100 | 97 |
| EL28MH1 28 | 6.2 | .5 | 5.3 | 93 | 95 | 111 | 104 | 99 | 95 |
| EL56MH2 57 | 6.3 | 3.9 | 8.6 | 96 | 99 | 116 | 107 | 104 | 91 |
| EL56MH1 57 | 7.1 | 3.3 | 8.5 | 95 | 97 | 116 | 109 | 103 | 95 |
| EL56MH3 57 | 7.6 | 3.7 | 9.2 | 93 | 96 | 115 | 107 | 103 | 97 |
| EL99MH2 121 | 8.6 | 11.6 | 16.5 | * | * | * | * | * | * |
| EL99MH3 235 | 4.0 | 13.6 | 19.3 | * | * | * | * | * | * |
| EL99MH4 358 | 7.4 | 31.8 | 37.7 | * | * | * | * | * | * |
| EL99MH5 494 | 7.5 | 12.2 | 16.2 | * | * | * | * | * | * |
| EL99MH6 627 | 8.8 | 10.8 | 12.0 | * | * | * | * | * | * |
| EL99MH7 725 | 7.8 | 12.5 | 16.8 | 103 | * | 84 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | |
| EH01ML1 1 | 1.2 | .5 | 1.0 | 95 | 96 | 108 | 113 | 89 | 93 |
| EH07ML1 7 | 3.1 | * | .8 | 100 | 99 | 108 | 108 | 130 | 116 |
| EH14ML1 14 | 3.6 | 1.3 | 2.6 | 98 | 102 | 115 | 111 | 128 | 116 |
| EH28ML1 28 | 2.6 | .5 | 1.6 | 94 | 99 | 112 | 111 | 101 | 98 |
| EH99ML1 28 | 2.6 | .9 | 1.8 | * | * | * | * | * | * |
| EH56ML1 57 | 2.4 | 1.6 | 2.2 | 97 | 102 | 114 | 108 | 115 | 105 |
| EH99ML2 120 | 5.3 | .9 | 2.8 | * | * | * | * | * | * |
| EH99ML3 240 | 5.9 | 1.8 | 4.7 | * | * | * | * | * | * |
| EH99ML4 358 | 6.1 | 2.3 | 5.6 | * | * | * | * | * | * |
| EH99ML5 494 | 6.4 | 1.8 | 4.6 | * | * | * | * | * | * |
| EH99ML6 626 | 6.2 | 2.0 | 5.0 | * | * | * | * | * | * |
| EH99ML7 730 | 5.8 | 2.3 | 5.0 | 101 | * | 93 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | |
| EL01ML3 1 | .6 | .3 | .4 | 87 | 97 | 99 | 100 | 100 | 95 |
| EL01ML2 1 | .8 | 1.4 | 1.6 | 99 | 97 | 112 | 101 | 91 | 101 |
| EL01ML1 1 | 1.0 | * | .1 | 96 | 101 | 113 | 103 | 100 | 90 |
| EL07ML3 7 | 1.1 | .3 | .4 | 100 | 100 | 113 | 104 | 135 | 107 |
| EL07ML1 7 | .9 | .2 | .7 | 96 | 101 | 108 | 105 | 134 | 116 |
| EL07ML2 7 | 1.1 | * | .2 | 101 | 100 | 113 | 106 | 133 | 120 |
| EL14ML1 14 | .9 | * | .5 | 97 | 100 | 112 | 108 | 129 | 127 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | |
| EL14ML2 14 | 1.1 | .5 | .7 | 97 | 98 | 110 | 106 | 126 | 115 |
| EL14ML3 14 | 1.1 | .8 | 1.3 | 101 | 100 | 111 | 109 | 130 | 116 |
| EL28ML3 28 | 1.4 | .2 | .4 | 93 | 100 | 111 | 106 | 108 | 97 |
| EL28ML2 28 | 1.9 | .3 | .1 | 93 | 95 | 109 | 104 | 105 | 92 |
| EL28ML1 28 | 1.2 | * | .2 | 92 | 101 | 105 | 105 | 111 | 96 |
| EL99ML1 28 | 1.0 | * | .4 | * | * | * | * | * | * |
| EL56ML1 57 | 1.3 | .8 | 1.2 | 103 | 101 | 110 | 105 | 116 | 105 |
| EL56ML2 57 | .8 | 1.0 | 1.2 | 102 | 105 | 111 | 105 | 115 | 109 |
| EL56ML3 57 | 5.7 | .3 | .5 | 99 | 99 | 109 | 103 | 114 | 105 |
| EL99ML2 120 | 2.4 | * | 1.0 | * | * | * | * | * | * |
| EL99ML3 235 | 1.7 | .9 | 2.4 | * | * | * | * | * | * |
| EL99ML4 358 | 2.1 | .2 | 1.5 | * | * | * | * | * | * |
| EL99ML5 494 | 1.7 | .2 | .9 | * | * | * | * | * | * |
| EL99ML6 627 | 2.6 | .5 | 1.3 | * | * | * | * | * | * |
| EL99ML7 725 | 2.3 | .9 | 2.3 | 100 | * | 103 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | |
| EH01MM1 1 | 4.1 | 2.3 | 5.9 | 93 | 93 | 108 | 100 | 94 | 93 |
| EH07MM1 7 | 7.1 | 3.0 | 6.8 | 93 | 99 | 110 | 109 | 121 | 113 |
| EH14MM1 14 | 4.5 | 2.5 | 5.2 | 96 | 98 | 113 | 102 | 117 | 100 |
| EH99MM1 28 | 4.4 | 3.0 | 4.9 | * | * | * | * | * | * |
| EH28MM1 28 | 7.6 | 5.1 | 10.4 | 95 | 97 | 110 | 104 | 101 | 89 |
| EH56MM1 57 | 6.3 | 4.8 | 8.1 | 91 | 101 | 110 | 109 | 115 | 100 |
| EH99MM2 120 | 8.4 | 3.4 | 7.1 | * | * | * | * | * | * |
| EH99MM3 239 | 10.4 | 5.0 | 10.7 | * | * | * | * | * | * |
| EH99MM4 357 | 9.8 | 4.4 | 10.0 | * | * | * | * | * | * |
| EH99MM5 493 | 9.2 | 3.7 | 8.1 | * | * | * | * | * | * |
| EH99MM6 625 | 9.2 | 4.1 | 8.2 | * | * | * | * | * | * |
| EH99MM7 729 | 10.5 | 5.0 | 10.6 | 91 | * | 96 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | |
| EL01MM2 1 | 2.8 | 1.3 | 3.3 | 94 | 91 | 110 | 98 | 97 | 88 |
| EL01MM3 1 | 2.5 | .3 | 100.0 | 92 | 89 | 109 | 100 | * | 90 |
| EL01MM1 1 | 2.3 | .5 | 3.0 | 94 | 96 | 108 | 106 | 91 | 92 |
| EL07MM2 7 | 3.5 | .3 | 2.2 | 94 | 94 | 110 | 102 | 124 | 118 |
| EL07MM3 7 | 3.6 | 1.3 | 3.3 | * | * | * | * | 126 | 115 |
| EL07MM1 7 | 3.5 | 1.6 | 3.9 | 94 | 98 | 108 | 107 | 130 | 112 |
| EL14MM1 14 | 3.4 | 1.0 | 2.6 | 92 | 94 | 109 | 101 | 125 | 115 |
| EL14MM2 14 | 3.2 | .8 | 2.4 | 95 | 96 | 113 | 105 | 134 | 115 |
| EL14MM3 14 | 2.7 | 1.4 | 3.0 | 97 | 97 | 110 | 101 | 125 | 117 |
| EL28MM2 28 | 3.0 | 1.1 | 3.1 | 90 | 98 | 113 | 105 | 101 | 93 |
| EL28MM3 28 | 3.3 | 1.0 | 3.5 | 93 | 95 | 111 | 102 | 102 | 93 |
| EL28MM1 28 | 2.8 | 1.0 | 3.1 | 98 | 101 | 115 | 108 | 105 | 95 |
| EL99MM1 28 | 2.6 | .3 | 1.4 | * | * | * | * | * | * |
| EL56MM2 57 | 2.6 | 1.9 | 3.6 | 98 | 99 | 107 | 99 | 116 | 97 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | |
| EL56MM3 57 | 1.8 | 1.4 | 2.1 | 98 | 98 | 113 | 109 | 119 | 106 |
| EL56MM1 57 | 2.6 | 1.0 | 2.7 | 99 | 104 | 108 | 108 | 118 | 103 |
| EL99MM2 120 | 3.9 | .5 | 2.1 | * | * | * | * | * | * |
| EL99MM3 234 | 3.1 | 1.6 | 5.4 | * | * | * | * | * | * |
| EL99MM4 357 | 4.7 | 1.1 | 4.0 | * | * | * | * | * | * |
| EL99MM5 493 | 5.2 | 1.1 | 3.7 | * | * | * | * | * | * |
| EL99MM6 626 | 5.0 | * | 1.4 | * | * | * | * | * | * |
| EL99MM7 724 | 5.4 | 2.2 | 5.3 | 90 | * | 80 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | |
| EH010M1 1 | 6.7 | .3 | 3.5 | 111 | 115 | 109 | 104 | 96 | 108 |
| EH070M1 7 | 1.3 | 1.1 | 1.7 | 100 | 104 | 109 | 104 | 102 | 110 |
| EH140M1 14 | 1.5 | .2 | .8 | 94 | 99 | 106 | 105 | 83 | 89 |
| EH990M1 28 | 15.9 | 10.0 | 21.2 | * | * | * | * | * | * |
| EH280M1 28 | 2.1 | * | 1.2 | 100 | 97 | 113 | 106 | 80 | 82 |
| EH560M1 56 | 5.1 | .5 | 2.2 | 88 | 90 | 117 | 106 | 85 | 80 |
| EH990M2 128 | 21.4 | 100.0 | 100.0 | * | * | * | * | * | * |
| EH990M3 251 | 31.7 | 18.8 | 45.5 | * | * | * | * | * | * |
| EH990M4 364 | 33.0 | 13.2 | 36.5 | * | * | * | * | * | * |
| EH990M5 503 | 35.6 | 13.2 | 41.5 | * | * | * | * | * | * |
| EH990M6 626 | 42.2 | 21.1 | 56.2 | * | * | * | * | * | * |
| EH990M7 736 | 47.7 | 18.8 | 53.5 | 98 | * | 101 | * | * | * |
| EL010M3 1 | .7 | | .4 | 99 | 104 | 106 | 99 | 93 | 87 |
| EL010M1 1 | 10.4 | 5.5 | 12.9 | 95 | 99 | 106 | 106 | 87 | 89 |
| EL010M2 1 | .6 | .6 | 1.0 | 102 | 103 | 113 | 104 | 89 | 90 |
| EL070M1 7 | .7 | .6 | 1.2 | 104 | 102 | 122 | 104 | 97 | 96 |
| EL070M2 7 | .6 | .7 | .5 | 98 | 99 | 110 | 101 | 103 | 94 |
| EL070M3 7 | 1.4 | .2 | .4 | 101 | 103 | 114 | 108 | 101 | 95 |
| EL140M2 14 | .7 | .4 | .8 | 101 | 104 | 110 | 107 | 90 | 89 |
| EL140M1 14 | .6 | .5 | .9 | 100 | 102 | 112 | 106 | 87 | 93 |
| EL140M3 14 | 1.8 | .2 | 1.2 | 93 | 100 | 103 | 105 | 85 | 88 |
| EL280M1 28 | 1.6 | * | .6 | 93 | 98 | 103 | 101 | 83 | 83 |
| EL280M2 28 | .9 | * | .4 | 99 | 102 | 108 | 104 | 94 | 89 |
| EL280M3 28 | 1.5 | .2 | .3 | 97 | 97 | 108 | 99 | 87 | 84 |
| EL990M1 28 | 7.9 | 1.8 | 5.2 | * | * | * | * | * | * |
| EL560M2 56 | 1.5 | .8 | 1.3 | 94 | 103 | 106 | 107 | 100 | 81 |
| EL560M1 56 | 2.3 | .7 | 1.4 | 105 | 121 | 107 | 109 | 104 | 90 |
| EL560M3 56 | 1.6 | 1.1 | 1.8 | 94 | 106 | 107 | 107 | 97 | 84 |
| EL990M2 128 | 14.5 | 4.3 | 11.4 | * | * | * | * | * | * |
| EL990M3 237 | 14.5 | 2.2 | 7.8 | * | * | * | * | * | * |
| EL990M4 364 | 16.0 | 2.2 | 10.4 | * | * | * | * | * | * |
| EL990M5 503 | 27.8 | 6.5 | 18.5 | * | * | * | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | ASTM #2 OIL 100.0% 23°C | | | | | | |
| EL990M6 626 | 30.5 | 7.2 | 4.9 | * | * | * | * | * | * |
| EL990M7 731 | 33.4 | 7.6 | 27.6 | 92 | * | 93 | * | * | * |
| | | | ASTM #2 OIL 100.0% 50°C | | | | | | |
| EH010P1 1 | 34.0 | 13.1 | 38.5 | 81 | 77 | 86 | 88 | 67 | 82 |
| EH070P1 7 | 79.3 | 64.0 | 148.7 | 65 | 62 | 70 | 68 | 45 | 39 |
| EH140P1 14 | 82.5 | 29.2 | 97.4 | 57 | 57 | 69 | 62 | 45 | 41 |
| EH280P1 28 | 81.9 | 28.4 | 95.1 | 62 | 62 | 70 | 69 | 59 | 58 |
| EH990P1 28 | 65.9 | 26.0 | 83.9 | * | * | * | * | * | * |
| EH560P1 56 | 86.4 | 29.2 | 99.9 | 62 | 61 | 70 | 67 | 58 | 58 |
| EH990P2 141 | 80.9 | 28.8 | 99.5 | * | * | * | * | * | * |
| EH990P3 257 | 88.8 | 29.7 | 103.0 | * | * | * | * | * | * |
| EH990P4 385 | 86.3 | 28.8 | 102.5 | * | * | * | * | * | * |
| EH990P5 509 | 89.1 | 29.9 | 105.9 | * | * | * | * | * | * |
| EH990P6 627 | 90.1 | 29.7 | 107.4 | * | * | * | * | * | * |
| EH990P7 742 | 91.4 | 30.6 | 109.1 | 71 | * | 69 | * | * | * |
| | | | ASTM #2 OIL 100.0% 23°C | | | | | | |
| EL010P1 1 | 10.0 | 3.6 | 8.5 | 95 | 98 | 107 | 105 | 103 | 97 |
| EL010P3 1 | 14.2 | 6.3 | 15.7 | 98 | 99 | 109 | 101 | 89 | 94 |
| EL010P2 1 | 12.5 | 5.9 | 13.6 | 109 | 107 | 105 | 93 | 101 | 105 |
| EL070P2 7 | 33.4 | 12.4 | 36.9 | 85 | 84 | 102 | 93 | 80 | 63 |
| EL070P3 7 | 34.4 | 42.5 | 76.6 | 87 | 87 | 95 | 94 | 73 | 66 |
| EL070P1 7 | 41.7 | 15.8 | 47.9 | 80 | 80 | 89 | 84 | 62 | 54 |
| EL140P2 14 | 56.1 | 19.9 | 80.2 | 67 | 65 | 78 | 74 | 64 | 75 |
| EL140P3 14 | 46.8 | 17.7 | 54.5 | 75 | 76 | 87 | 84 | 70 | 69 |
| EL140P1 14 | 47.5 | 19.2 | 57.4 | 79 | 75 | 90 | 85 | 52 | 57 |
| EL280P1 28 | 63.0 | 22.6 | 71.0 | 62 | 66 | 70 | 70 | 63 | 70 |
| EL280P3 28 | 62.9 | 23.8 | 73.9 | 58 | 58 | 71 | 69 | 69 | 57 |
| EL280P2 28 | 72.6 | 25.4 | 84.9 | 60 | 60 | 72 | 68 | 67 | 70 |
| EL990P1 28 | 69.3 | 26.6 | 84.5 | * | * | * | * | * | * |
| EL560P2 55 | 75.1 | 27.5 | 90.6 | 75 | 74 | 69 | 69 | 55 | 74 |
| EL560P3 55 | 74.5 | 27.4 | 88.4 | 70 | 65 | 68 | 61 | 53 | 63 |
| EL560P1 56 | 77.5 | 26.3 | 89.9 | 56 | 59 | 67 | 69 | 62 | 55 |
| EL990P2 141 | 90.7 | 31.0 | 105.1 | * | * | * | * | * | * |
| EL990P3 244 | 88.1 | 31.2 | 106.9 | * | * | * | * | * | * |
| EL990P4 385 | 88.6 | 30.8 | 105.2 | * | * | * | * | * | * |
| EL990P5 509 | 89.0 | 31.2 | 103.8 | * | * | * | * | * | * |
| EL990P6 627 | 88.5 | 30.5 | 105.9 | * | * | * | * | * | * |
| EL990P7 737 | 88.0 | 31.0 | 107.4 | 80 | * | 68 | * | * | * |
| | | | PHENOL 8.0% 50°C | | | | | | |
| EH01PH1 1 | 1.9 | .2 | 1.1 | 98 | 101 | 112 | 109 | 84 | 86 |
| EH07PH1 7 | 2.1 | * | .5 | 95 | 97 | 105 | 103 | 88 | 88 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 8.0% 50°C | | | | | | |
| EH14PH1 14 | 4.1 | 1.4 | 4.6 | 95 | 94 | 127 | 129 | 90 | 87 |
| EH28PH1 28 | 4.0 | .7 | 1.5 | 94 | 102 | 118 | 116 | 95 | 82 |
| EH99PH1 29 | 4.0 | 1.2 | 2.7 | * | * | * | * | * | * |
| EH56PH1 56 | 4.8 | 1.8 | 3.7 | 94 | 97 | 117 | 115 | 79 | 80 |
| EH99PH2 121 | 6.9 | 1.6 | 5.5 | * | * | * | * | * | * |
| EH99PH3 243 | 9.9 | 3.3 | 9.6 | * | * | * | * | * | * |
| EH99PH4 362 | 10.9 | 4.0 | 11.3 | * | * | * | * | * | * |
| EH99PH5 499 | 13.5 | 5.4 | 14.0 | * | * | * | * | * | * |
| EH99PH6 624 | 14.8 | 5.4 | 15.0 | * | * | * | * | * | * |
| EH99PH7 728 | 16.0 | 6.1 | 16.6 | 87 | * | 99 | * | * | * |
| | | | PHENOL 8.0% 23°C | | | | | | |
| EL01PH1 1 | 1.5 | .3 | 100.0 | 100 | 102 | 112 | 104 | 93 | 90 |
| EL01PH2 1 | 1.5 | .3 | .5 | 96 | 98 | 115 | 104 | 88 | 84 |
| EL01PH3 1 | 1.4 | .3 | .3 | 97 | 102 | 111 | 106 | 91 | 81 |
| EL07PH1 7 | 1.6 | .2 | .3 | 94 | 98 | 107 | 104 | 91 | 83 |
| EL07PH2 7 | 1.2 | .2 | .9 | 102 | 100 | 114 | 103 | 98 | 83 |
| EL07PH3 7 | 2.0 | 1.2 | 2.4 | 99 | 103 | 113 | 108 | 98 | 90 |
| EL14PH2 14 | 3.0 | 1.0 | 3.0 | 95 | 99 | 110 | 105 | 89 | 82 |
| EL14PH1 14 | 1.9 | .2 | .3 | 89 | 91 | 117 | 111 | 88 | 80 |
| EL14PH3 14 | 2.1 | .7 | 2.2 | 94 | 98 | 111 | 107 | 88 | 83 |
| EL28PH2 28 | 2.3 | 2.8 | 3.8 | 102 | 101 | 115 | 107 | 86 | 84 |
| EL28PH3 28 | 2.7 | .6 | 1.9 | 95 | 99 | 114 | 106 | 95 | 79 |
| EL28PH1 28 | 2.6 | .2 | .9 | 95 | 97 | 112 | 109 | 73 | 93 |
| EL99PH1 29 | 7.7 | .2 | 1.5 | * | * | * | * | * | * |
| EL56PH1 56 | 3.7 | 1.2 | 2.8 | 94 | 93 | 121 | 107 | 88 | 80 |
| EL56PH2 56 | 3.6 | .8 | 2.3 | 95 | 104 | 114 | 111 | 91 | 83 |
| EL56PH3 56 | 3.6 | 1.3 | 2.8 | 92 | 100 | 119 | 110 | 89 | 84 |
| EL99PH2 121 | 9.1 | .2 | 2.2 | * | * | * | * | * | * |
| EL99PH3 230 | 10.4 | 1.0 | 4.1 | * | * | * | * | * | * |
| EL99PH4 362 | 11.3 | 1.2 | 4.7 | * | * | * | * | * | * |
| EL99PH5 499 | 12.7 | 1.5 | 5.3 | * | * | * | * | * | * |
| EL99PH6 625 | 14.2 | 2.0 | 6.6 | * | * | * | * | * | * |
| EL99PH7 723 | 14.9 | 2.9 | 8.8 | 92 | * | 87 | * | * | * |
| | | | PHENOL 1.0% 50°C | | | | | | |
| EH01PL1 1 | 1.2 | .2 | .3 | 95 | 98 | 117 | 116 | 98 | 86 |
| EH07PL1 7 | 1.1 | .7 | .7 | 100 | 97 | 117 | 106 | 92 | 95 |
| EH14PL1 14 | 1.8 | .4 | .8 | 93 | 96 | 109 | 102 | 89 | 90 |
| EH99PL1 28 | 2.2 | 1.1 | 2.0 | * | * | * | * | * | * |
| EH28PL1 28 | 2.0 | 1.0 | 1.2 | 91 | 93 | 119 | 119 | 95 | 88 |
| EH56PL1 56 | 2.4 | 1.4 | 1.8 | 100 | 104 | 123 | 115 | 95 | 86 |
| EH99PL2 122 | 3.7 | 1.1 | 2.9 | * | * | * | * | * | * |
| EH99PL3 245 | 5.2 | 1.8 | 4.4 | * | * | * | * | * | * |
| EH99PL4 363 | 5.5 | 1.8 | 5.1 | * | * | * | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 1.0% 50°C | | | | | | |
| EH99PL5 499 | 5.6 | 1.4 | 4.3 | * | * | * | * | * | * |
| EH99PL6 625 | 6.5 | 2.5 | 5.8 | * | * | * | * | * | * |
| EH99PL7 729 | 6.1 | 3.2 | 6.6 | 96 | * | 91 | * | * | * |
| | | | PHENOL 1.0% 23°C | | | | | | |
| EL01PL2 1 | 1.0 | * | .1 | 92 | 102 | 112 | 101 | 102 | 69 |
| EL01PL3 1 | 1.1 | .2 | .1 | 98 | 100 | 109 | 103 | 92 | 80 |
| EL01PL1 1 | 1.5 | .5 | .5 | 95 | 101 | 106 | 103 | 95 | 91 |
| EL07PL2 7 | .4 | .2 | .4 | 95 | 100 | 105 | 103 | 92 | 87 |
| EL07PL1 7 | .4 | * | .2 | 98 | 102 | 114 | 111 | 104 | 83 |
| EL07PL3 7 | .4 | .7 | .4 | 98 | 99 | 108 | 107 | 97 | 89 |
| EL14PL2 14 | .7 | * | .3 | 97 | 99 | 118 | 107 | 89 | 89 |
| EL14PL3 14 | 1.3 | * | .4 | 95 | 98 | 115 | 108 | 91 | 87 |
| EL14PL1 14 | 1.8 | .7 | 1.4 | 95 | 90 | 112 | 104 | 78 | 97 |
| EL28PL1 28 | 1.2 | .2 | .3 | 91 | 98 | 117 | 115 | 97 | 89 |
| EL28PL3 28 | 1.1 | .3 | 34.0 | 98 | 102 | 112 | 105 | 92 | 88 |
| EL28PL2 28 | 1.3 | .2 | .4 | 100 | 102 | 112 | 108 | 94 | 88 |
| EL99PL1 28 | 2.2 | 1.6 | .1 | * | * | * | * | * | * |
| EL56PL3 56 | 1.5 | .2 | .1 | 97 | 102 | 109 | 106 | 90 | 90 |
| EL56PL1 56 | 1.4 | * | .5 | 95 | 101 | 114 | 107 | 96 | 85 |
| EL56PL2 56 | 1.8 | 1.0 | 2.1 | 103 | 100 | 117 | 113 | 88 | 87 |
| EL99PL2 122 | 3.4 | .5 | 2.6 | * | * | * | * | * | * |
| EL99PL3 233 | 3.2 | 1.1 | 3.7 | * | * | * | * | * | * |
| EL99PL4 363 | 3.9 | .7 | 3.6 | * | * | * | * | * | * |
| EL99PL5 499 | 3.6 | .7 | 3.4 | * | * | * | * | * | * |
| EL99PL6 626 | 4.3 | .7 | 3.4 | * | * | * | * | * | * |
| EL99PL7 724 | 4.0 | 1.4 | 4.3 | 100 | * | 104 | * | * | * |
| | | | PHENOL 4.0% 50°C | | | | | | |
| EH01PM1 1 | 1.3 | .2 | .9 | 92 | 97 | 127 | 121 | 97 | 86 |
| EH07PM1 7 | 1.4 | .2 | .5 | 94 | 97 | 105 | 102 | 96 | 90 |
| EH14PM1 14 | 3.0 | 1.0 | 2.7 | 85 | 93 | 110 | 107 | 95 | 83 |
| EH28PM1 28 | 3.0 | .7 | 1.6 | 94 | 100 | 111 | 109 | 93 | 78 |
| EH99PM1 29 | 3.1 | .9 | 2.1 | * | * | * | * | * | * |
| EH56PM1 56 | 3.6 | 1.6 | 2.5 | 95 | 107 | 119 | 118 | 88 | 73 |
| EH99PM2 121 | 5.0 | 1.6 | 3.7 | * | * | * | * | * | * |
| EH99PM3 244 | 7.7 | 3.8 | 8.5 | * | * | * | * | * | * |
| EH99PM4 362 | 8.4 | 3.6 | 9.2 | * | * | * | * | * | * |
| EH99PM5 499 | 10.5 | 4.2 | 10.4 | * | * | * | * | * | * |
| EH99PM6 624 | 11.0 | 4.5 | 10.8 | * | * | * | * | * | * |
| EH99PM7 728 | 11.5 | 4.7 | 11.5 | 91 | * | 91 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 23°C | | | | | | | | | |
| EL01PM2 1 | 1.2 | .3 | .1 | 97 | 100 | 112 | 103 | 87 | 87 |
| EL01PM1 1 | 1.2 | .2 | .6 | 93 | 94 | 123 | 118 | 91 | 96 |
| EL01PM3 1 | 1.2 | .3 | .1 | 96 | 101 | 112 | 102 | 98 | 83 |
| EL07PM2 7 | .6 | .2 | .5 | 102 | 102 | 112 | 105 | 95 | 84 |
| EL07PM1 7 | 1.1 | .2 | .6 | 96 | 99 | 118 | 111 | 105 | 78 |
| EL07PM3 7 | .5 | .7 | .3 | 96 | 99 | 110 | 101 | 100 | 88 |
| EL14PM3 14 | 1.2 | .9 | .7 | 98 | 100 | 117 | 107 | 91 | 90 |
| EL14PM2 14 | 1.2 | .3 | .4 | 97 | 103 | 109 | 110 | 95 | 85 |
| EL14PM1 14 | 2.2 | .7 | 1.7 | 92 | 93 | 113 | 113 | 92 | 81 |
| EL28PM1 28 | 1.5 | .7 | 43.9 | 91 | 94 | 112 | 109 | 99 | 77 |
| EL28PM3 28 | 2.5 | 1.0 | 1.8 | 96 | 104 | 113 | 108 | 91 | 80 |
| EL28PM2 28 | 1.6 | * | .8 | 100 | 99 | 109 | 115 | 97 | 81 |
| EL99PM1 29 | 1.9 | 1.4 | 1.8 | * | * | * | * | * | * |
| EL56PM2 56 | 2.2 | .8 | 1.6 | 102 | 100 | 116 | 107 | 88 | 82 |
| EL56PM3 56 | 2.3 | .2 | .6 | 100 | 100 | 113 | 106 | 92 | 87 |
| EL56PM1 56 | 1.9 | .5 | .9 | 98 | 105 | 110 | 106 | 90 | 81 |
| EL99PM2 121 | 2.9 | .5 | 1.4 | * | * | * | * | * | * |
| EL99PM3 231 | 2.9 | 1.8 | 3.8 | * | * | * | * | * | * |
| EL99PM4 362 | 3.5 | 3.4 | 5.7 | * | * | * | * | * | * |
| EL99PM5 499 | 4.2 | 1.1 | 3.6 | * | * | * | * | * | * |
| EL99PM6 625 | 4.8 | 1.6 | 4.1 | * | * | * | * | * | * |
| EL99PM7 723 | 4.9 | .9 | 3.9 | 86 | * | 83 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | |
| EH01SH1 1 | .1 | .6 | .5 | 102 | 101 | 111 | 108 | 79 | 83 |
| EH07SH1 7 | .1 | 1.3 | 1.2 | 127 | 133 | 110 | 109 | 109 | 108 |
| EH14SH1 14 | .3 | * | .1 | 91 | 97 | 103 | 96 | 99 | 90 |
| EH28SH1 28 | .4 | * | * | 101 | 122 | 97 | 113 | 86 | 92 |
| EH56SH1 56 | .6 | .3 | .1 | 109 | 101 | 117 | 110 | 90 | 93 |
| EH99SH2 131 | .7 | .5 | .1 | * | * | * | * | * | * |
| EH99SH3 253 | 1.2 | .2 | .4 | * | * | * | * | * | * |
| EH99SH4 379 | 1.7 | * | .3 | * | * | * | * | * | * |
| EH99SH5 510 | 3.1 | 1.1 | .6 | * | * | * | * | * | * |
| EH99SH1 630 | 2.1 | .9 | .7 | * | * | * | * | * | * |
| EH99SH6 630 | .3 | .5 | * | * | * | * | * | * | * |
| EH99SH7 742 | * | .2 | .4 | 109 | * | 98 | * | * | * |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | |
| EL01SH1 1 | .1 | .4 | .1 | 96 | 100 | 108 | 100 | 86 | 90 |
| EL01SH2 1 | .1 | .4 | .6 | 99 | 102 | 107 | 102 | 86 | 84 |
| EL01SH3 1 | .1 | .2 | .2 | 102 | 102 | 113 | 104 | 83 | 90 |
| EL07SH2 7 | .1 | .5 | .3 | 98 | 102 | 115 | 113 | 93 | 80 |
| EL07SH1 7 | 100.0 | .4 | .4 | 96 | 103 | 108 | 105 | 86 | 84 |
| EL07SH3 7 | .1 | .5 | .7 | 98 | 105 | 112 | 106 | 83 | 88 |
| EL14SH3 14 | .2 | .7 | .8 | 103 | 101 | 115 | 100 | 84 | 88 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | |
| EL14SH1 14 | .2 | * | .2 | 107 | 96 | 109 | 97 | 85 | 97 |
| EL14SH2 14 | .2 | .2 | .8 | 104 | 106 | 116 | 113 | 81 | 85 |
| EL28SH2 28 | .1 | .5 | .5 | 109 | 105 | 106 | 110 | 88 | 78 |
| EL28SH3 28 | * | .7 | .7 | 106 | 109 | 116 | 112 | 88 | 86 |
| EL99SH1 28 | .8 | .2 | .4 | * | * | * | * | * | * |
| EL28SH1 28 | .3 | .3 | .5 | 109 | 110 | 102 | 114 | 82 | 97 |
| EL56SH1 56 | .5 | * | .6 | 113 | 97 | 122 | 93 | 92 | 85 |
| EL56SH3 56 | .3 | .7 | .4 | 104 | 104 | 99 | 107 | 84 | 80 |
| EL56SH2 56 | .3 | 1.0 | .8 | 105 | 103 | 103 | 103 | 77 | 84 |
| EL99SH2 131 | .9 | .2 | .2 | * | * | * | * | * | * |
| EL99SH3 246 | .9 | .5 | .2 | * | * | * | * | * | * |
| EL99SH4 379 | .8 | .7 | .4 | * | * | * | * | * | * |
| EL99SH5 510 | .8 | 1.1 | .9 | * | * | * | * | * | * |
| EL99SH6 630 | .1 | .7 | .3 | * | * | * | * | * | * |
| EL99SH7 737 | .3 | .9 | .3 | 102 | * | 104 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | |
| EH01SM1 1 | 1.0 | .5 | .2 | 94 | 88 | 98 | 100 | 71 | 84 |
| EH07SM1 7 | .6 | 1.3 | 1.6 | 94 | 89 | 115 | 120 | 81 | 77 |
| EH14SM1 14 | .2 | .5 | .6 | 102 | 102 | 108 | 105 | 76 | 77 |
| EH28SM1 28 | 5.4 | .5 | .3 | 101 | 89 | 112 | 103 | 84 | 75 |
| EH99SM1 28 | 1.0 | .7 | .3 | * | * | * | * | * | * |
| EH56SM1 61 | .3 | .5 | .4 | 99 | 96 | 114 | 105 | 98 | 94 |
| EH99SM2 132 | 1.2 | * | .3 | * | * | * | * | * | * |
| EH99SM3 254 | 1.0 | * | .2 | * | * | * | * | * | * |
| EH99SM4 370 | .8 | .2 | .7 | * | * | * | * | * | * |
| EH99SM5 511 | 1.4 | * | .7 | * | * | * | * | * | * |
| EH99SM6 624 | .2 | * | .8 | * | * | * | * | * | * |
| EH99SM7 743 | .5 | .9 | .5 | 105 | * | 92 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | |
| EL01SM2 1 | .9 | .3 | .7 | 107 | 105 | 101 | 105 | 91 | 81 |
| EL01SM3 1 | .7 | .3 | .1 | 103 | 106 | 112 | 105 | 90 | 94 |
| EL01SM1 1 | .7 | * | .2 | 109 | 105 | 107 | 105 | 95 | 93 |
| EL07SM2 7 | .6 | .5 | 1.3 | 95 | 86 | 109 | 109 | 88 | 82 |
| EL07SM3 7 | .7 | .8 | 1.0 | 93 | 87 | 101 | 111 | 90 | 81 |
| EL07SM1 7 | .6 | .5 | .4 | 84 | 96 | 110 | 108 | 84 | 79 |
| EL14SM1 14 | .3 | * | .5 | 101 | 100 | 102 | 101 | 78 | 81 |
| EL14SM3 15 | .6 | .3 | .4 | 89 | 98 | 100 | 95 | 87 | 87 |
| EL14SM2 15 | .5 | .8 | 1.2 | 92 | 103 | 98 | 104 | 95 | 93 |
| EL99SM1 28 | .1 | .2 | .2 | * | * | * | * | * | * |
| EL28SM3 28 | .3 | .5 | .6 | 103 | 93 | 100 | 100 | 78 | 84 |
| EL28SM2 28 | .1 | .7 | .8 | 100 | 103 | 106 | 121 | 82 | 75 |
| EL28SM1 28 | 4.9 | * | .1 | 98 | 92 | 112 | 108 | 85 | 83 |
| EL56SM2 56 | .5 | .3 | .1 | 102 | 112 | 106 | 105 | 90 | 103 |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | |
| EL56SM3 56 | .5 | 1.0 | .2 | 102 | 105 | 110 | 101 | 82 | 89 |
| EL56SM1 61 | .5 | .9 | .4 | 95 | 99 | 108 | 107 | 86 | 80 |
| EL99SM2 132 | .2 | .5 | .9 | * | * | * | * | * | * |
| EL99SM3 246 | .2 | .9 | 1.1 | * | * | * | * | * | * |
| EL99SM4 370 | .5 | .7 | 1.0 | * | * | * | * | * | * |
| EL99SM5 511 | 1.0 | .7 | 1.0 | * | * | * | * | * | * |
| EL99SM6 624 | .2 | .9 | 1.5 | * | * | * | * | * | * |
| EL99SM7 738 | .2 | .7 | 1.0 | 100 | * | 100 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | |
| EH01WP1 1 | .7 | .3 | .6 | 116 | 126 | 88 | 91 | 99 | 97 |
| EH07WP1 7 | 1.2 | .5 | .7 | 92 | 102 | 109 | 103 | 87 | 85 |
| EH14WP1 14 | 1.7 | .5 | .9 | 97 | 101 | 112 | 107 | 75 | 95 |
| EH28WP1 28 | 3.9 | 3.8 | 4.2 | 103 | 102 | 110 | 103 | 90 | 83 |
| EH99WP1 28 | 2.4 | .9 | 1.5 | * | * | * | * | * | * |
| EH56WP1 56 | 3.0 | 2.7 | 3.7 | 99 | 96 | 112 | 106 | 85 | 75 |
| EH99WP2 133 | 3.5 | 1.2 | 2.3 | * | * | * | * | * | * |
| EH99WP3 254 | 5.3 | 2.3 | 5.0 | * | * | * | * | * | * |
| EH99WP4 370 | 5.3 | 2.8 | 5.7 | * | * | * | * | * | * |
| EH99WP5 503 | 5.3 | 2.3 | 5.2 | * | * | * | * | * | * |
| EH99WP6 622 | 5.7 | 2.5 | 5.5 | * | * | * | * | * | * |
| EH99WP7 743 | 5.8 | 2.8 | 6.0 | 103 | * | 87 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | |
| EL01WP2 1 | .4 | .3 | .1 | 123 | 115 | 109 | 106 | 97 | 96 |
| EL01WP1 1 | .4 | .6 | .8 | 125 | 122 | 106 | 102 | 103 | 98 |
| EL01WP3 1 | .5 | .3 | .1 | 118 | 114 | 109 | 108 | 94 | 87 |
| EL07WP2 7 | .7 | 1.0 | .9 | 98 | 103 | 112 | 105 | 95 | 84 |
| EL07WP1 7 | .8 | * | .2 | 97 | 95 | 109 | 103 | 85 | 89 |
| EL07WP3 7 | .7 | .5 | .2 | 99 | 94 | 106 | 100 | 92 | 69 |
| EL14WP1 14 | .8 | .7 | .7 | 84 | 86 | 107 | 102 | 88 | 67 |
| EL14WP2 14 | 1.0 | .2 | .3 | 95 | 103 | 105 | 84 | 87 | 88 |
| EL14WP3 14 | .7 | * | .1 | 101 | 104 | 109 | 100 | 88 | 87 |
| EL28WP1 28 | 1.0 | 2.1 | 2.3 | 108 | 115 | 108 | 102 | 97 | 89 |
| EL99WP1 28 | .9 | .5 | .9 | * | * | * | * | * | * |
| EL28WP2 28 | 1.2 | .9 | .9 | 120 | 113 | 106 | 106 | 114 | 106 |
| EL28WP3 28 | 1.1 | .6 | * | 119 | 118 | 113 | 105 | 115 | 97 |
| EL56WP3 56 | 1.3 | * | .9 | 98 | 97 | 107 | 99 | 89 | 86 |
| EL56WP2 56 | 1.5 | .2 | 1.5 | 90 | 90 | 113 | 104 | 89 | 88 |
| EL56WP1 56 | 1.3 | .2 | .6 | 100 | 99 | 110 | 109 | 86 | 86 |
| EL99WP2 132 | 1.8 | * | .7 | * | * | * | * | * | * |
| EL99WP3 246 | .5 | .7 | 4.8 | * | * | * | * | * | * |
| EL99WP4 370 | 2.2 | .7 | 1.6 | * | * | * | * | * | * |
| EL99WP5 503 | 1.9 | * | 1.0 | * | * | * | * | * | * |
| EL99WP6 622 | 2.0 | .9 | 1.8 | * | * | * | * | * | * |
| EL99WP7 738 | 2.0 | 1.4 | 2.7 | 96 | * | 92 | * | * | * |

ETHYLENE PROPYLENE DIENE MONOMER: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | |
| EH01XM1 1 | .2 | * | .1 | 107 | 88 | 117 | 109 | 84 | 95 |
| EH07XM1 7 | .5 | .2 | .2 | 99 | 108 | 111 | 106 | 92 | 70 |
| EH14XM1 14 | .8 | .2 | .1 | 107 | 114 | 113 | 107 | 78 | 94 |
| EH99XM1 28 | 1.0 | .5 | .7 | * | * | * | * | * | * |
| EH28XM1 28 | 4.1 | 3.3 | 3.2 | 109 | 107 | 104 | 112 | 80 | 90 |
| EH56XM1 56 | 1.2 | * | .6 | 89 | 104 | 116 | 111 | 94 | 80 |
| EH99XM2 118 | .9 | .5 | .9 | * | * | * | * | * | * |
| EH99XM3 231 | 2.5 | .5 | .8 | * | * | * | * | * | * |
| EH99XM4 363 | 2.6 | .2 | .8 | * | * | * | * | * | * |
| EH99XM5 489 | 2.9 | .9 | 1.6 | * | * | * | * | * | * |
| EH99XM6 609 | 2.8 | 1.4 | 1.8 | * | * | * | * | * | * |
| EH99XM7 720 | 3.0 | .5 | 1.0 | 107 | * | 89 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | |
| EL01XM2 1 | .2 | .3 | .4 | 99 | 106 | 109 | 112 | 84 | 79 |
| EL01XM1 1 | * | * | * | 110 | 93 | 119 | 98 | 92 | 74 |
| EL01XM3 1 | .3 | * | .4 | 103 | 102 | 114 | 107 | 83 | 78 |
| EL07XM3 7 | .3 | .2 | .4 | 108 | 107 | 115 | 105 | 82 | 91 |
| EL07XM1 7 | .3 | .6 | .9 | 99 | 102 | 110 | 110 | 86 | 68 |
| EL07XM2 7 | .4 | .3 | .1 | 103 | 107 | 113 | 104 | 84 | 89 |
| EL14XM3 14 | .2 | .9 | .9 | 114 | 102 | 113 | 114 | 76 | 91 |
| EL14XM1 14 | .7 | .5 | .6 | 104 | 108 | 107 | 109 | 90 | 98 |
| EL14XM2 14 | .4 | * | .1 | 112 | 109 | 115 | 120 | 72 | 92 |
| EL28XM2 28 | .4 | .3 | .2 | 108 | 103 | 121 | 122 | 85 | 90 |
| EL28XM3 28 | .6 | .2 | .3 | 100 | 102 | 117 | 122 | 89 | 81 |
| EL99XM1 28 | 1.1 | .5 | .5 | * | * | * | * | * | * |
| EL28XM1 28 | .7 | * | .2 | 114 | 113 | 108 | 112 | 84 | 87 |
| EL56XM3 56 | 100.0 | * | .3 | 96 | 91 | 115 | 109 | 90 | 87 |
| EL56XM2 56 | 100.0 | .6 | .7 | 92 | 104 | 114 | 107 | 88 | 78 |
| EL56XM1 56 | .7 | * | .4 | 100 | 88 | 111 | 111 | 74 | 83 |
| EL99XM2 118 | .9 | .8 | .5 | * | * | * | * | * | * |
| EL99XM3 223 | .5 | .5 | .1 | * | * | * | * | * | * |
| EL99XM4 363 | .8 | .5 | .3 | * | * | * | * | * | * |
| EL99XM5 489 | .6 | .5 | .4 | * | * | * | * | * | * |
| EL99XM6 609 | .6 | .5 | .3 | * | * | * | * | * | * |
| EL99XM7 715 | .5 | .3 | .1 | 101 | * | 102 | * | * | * |

## EPI_CO : FINAL PROPERTIES

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | |
| LH01AM1 1 | 4.50 | 61.50 | 3.02 | 1.01 | 86.48 | 93.68 | 396.24 | 405.28 | 15.94 | 17.06 |
| LH07AM1 7 | 4.45 | 61.40 | 3.03 | 1.01 | 90.04 | 103.37 | 430.24 | 427.76 | 15.07 | 15.02 |
| LH14AM1 14 | 4.58 | 63.00 | 3.05 | 1.02 | 99.76 | 102.48 | 414.24 | 398.16 | 13.82 | 15.40 |
| LH28AM1 27 | 4.53 | 62.70 | 3.10 | 1.03 | 94.73 | 105.24 | 427.68 | 418.40 | 14.25 | 15.88 |
| LH99AM1 39 | 4.56 | 62.00 | 3.06 | 1.03 | * | * | * | * | * | * |
| LH56AM1 56 | 4.90 | 66.80 | 3.11 | 1.03 | 91.74 | 113.54 | 344.16 | 318.16 | 13.70 | 14.94 |
| LH99AM2 121 | 4.87 | 65.40 | 3.13 | 1.08 | * | * | * | * | * | * |
| LH99AM3 241 | 5.22 | 68.00 | 3.20 | 1.08 | * | * | * | * | * | * |
| LH99AM4 374 | 5.32 | 68.40 | 3.23 | 1.08 | * | * | * | * | * | * |
| LH99AM5 484 | 5.53 | 70.00 | 3.27 | 1.10 | * | * | * | * | * | * |
| LH99AM6 609 | 5.62 | 70.40 | 3.29 | 1.11 | 73.00 | * | 476.00 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | |
| LL01AM1 1 | 4.32 | 60.10 | 3.01 | 0.99 | 84.72 | 92.24 | 426.72 | 402.88 | 14.98 | 16.62 |
| LL07AM1 7 | 4.46 | 61.60 | 3.01 | 1.00 | 87.86 | 98.04 | 417.04 | 405.60 | 16.06 | 17.21 |
| LL14AM1 14 | 4.30 | 59.30 | 3.01 | 1.00 | 92.88 | 94.32 | 422.08 | 392.64 | 13.90 | 16.90 |
| LL28AM1 27 | 4.24 | 58.90 | 3.02 | 1.00 | 92.50 | 97.66 | 428.16 | 413.04 | 16.05 | 17.57 |
| LL99AM1 39 | 4.26 | 59.10 | 3.01 | 1.01 | * | * | * | * | * | * |
| LL56AM1 56 | 4.62 | 64.20 | 3.04 | 1.01 | 97.11 | 105.26 | 310.56 | 316.64 | 15.08 | 15.66 |
| LL99AM2 101 | 4.28 | 59.50 | 3.02 | 1.01 | * | * | * | * | * | * |
| LL99AM3 241 | 4.29 | 59.40 | 3.02 | 1.01 | * | * | * | * | * | * |
| LL99AM4 374 | 4.32 | 59.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| LL99AM5 484 | 4.32 | 59.30 | 3.02 | 1.01 | * | * | * | * | * | * |
| LL99AM6 606 | 4.36 | 59.70 | 3.03 | 1.01 | 85.87 | * | 860.70 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | |
| LH01BM1 1 | 4.27 | 57.90 | 3.01 | 1.00 | 93.26 | 95.90 | 453.04 | 409.30 | 14.27 | 15.34 |
| LH07BM1 7 | 4.39 | 60.20 | 3.01 | 1.00 | 92.74 | 97.46 | 343.68 | 378.88 | 14.91 | 16.53 |
| LH14BM1 14 | 4.22 | 57.90 | 3.00 | 1.00 | 93.05 | 92.21 | 370.96 | 346.50 | 13.57 | 13.99 |
| LH28BM1 28 | 4.34 | 59.70 | 3.00 | 1.00 | 93.35 | 99.70 | 295.28 | 266.16 | 12.16 | 12.63 |
| LH99BM1 38 | 4.35 | 61.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| LH56BM1 56 | 4.72 | 65.70 | 3.01 | 1.01 | 95.06 | 99.94 | 283.60 | 319.76 | 11.92 | 14.03 |
| LH99BM2 121 | 4.43 | 62.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| LH99BM3 241 | 4.47 | 61.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| LH99BM4 373 | 4.38 | 62.10 | 2.99 | 1.00 | * | * | * | * | * | * |
| LH99BM5 485 | 4.35 | 61.90 | 2.99 | 1.00 | * | * | * | * | * | * |
| LH99BM6 609 | 4.44 | 62.30 | 2.99 | 1.00 | 107.40 | * | 364.00 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | |
| LL01BM1 1 | 4.24 | 58.10 | 3.01 | 1.00 | 86.62 | 93.43 | 418.00 | 410.30 | 13.74 | 15.44 |
| LL07BM1 7 | 4.36 | 59.20 | 3.00 | 1.00 | 90.97 | 94.70 | 454.96 | 429.60 | 14.98 | 15.97 |
| LL14BM1 14 | 4.26 | 58.10 | 3.01 | 1.00 | 87.83 | 94.71 | 434.88 | 404.56 | 14.48 | 16.78 |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | |
| LL28BM1 28 | 4.56 | 63.00 | 3.01 | 1.00 | 90.79 | 96.50 | 304.32 | 426.96 | 15.52 | 16.37 |
| LL99BM1 38 | 4.25 | 58.70 | 3.02 | 1.00 | * | * | * | * | * | * |
| LL56BM1 56 | 4.65 | 63.90 | 3.05 | 1.00 | 94.50 | 92.62 | 444.08 | 476.80 | 14.73 | 16.58 |
| LL99BM2 101 | 4.25 | 58.60 | 3.02 | 1.01 | * | * | * | * | * | * |
| LL99BM3 241 | 4.34 | 58.80 | 3.02 | 1.00 | * | * | * | * | * | * |
| LL99BM4 373 | 4.27 | 59.20 | 3.02 | 1.00 | * | * | * | * | * | * |
| LL99BM5 485 | 4.25 | 58.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| LL99BM6 606 | 4.26 | 58.70 | 3.02 | 1.00 | 83.83 | * | 623.17 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | |
| LH01DH1 1 | 4.93 | 65.50 | 3.07 | 1.02 | 80.60 | 84.70 | 373.06 | 324.26 | 14.04 | 13.75 |
| LH07DH1 7 | 5.33 | 66.20 | 3.23 | 1.05 | 80.96 | 77.20 | 365.12 | 372.10 | 13.44 | 11.81 |
| LH14DH1 14 | 5.29 | 67.20 | 3.10 | 1.05 | 72.78 | 79.26 | 345.38 | 328.00 | 12.27 | 12.70 |
| LH28DH1 28 | 5.55 | 69.10 | 3.27 | 1.08 | 65.82 | 69.92 | 361.94 | 332.16 | 11.56 | 10.96 |
| LH99DH1 37 | 5.67 | 69.90 | 3.36 | 1.10 | * | * | * | * | * | * |
| LH56DH1 56 | 5.24 | 67.70 | 3.22 | 1.06 | 87.36 | 89.44 | 324.98 | 296.86 | 14.44 | 13.83 |
| LH99DH2 121 | 5.65 | 70.80 | 3.38 | 1.10 | * | * | * | * | * | * |
| LH99DH3 234 | 5.35 | 68.50 | 3.30 | 1.08 | * | * | * | * | * | * |
| LH99DH4 365 | 5.41 | 69.80 | 3.30 | 1.08 | * | * | * | * | * | * |
| LH99DH5 499 | 5.52 | 71.70 | 3.25 | 1.07 | * | * | * | * | * | * |
| LH99DH6 609 | 5.61 | 72.40 | 3.29 | 1.08 | 91.80 | * | 499.25 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | |
| LL01DH1 1 | 4.79 | 64.90 | 3.05 | 1.01 | 80.02 | 84.52 | 364.32 | 329.54 | 14.29 | 14.72 |
| LL07DH1 7 | 4.87 | 64.90 | 3.12 | 1.03 | 77.22 | 82.18 | 393.00 | 357.86 | 13.22 | 12.71 |
| LL14DH1 14 | 5.32 | 67.50 | 3.18 | 1.04 | 77.68 | 78.84 | 405.34 | 359.90 | 11.53 | 11.94 |
| LL28DH1 28 | 5.26 | 67.60 | 3.19 | 1.05 | 73.82 | 77.78 | 433.64 | 396.05 | 11.86 | 12.21 |
| LL99DH1 37 | 5.60 | 70.80 | 3.27 | 1.06 | * | * | * | * | * | * |
| LL56DH1 56 | 5.11 | 65.50 | 3.20 | 1.05 | 75.38 | 81.08 | 378.00 | 353.60 | 12.71 | 12.49 |
| LL99DH2 101 | 5.67 | 72.60 | 3.30 | 1.08 | * | * | * | * | * | * |
| LL99DH3 234 | 5.77 | 72.90 | 3.31 | 1.08 | * | * | * | * | * | * |
| LL99DH4 365 | 5.69 | 72.20 | 3.29 | 1.07 | * | * | * | * | * | * |
| LL99DH5 500 | 5.58 | 71.80 | 3.33 | 1.09 | * | * | * | * | * | * |
| LL99DH6 606 | 6.16 | 74.20 | 3.43 | 1.12 | 98.69 | * | 674.33 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | |
| LH01DL1 1 | 4.82 | 65.90 | 3.03 | 1.01 | 75.88 | 85.18 | 388.58 | 364.72 | 14.90 | 15.32 |
| LH07DL1 7 | 4.86 | 65.80 | 3.07 | 1.02 | 81.28 | 85.42 | 398.26 | 354.90 | 14.73 | 14.58 |
| LH14DL1 14 | 4.80 | 63.70 | 3.13 | 1.03 | 80.10 | 84.70 | 336.92 | 327.96 | 13.52 | 13.61 |
| LH28DL1 28 | 5.32 | 70.40 | 3.17 | 1.05 | 80.90 | 84.90 | 321.93 | 309.58 | 13.20 | 12.37 |
| LH99DL1 37 | 5.02 | 67.20 | 3.18 | 1.05 | * | * | * | * | * | * |
| LH56DL1 56 | 5.10 | 66.20 | 3.19 | 1.05 | 84.12 | 88.16 | 234.58 | 266.76 | 13.84 | 13.99 |
| LH99DL2 121 | 5.12 | 68.30 | 3.21 | 1.06 | * | * | * | * | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | |
| LH99DL3 234 | 5.30 | 69.30 | 3.26 | 1.07 | * | * | * | * | * | * |
| LH99DL4 364 | 5.34 | 68.60 | 3.31 | 1.08 | * | * | * | * | * | * |
| LH99DL5 499 | 5.38 | 67.70 | 3.31 | 1.08 | * | * | * | * | * | * |
| LH99DL6 609 | 5.38 | 69.20 | 3.32 | 1.08 | 91.94 | * | 536.00 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | |
| LL01DL1 1 | 4.62 | 63.50 | 3.00 | 1.00 | 80.72 | 86.86 | 365.20 | 326.38 | 16.44 | 16.10 |
| LL07DL1 7 | 4.64 | 63.10 | 3.03 | 1.01 | 80.62 | 85.66 | 421.32 | 378.84 | 14.90 | 15.43 |
| LL14DL1 14 | 4.55 | 61.90 | 3.06 | 1.01 | 79.56 | 83.44 | 392.24 | 337.82 | 14.40 | 14.29 |
| LL28DL1 28 | 4.86 | 65.10 | 3.07 | 1.02 | 80.00 | 84.96 | 386.20 | 360.04 | 14.40 | 14.28 |
| LL99DL1 37 | 4.43 | 60.50 | 3.07 | 1.02 | * | * | * | * | * | * |
| LL56DL1 56 | 4.71 | 63.10 | 3.09 | 1.02 | 80.78 | 85.70 | 389.74 | 359.48 | 15.33 | 15.50 |
| LL99DL2 101 | 4.51 | 61.10 | 3.10 | 1.03 | * | * | * | * | * | * |
| LL99DL3 234 | 4.61 | 61.70 | 3.13 | 1.04 | * | * | * | * | * | * |
| LL99DL4 364 | 4.67 | 62.40 | 3.15 | 1.04 | * | * | * | * | * | * |
| LL99DL5 500 | 4.74 | 62.50 | 3.16 | 1.05 | * | * | * | * | * | * |
| LL99DL6 606 | 4.77 | 63.00 | 3.17 | 1.05 | 91.05 | * | 745.50 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | |
| LH01DM1 1 | 5.33 | 69.30 | 3.16 | 1.04 | 78.60 | 82.96 | 377.04 | 351.54 | 13.01 | 13.16 |
| LH07DM1 7 | 4.92 | 64.50 | 3.12 | 1.04 | 77.58 | 82.32 | 419.38 | 387.70 | 13.60 | 13.89 |
| LH14DM1 14 | 4.94 | 64.30 | 3.18 | 1.04 | 75.50 | 80.44 | 361.74 | 329.02 | 12.85 | 12.58 |
| LH28DM1 28 | 5.41 | 69.10 | 3.21 | 1.06 | 75.74 | 79.32 | 342.48 | 299.30 | 12.36 | 11.73 |
| LH99DM1 37 | 5.36 | 69.10 | 3.24 | 1.07 | * | * | * | * | * | * |
| LH56DM1 56 | 5.16 | 67.00 | 3.20 | 1.05 | 84.86 | 89.24 | 291.52 | 274.74 | 14.28 | 14.21 |
| LH99DM2 121 | 5.53 | 70.80 | 3.30 | 1.08 | * | * | * | * | * | * |
| LH99DM3 234 | 5.52 | 70.80 | 3.30 | 1.09 | * | * | * | * | * | * |
| LH99DM4 365 | 5.56 | 70.70 | 3.31 | 1.08 | * | * | * | * | * | * |
| LH99DM5 499 | 5.61 | 71.50 | 3.32 | 1.09 | * | * | * | * | * | * |
| LH99DM6 609 | 5.77 | 72.10 | 3.36 | 1.10 | 90.15 | * | 479.67 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | |
| LL01DM1 1 | 4.82 | 66.10 | 3.03 | 1.00 | 81.32 | 86.16 | 360.46 | 306.08 | 15.68 | 15.23 |
| LL07DM1 7 | 4.83 | 66.10 | 3.06 | 1.02 | 78.86 | 83.58 | 371.92 | 391.80 | 14.47 | 15.03 |
| LL14DM1 14 | 4.87 | 63.70 | 3.12 | 1.03 | 77.96 | 80.96 | 359.62 | 354.82 | 11.93 | 11.96 |
| LL28DM1 28 | 5.09 | 66.00 | 3.15 | 1.04 | 80.00 | 82.30 | 398.78 | 356.68 | 12.61 | 12.60 |
| LL99DM1 37 | 4.77 | 62.10 | 3.13 | 1.06 | * | * | * | * | * | * |
| LL56DM1 56 | 4.97 | 65.70 | 3.15 | 1.03 | 80.86 | 83.36 | 396.14 | 362.14 | 13.72 | 14.10 |
| LL99DM2 102 | 4.83 | 63.00 | 3.16 | 1.07 | * | * | * | * | * | * |
| LL99DM3 234 | 5.52 | 63.00 | 3.17 | 1.07 | * | * | * | * | * | * |
| LL99DM4 365 | 5.00 | 63.90 | 3.20 | 1.08 | * | * | * | * | * | * |
| LL99DM5 500 | 4.98 | 64.20 | 3.20 | 1.08 | * | * | * | * | * | * |
| LL99DM6 606 | 4.89 | 63.70 | 3.18 | 1.07 | 93.23 | * | 790.20 | * | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 8.0% 50°C | | | | | | | | | | |
| LH01FH1 1 | 4.74 | 64.60 | 3.04 | 1.01 | 79.44 | 86.56 | 400.00 | 365.20 | 8.85 | 12.56 |
| LH07FH1 7 | 7.03 | 78.80 | 3.59 | 1.15 | 48.48 | 50.32 | * | 243.20 | 7.46 | 7.06 |
| LH14FH1 14 | 7.07 | 77.40 | 3.62 | 1.17 | 44.32 | 49.44 | 211.20 | 202.40 | 7.40 | 6.82 |
| LH28FH1 28 | 7.12 | 78.70 | 3.71 | 1.16 | 51.44 | 51.96 | 244.00 | 213.60 | 6.02 | 6.26 |
| LH99FH1 39 | 6.53 | 73.30 | 3.61 | 1.16 | * | * | * | * | * | * |
| LH56FH1 56 | 7.64 | 81.90 | 3.69 | 1.18 | 47.44 | 48.12 | 244.00 | 200.80 | 4.92 | 4.41 |
| LH99FH2 121 | 8.27 | 80.80 | 3.96 | 1.25 | * | * | * | * | * | * |
| LH99FH3 233 | 6.90 | 71.50 | 3.71 | 1.28 | * | * | * | * | * | * |
| LH99FH4 368 | 6.78 | 74.30 | 3.70 | 1.19 | * | * | * | * | * | * |
| LH99FH5 499 | 7.58 | 78.20 | 3.82 | 1.22 | * | * | * | * | * | * |
| LH99FH6 609 | 8.16 | 81.40 | 3.88 | 1.24 | 40.40 | * | 164.30 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | |
| LL01FH1 1 | 4.57 | 63.40 | 3.02 | 1.00 | 81.12 | 84.80 | 401.60 | 382.40 | 20.80 | 26.00 |
| LL07FH1 7 | 7.01 | 79.80 | 3.57 | 1.15 | 44.84 | 50.24 | 246.40 | 229.60 | 9.02 | 8.74 |
| LL14FH1 14 | 7.16 | 78.80 | 3.62 | 1.16 | 45.04 | 45.92 | 236.00 | 214.40 | 6.32 | 6.34 |
| LL28FH1 28 | 6.99 | 78.10 | 3.70 | 1.16 | 55.92 | 56.08 | 321.60 | 281.60 | 7.80 | 6.82 |
| LL99FH1 39 | 6.92 | 74.50 | 3.69 | 1.18 | * | * | * | * | * | * |
| LL56FH1 56 | 6.83 | 73.50 | 3.66 | 1.17 | 44.56 | 48.08 | 249.60 | 239.20 | 6.08 | 5.44 |
| LL99FH2 102 | 7.59 | 78.80 | 3.86 | 1.23 | * | * | * | * | * | * |
| LL99FH3 233 | 7.86 | 79.20 | 3.90 | 1.24 | * | * | * | * | * | * |
| LL99FH4 368 | 6.85 | 76.80 | 3.72 | 1.19 | * | * | * | * | * | * |
| LL99FH5 500 | 7.43 | 78.20 | 3.78 | 1.21 | * | * | * | * | * | * |
| LL99FH6 606 | 7.42 | 78.10 | 3.77 | 1.21 | 31.51 | * | 172.50 | * | * | * |
| FURFURAL 1.0% 50°C | | | | | | | | | | |
| LH01FL1 1 | 4.73 | 64.00 | 3.05 | 1.01 | 78.63 | 82.76 | 439.28 | 377.76 | 17.77 | 24.13 |
| LH07FL1 7 | 4.99 | 66.00 | 3.13 | 1.03 | 81.04 | 84.84 | 416.00 | 405.60 | 17.08 | 16.66 |
| LH14FL1 14 | 5.03 | 65.80 | 3.16 | 1.05 | 83.12 | 84.40 | 351.20 | 320.00 | 15.74 | 26.00 |
| LH28FL1 28 | 5.12 | 66.30 | 3.19 | 1.05 | 79.60 | 81.36 | 315.20 | 321.60 | 12.46 | 11.88 |
| LH99FL1 39 | 5.24 | 68.80 | 3.23 | 1.06 | * | * | * | * | * | * |
| LH56FL1 56 | 5.27 | 67.10 | 3.24 | 1.06 | 78.64 | 84.00 | 325.60 | 285.60 | 12.16 | 11.54 |
| LH56FL2 56 | 5.15 | 65.10 | 3.24 | 1.07 | 84.32 | 79.40 | 307.20 | 288.80 | 13.16 | 11.88 |
| LH99FL2 121 | 5.59 | 71.40 | 3.32 | 1.08 | * | * | * | * | * | * |
| LH99FL3 233 | 5.78 | 72.40 | 3.37 | 1.10 | * | * | * | * | * | * |
| LH99FL4 367 | 5.92 | 73.20 | 3.40 | 1.10 | * | * | * | * | * | * |
| LH99FL5 499 | 6.03 | 74.20 | 3.43 | 1.11 | * | * | * | * | * | * |
| LH99FL6 609 | 6.10 | 74.80 | 3.43 | 1.12 | 90.50 | * | 411.00 | * | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 23°C | | | | | | | | | | |
| LL01FL1 1 | 4.54 | 62.20 | 3.01 | 1.00 | 78.38 | 83.56 | 379.12 | 367.92 | 17.69 | 24.69 |
| LL07FL1 7 | 4.66 | 63.20 | 3.05 | 1.01 | 80.08 | 86.80 | 395.60 | 389.20 | 17.96 | 19.42 |
| LL14FL1 14 | 4.79 | 64.70 | 3.07 | 1.02 | 78.16 | 84.00 | 391.20 | 364.80 | 17.76 | 18.96 |
| LL28FL1 28 | 4.84 | 64.90 | 3.10 | 1.02 | 78.56 | 82.96 | 440.80 | 410.40 | 14.22 | 14.97 |
| LL99FL1 39 | 4.51 | 60.60 | 3.08 | 1.03 | * | * | * | * | * | * |
| LL56FL1 56 | 4.69 | 61.20 | 3.12 | 1.03 | 78.72 | 83.76 | 420.00 | 389.60 | 15.06 | 14.90 |
| LL56FL2 56 | 4.66 | 60.70 | 3.13 | 1.03 | 77.68 | 89.52 | 407.20 | 400.00 | 14.48 | 15.20 |
| LL99FL2 102 | 4.63 | 61.60 | 3.11 | 1.05 | * | * | * | * | * | * |
| LL99FL3 233 | 4.77 | 62.80 | 3.15 | 1.06 | * | * | * | * | * | * |
| LL99FL4 367 | 4.86 | 63.00 | 3.17 | 1.06 | * | * | * | * | * | * |
| LL99FL5 500 | 4.93 | 63.60 | 3.18 | 1.07 | * | * | * | * | * | * |
| LL99FL6 606 | 4.98 | 63.90 | 3.20 | 1.18 | 90.23 | * | 752.17 | * | * | * |
| FURFURAL 4.0% 50°C | | | | | | | | | | |
| LH01FM1 1 | 5.19 | 66.40 | 3.19 | 1.05 | 75.80 | 77.54 | 416.46 | 388.00 | 14.70 | 18.73 |
| LH07FM1 7 | 5.62 | 70.30 | 3.28 | 1.07 | 70.16 | 70.52 | 376.80 | 338.40 | 14.46 | 12.96 |
| LH14FM1 14 | 5.69 | 70.20 | 3.34 | 1.09 | 65.44 | 68.56 | 340.00 | 316.80 | 11.82 | 11.30 |
| LH28FM1 28 | 5.96 | 72.70 | 3.38 | 1.10 | 66.56 | 66.96 | 306.40 | 280.80 | 9.96 | 11.10 |
| LH99FM1 39 | 5.82 | 71.90 | 3.38 | 1.10 | * | * | * | * | * | * |
| LH56FM1 56 | 6.42 | 76.30 | 3.45 | 1.12 | 64.96 | 66.08 | 280.80 | 250.40 | 9.06 | 8.96 |
| LH99FM2 121 | 6.64 | 80.10 | 3.57 | 1.15 | * | * | * | * | * | * |
| LH99FM3 233 | 7.40 | 81.10 | 3.72 | 1.20 | * | * | * | * | * | * |
| LH99FM4 367 | 7.15 | 80.50 | 3.67 | 1.19 | * | * | * | * | * | * |
| LH99FM5 499 | 7.26 | 80.80 | 3.69 | 1.19 | * | * | * | * | * | * |
| LH99FM6 609 | 7.20 | 80.00 | 3.66 | 1.18 | 70.60 | * | 291.00 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | | | | | |
| LL01FM1 1 | 4.91 | 64.80 | 3.09 | 1.03 | 77.93 | 78.20 | 400.00 | 354.80 | 15.81 | 19.29 |
| LL07FM1 7 | 5.19 | 66.10 | 3.21 | 1.06 | 72.88 | 77.84 | 428.00 | 396.40 | 15.08 | 14.90 |
| LL14FM1 14 | 5.51 | 69.30 | 3.26 | 1.07 | 69.60 | 70.72 | 440.00 | 383.20 | 12.34 | 13.44 |
| LL28FM1 28 | 5.54 | 68.90 | 3.28 | 1.07 | 67.33 | 69.60 | 404.00 | 408.80 | 10.87 | 12.58 |
| LL99FM1 39 | * | * | * | * | * | * | * | * | * | * |
| LL56FM1 56 | 5.87 | 72.70 | 3.32 | 1.08 | 68.80 | 71.68 | 354.40 | 336.80 | 11.20 | 10.32 |
| LL99FM2 105 | 5.98 | 73.80 | 3.40 | 1.10 | * | * | * | * | * | * |
| LL99FM3 233 | 6.24 | 75.40 | 3.46 | 1.12 | * | * | * | * | * | * |
| LL99FM4 367 | 6.05 | 73.80 | 3.40 | 1.11 | * | * | * | * | * | * |
| LL99FM5 500 | 6.57 | 77.40 | 3.50 | 1.13 | * | * | * | * | * | * |
| LL99FM6 606 | 6.90 | 79.10 | 3.61 | 1.17 | 72.32 | * | 430.58 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | |
| LH01MH1 1 | 7.61 | 83.60 | 3.98 | 1.25 | 40.88 | 37.68 | 229.44 | 192.56 | 6.28 | 6.66 |
| LH07MH1 7 | 7.18 | 84.20 | 3.75 | 1.20 | 47.28 | 49.20 | 313.28 | 218.80 | 8.55 | 8.02 |
| LH14MH1 14 | 7.97 | 88.90 | 3.98 | 1.26 | 36.08 | 37.36 | 175.44 | 151.20 | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | |
| LH28MH1 28 | 7.68 | 86.00 | 3.87 | 1.24 | 32.71 | 34.12 | 169.30 | 166.48 | 6.17 | 5.49 |
| LH99MH1 36 | 7.03 | 81.00 | 3.67 | 1.22 | * | * | * | * | * | * |
| LH56MH1 55 | 7.22 | 82.90 | 3.77 | 1.21 | 34.48 | 32.38 | 168.07 | 146.24 | 6.03 | 5.67 |
| LH99MH2 120 | 7.25 | 84.90 | 3.78 | 1.20 | * | * | * | * | * | * |
| LH99MH3 247 | 6.37 | 76.50 | 3.47 | 1.11 | * | * | * | * | * | * |
| LH99MH4 367 | 6.29 | 76.10 | 3.54 | 1.14 | * | * | * | * | * | * |
| LH99MH5 500 | 6.04 | 75.20 | 3.41 | 1.09 | * | * | * | * | * | * |
| LH99MH6 609 | 5.65 | 72.70 | 3.37 | 1.10 | 36.58 | * | 311.58 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | |
| LL01MH1 1 | 7.64 | 86.40 | 3.87 | 1.23 | 40.88 | 37.84 | 237.68 | 195.12 | 6.56 | 7.30 |
| LL07MH1 7 | 6.51 | 85.80 | 3.74 | 1.19 | 48.80 | 49.52 | 272.64 | 246.64 | 8.50 | 7.86 |
| LL14MH1 14 | 6.52 | 80.40 | 3.61 | 1.16 | 56.40 | 56.40 | 340.56 | 311.76 | 10.94 | 11.34 |
| LL28MH1 28 | 7.30 | 80.00 | 3.77 | 1.20 | 37.80 | 38.23 | 202.00 | 185.76 | 7.13 | 7.18 |
| LL99MH1 36 | 7.11 | 78.90 | 3.79 | 1.20 | * | * | * | * | * | * |
| LL56MH1 55 | 6.92 | 82.90 | 3.82 | 1.22 | 37.18 | 37.89 | 189.60 | 166.64 | 6.71 | 6.76 |
| LL99MH2 109 | 5.96 | 75.60 | 3.60 | 1.17 | * | * | * | * | * | * |
| LL99MH3 247 | 6.37 | 73.20 | 3.53 | 1.13 | * | * | * | * | * | * |
| LL99MH4 367 | 6.01 | 72.20 | 3.50 | 1.12 | * | * | * | * | * | * |
| LL99MH5 501 | 7.18 | 71.50 | 3.41 | 1.13 | * | * | * | * | * | * |
| LL99MH6 606 | 6.03 | 73.10 | 3.53 | 1.13 | 65.77 | * | 601.60 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | |
| LH01ML1 1 | 4.51 | 59.90 | 3.11 | 1.02 | 80.72 | 87.60 | 437.92 | 414.08 | 14.62 | 14.78 |
| LH07ML1 7 | 4.72 | 61.60 | 3.17 | 1.05 | 80.24 | 85.12 | 378.56 | 403.76 | 16.22 | 16.98 |
| LH14ML1 14 | 4.82 | 63.00 | 3.20 | 1.06 | 83.60 | 87.12 | 337.76 | 333.20 | 16.70 | 19.38 |
| LH28ML1 28 | 5.27 | 66.90 | 3.27 | 1.07 | 80.60 | 84.57 | 337.44 | 336.24 | 14.42 | 12.49 |
| LH99ML1 37 | 4.91 | 63.30 | 3.26 | 1.07 | * | * | * | * | * | * |
| LH56ML1 55 | 5.41 | 68.50 | 3.25 | 1.17 | 81.58 | 87.85 | 312.48 | 316.88 | 14.89 | 13.76 |
| LH99ML2 121 | 5.03 | 64.30 | 3.29 | 1.08 | * | * | * | * | * | * |
| LH99ML3 247 | 4.99 | 63.90 | 3.27 | 1.07 | * | * | * | * | * | * |
| LH99ML4 367 | 5.02 | 64.70 | 3.20 | 1.07 | * | * | * | * | * | * |
| LH99ML5 500 | 5.01 | 64.20 | 3.28 | 1.07 | * | * | * | * | * | * |
| LH99ML6 609 | 5.05 | 64.50 | 3.29 | 1.08 | 84.91 | * | 443.67 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | |
| LL01ML1 1 | 4.48 | 60.80 | 3.03 | 1.00 | 86.16 | 87.44 | 419.12 | 395.04 | 17.74 | 16.50 |
| LL07ML1 7 | 4.83 | 65.60 | 3.07 | 1.02 | 86.16 | 89.68 | 440.64 | 383.76 | 16.80 | 17.75 |
| LL14ML1 14 | 4.83 | 66.10 | 3.09 | 1.02 | 83.92 | 87.28 | 420.32 | 392.64 | * | * |
| LL28ML1 28 | 5.00 | 66.90 | 3.11 | 1.03 | 82.41 | 88.66 | 464.00 | 436.16 | 15.63 | 15.88 |
| LL99ML1 37 | 4.66 | 62.40 | 3.11 | 1.04 | * | * | * | * | * | * |
| LL56ML1 55 | 5.02 | 66.90 | 3.13 | 1.04 | 83.99 | 86.50 | 432.40 | 391.44 | 17.33 | 16.23 |
| LL99ML2 109 | 4.76 | 63.40 | 3.15 | 1.06 | * | * | * | * | * | * |

EPICHLOROHYDRIN RUBBER AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | |
| LL99ML3 247 | 4.91 | 64.10 | 3.18 | 1.06 | * | * | * | * | * | * |
| LL99ML4 367 | 4.99 | 64.20 | 3.27 | 1.08 | * | * | * | * | * | * |
| LL99ML5 501 | 5.04 | 65.10 | 3.21 | 1.07 | * | * | * | * | * | * |
| LL99ML6 606 | 5.06 | 65.50 | 3.23 | 1.08 | 90.57 | * | 739.00 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | |
| LH01MM1 1 | 5.40 | 67.10 | 3.41 | 1.10 | 66.80 | 66.32 | 409.04 | 358.56 | 11.96 | 10.86 |
| LH07MM1 7 | 5.56 | 69.20 | 3.40 | 1.11 | 71.76 | 71.60 | 370.56 | 346.40 | 12.30 | 12.82 |
| LH14MM1 14 | 6.18 | 66.60 | 3.47 | 1.12 | 62.32 | 66.48 | 289.12 | 277.12 | 12.10 | 12.86 |
| LH28MM1 28 | 6.45 | 77.20 | 3.55 | 1.14 | 54.44 | 60.87 | 259.36 | 248.32 | 8.48 | 8.45 |
| LH99MM1 37 | 5.91 | 71.90 | 3.51 | 1.13 | * | * | * | * | * | * |
| LH56MM1 55 | 5.75 | 70.90 | 3.04 | 1.09 | 74.49 | 75.86 | 335.12 | 311.92 | 12.83 | 12.23 |
| LH99MM2 121 | 5.92 | 72.10 | 3.51 | 1.13 | * | * | * | * | * | * |
| LH99MM3 247 | 5.62 | 73.00 | 3.36 | 1.09 | * | * | * | * | * | * |
| LH99MM4 367 | 5.12 | 66.70 | 3.27 | 1.07 | * | * | * | * | * | * |
| LH99MM5 500 | 5.25 | 67.70 | 3.21 | 1.07 | * | * | * | * | * | * |
| LH99MM6 609 | 5.22 | 67.60 | 3.31 | 1.08 | 73.29 | * | 528.92 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | |
| LL01MM1 1 | 5.46 | 63.10 | 3.27 | 1.06 | 73.68 | 75.76 | 448.48 | 412.88 | 13.54 | 11.62 |
| LL07MM1 7 | 5.30 | 68.00 | 3.30 | 1.08 | 78.00 | 82.32 | 432.48 | 412.80 | 12.30 | 13.14 |
| LL14MM1 14 | 5.60 | 72.50 | 3.33 | 1.08 | 71.92 | 78.00 | 346.64 | 395.20 | 14.58 | 15.30 |
| LL28MM1 28 | 5.88 | 71.60 | 3.46 | 1.12 | 66.95 | 65.54 | 408.72 | 356.24 | 10.81 | 10.22 |
| LL99MM1 37 | 5.65 | 69.40 | 3.39 | 1.12 | * | * | * | * | * | * |
| LL56MM1 55 | 5.63 | 70.50 | 3.35 | 1.09 | 70.74 | 70.42 | 415.12 | 375.28 | 12.36 | 11.81 |
| LL99MM2 109 | 5.81 | 72.80 | 3.50 | 1.17 | * | * | * | * | * | * |
| LL99MM3 247 | 5.76 | 69.20 | 3.39 | 1.12 | * | * | * | * | * | * |
| LL99MM4 367 | 5.51 | 68.50 | 3.36 | 1.11 | * | * | * | * | * | * |
| LL99MM5 501 | 5.57 | 66.10 | 3.25 | 1.10 | * | * | * | * | * | * |
| LL99MM6 606 | 5.53 | 69.10 | 3.37 | 1.08 | 79.31 | * | 678.80 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | |
| LH01OM1 1 | 4.52 | 61.40 | 3.04 | 1.01 | 83.43 | 86.58 | 429.20 | 404.56 | 15.33 | 16.54 |
| LH07OM1 7 | 4.45 | 59.60 | 3.09 | 1.02 | 85.21 | 95.72 | 383.68 | 416.32 | 18.43 | 20.31 |
| LH14OM1 13 | 4.56 | 59.90 | 3.10 | 1.02 | 89.29 | 95.16 | 407.04 | 404.32 | 16.14 | 17.35 |
| LH28OM1 28 | 4.81 | 62.90 | 3.17 | 1.04 | 88.80 | 92.00 | 344.00 | 308.00 | 12.20 | 12.70 |
| LH99OM1 39 | 5.08 | 67.30 | 3.18 | 1.05 | * | * | * | * | * | * |
| LH56OM1 56 | 4.95 | 63.10 | 3.22 | 1.06 | 89.43 | 91.21 | 340.72 | 306.96 | 13.31 | 14.13 |
| LH99OM2 121 | 5.23 | 68.30 | 3.22 | 1.06 | * | * | * | * | * | * |
| LH99OM3 247 | 5.23 | 68.40 | 3.23 | 1.06 | * | * | * | * | * | * |
| LH99OM4 371 | 5.32 | 69.00 | 3.25 | 1.06 | * | * | * | * | * | * |
| LH99OM5 494 | 5.28 | 68.80 | 3.26 | 1.07 | * | * | * | * | * | * |
| LH99OM6 609 | 5.34 | 68.80 | 3.25 | 1.07 | 105.20 | * | 590.00 | * | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | |
| LL01OM1 1 | 4.42 | 60.00 | 3.00 | 1.00 | 85.80 | 88.46 | 445.20 | 415.28 | 15.31 | 18.05 |
| LL07OM1 7 | 4.67 | 62.90 | 3.02 | 1.01 | 87.62 | 93.85 | 455.92 | 428.48 | 16.50 | 17.94 |
| LL14OM1 13 | 4.54 | 61.10 | 3.01 | 1.01 | 88.07 | 94.57 | 443.60 | 442.72 | 15.95 | 16.91 |
| LL28OM1 28 | 4.57 | 61.40 | 3.05 | 1.01 | 85.60 | 90.00 | 468.00 | 452.00 | 13.50 | 13.00 |
| LL99OM1 39 | 4.67 | 64.60 | 3.07 | 1.02 | * | * | * | * | * | * |
| LL56OM1 56 | 4.61 | 62.20 | 3.06 | 1.02 | 84.07 | 92.47 | 413.92 | 460.16 | 15.96 | 16.65 |
| LL99OM2 105 | 4.76 | 65.20 | 3.10 | 1.02 | * | * | * | * | * | * |
| LL99OM3 247 | 4.89 | 66.20 | 3.13 | 1.03 | * | * | * | * | * | * |
| LL99OM4 371 | 4.96 | 66.60 | 3.15 | 1.04 | * | * | * | * | * | * |
| LL99OM5 494 | 4.98 | 67.20 | 3.16 | 1.04 | * | * | * | * | * | * |
| LL99OM6 606 | 5.03 | 67.30 | 3.17 | 1.04 | 98.68 | * | 673.00 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | |
| LH01OP1 1 | 4.42 | 60.10 | 3.00 | 1.00 | 86.31 | 90.15 | 452.40 | 404.72 | 18.43 | 19.36 |
| LH07OP1 7 | 4.37 | 60.10 | 3.00 | 1.00 | 92.80 | 84.80 | 400.00 | 436.00 | 14.20 | 15.40 |
| LH14OP1 14 | 4.31 | 59.10 | 3.01 | 1.00 | 86.00 | 92.90 | 441.00 | 418.00 | 14.40 | 15.70 |
| LH28OP1 28 | 4.26 | 58.00 | 3.00 | 1.00 | 83.03 | 90.14 | 432.56 | 418.88 | 15.87 | 18.58 |
| LH99OP1 39 | 4.46 | 62.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| LH56OP1 56 | 4.43 | 60.40 | 3.02 | 1.00 | 85.36 | 93.84 | 442.40 | 334.56 | 15.59 | 15.10 |
| LH99OP2 121 | 4.45 | 62.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| LH99OP3 241 | 4.44 | 62.90 | 3.02 | 1.01 | * | * | * | * | * | * |
| LH99OP4 371 | 4.46 | 62.30 | 3.02 | 1.00 | * | * | * | * | * | * |
| LH99OP5 489 | 4.46 | 62.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| LH99OP6 609 | 4.47 | 62.70 | 3.03 | 1.01 | 102.20 | * | 589.00 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | |
| LL01OP1 1 | 4.25 | 58.00 | 3.00 | 1.00 | 86.50 | 91.72 | 446.80 | 421.76 | 19.03 | 19.93 |
| LL07OP1 7 | 4.43 | 60.50 | 3.00 | 1.00 | 80.70 | 87.10 | 457.00 | 411.00 | 14.00 | 14.70 |
| LL14OP1 14 | 4.37 | 60.90 | 3.00 | 0.99 | 82.40 | 91.60 | 400.00 | 388.00 | 14.20 | 15.90 |
| LL28OP1 28 | 4.49 | 61.40 | 3.00 | 1.00 | 87.69 | 90.14 | 447.68 | 397.84 | 17.48 | 17.25 |
| LL99OP1 39 | 4.14 | 57.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| LL56OP1 56 | 4.31 | 58.70 | 3.00 | 1.00 | 87.60 | 90.16 | 354.16 | 389.68 | 16.38 | 17.62 |
| LL99OP2 106 | 4.13 | 57.80 | 3.00 | 1.00 | * | * | * | * | * | * |
| LL99OP3 241 | 4.15 | 57.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| LL99OP4 371 | 4.16 | 57.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| LL99OP5 489 | 4.15 | 57.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| LL99OP6 606 | 4.16 | 58.00 | 3.01 | 1.00 | 82.80 | * | 710.30 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | |
| LH01PH1 1 | 6.67 | 75.90 | 3.56 | 1.15 | * | 45.88 | * | 204.20 | 6.28 | 5.94 |
| LH88PH1 1 | 2.40 | * | * | * | 87.79 | * | 87.79 | * | * | * |
| LH07PH1 7 | 7.20 | 78.90 | 3.66 | 1.17 | 39.74 | 40.18 | 235.94 | 219.40 | 5.57 | 5.22 |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 8.0% 50°C | | | | | | | | | | |
| LH14PH1 14 | 7.56 | 81.80 | 3.70 | 1.19 | 42.02 | 41.84 | 219.10 | 198.14 | 4.86 | 5.02 |
| LH28PH1 28 | 7.27 | 78.50 | 3.69 | 1.18 | 41.30 | 42.66 | 210.74 | 199.62 | 4.90 | 4.59 |
| LH99PH1 38 | 6.30 | 75.80 | 3.47 | 1.12 | * | * | * | * | * | * |
| LH56PH1 56 | 7.04 | 76.90 | 3.66 | 1.17 | 41.94 | 42.00 | 232.18 | 216.10 | 4.79 | 4.38 |
| LH99PH2 120 | 6.12 | 74.40 | 3.42 | 1.10 | * | * | * | * | * | * |
| LH99PH3 239 | 6.51 | 76.30 | 3.51 | 1.13 | * | * | * | * | * | * |
| LH99PH4 375 | 8.16 | 85.00 | 3.86 | 1.22 | * | * | * | * | * | * |
| LH99PH5 500 | 8.53 | 87.20 | 3.91 | 1.24 | * | * | * | * | * | * |
| LH99PH6 609 | 8.83 | 88.60 | 3.94 | 1.25 | 29.40 | * | 181.00 | * | * | * |
| PHENOL 8.0% 23°C | | | | | | | | | | |
| LL01PH1 1 | 6.45 | 73.40 | 3.53 | 1.13 | 46.92 | 52.48 | 241.32 | 245.40 | 6.89 | 6.82 |
| LL07PH1 7 | 7.64 | 81.70 | 3.76 | 1.18 | 34.46 | 36.34 | 187.58 | 184.72 | 4.00 | 4.20 |
| LL14PH1 14 | 7.70 | 81.10 | 3.79 | 1.21 | 32.88 | 37.34 | 129.88 | 169.30 | 4.36 | 3.50 |
| LL28PH1 28 | 7.69 | 80.30 | 3.80 | 1.21 | 35.70 | 37.82 | 177.40 | 159.08 | 4.15 | 4.39 |
| LL99PH1 38 | 6.93 | 78.20 | 3.63 | 1.17 | * | * | * | * | * | * |
| LL56PH1 56 | 7.79 | 81.30 | 3.77 | 1.21 | 35.30 | 36.64 | 188.04 | 172.52 | 4.26 | 3.84 |
| LL99PH2 106 | 6.97 | 78.70 | 3.65 | 1.17 | * | * | * | * | * | * |
| LL99PH3 239 | 6.70 | 76.90 | 3.52 | 1.15 | * | * | * | * | * | * |
| LL99PH4 375 | 8.50 | 86.40 | 3.95 | 1.25 | * | * | * | * | * | * |
| LL99PH5 501 | 8.58 | 97.70 | 3.95 | 1.23 | * | * | * | * | * | * |
| LL99PH6 606 | 8.30 | 85.20 | 3.89 | 1.24 | 41.28 | * | 193.30 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | | | | | |
| LH01PL1 1 | 4.63 | 62.50 | 3.06 | 1.01 | 81.62 | 86.14 | 408.68 | 362.06 | 15.45 | 15.61 |
| LH07PL1 7 | 4.99 | 65.50 | 3.14 | 1.04 | 78.40 | 84.14 | 367.74 | 434.12 | 15.41 | 16.43 |
| LH14PL1 14 | 5.19 | 66.90 | 3.19 | 1.05 | 81.02 | 83.38 | 417.84 | 406.84 | 15.11 | 14.93 |
| LH28PL1 28 | 5.30 | 68.50 | 3.22 | 1.06 | 80.70 | 85.30 | 370.54 | 358.56 | 14.64 | 14.59 |
| LH99PL1 37 | 5.17 | 68.00 | 3.22 | 1.06 | * | * | * | * | * | * |
| LH56PL1 56 | 5.31 | 68.80 | 3.23 | 1.06 | 81.48 | 82.58 | 377.25 | 345.72 | 13.66 | 13.80 |
| LH99PL2 120 | 5.27 | 69.20 | 3.26 | 1.07 | * | * | * | * | * | * |
| LH99PL3 239 | 5.42 | 69.10 | 3.27 | 1.07 | * | * | * | * | * | * |
| LH99PL4 374 | 5.36 | 69.30 | 3.27 | 1.07 | * | * | * | * | * | * |
| LH99PL5 500 | 5.44 | 70.10 | 3.29 | 1.08 | * | * | * | * | * | * |
| LH99PL6 609 | 5.45 | 69.20 | 3.28 | 1.07 | 93.90 | * | 481.00 | * | * | * |
| PHENOL 1.0% 23°C | | | | | | | | | | |
| LL01PL1 1 | 4.53 | 62.40 | 3.02 | 1.00 | 81.86 | 87.78 | 380.74 | 347.72 | 15.13 | 16.52 |
| LL07PL1 7 | 4.60 | 62.20 | 3.06 | 1.01 | 83.32 | 87.16 | 399.60 | 350.12 | 16.61 | 16.25 |
| LL14PL1 14 | 4.73 | 63.30 | 3.08 | * | 85.16 | 90.80 | 457.64 | 429.82 | 16.05 | 15.67 |
| LL28PL1 28 | 4.89 | 64.80 | 3.11 | 1.03 | 86.08 | 92.50 | 441.90 | 409.64 | 15.94 | 15.60 |
| LL99PL1 37 | 4.81 | 65.20 | 3.11 | 1.03 | * | * | * | * | * | * |
| LL56PL1 56 | 4.92 | 64.50 | 3.15 | 1.03 | 81.96 | 88.30 | 449.72 | 428.64 | 15.47 | 16.11 |
| LL99PL2 108 | 4.96 | 66.80 | 3.16 | 1.05 | * | * | * | * | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 1.0% 23°C | | | | | | | | | | |
| LL99PL3 240 | 5.09 | 67.30 | 3.00 | 1.05 | * | * | * | * | * | * |
| LL99PL4 374 | 5.17 | 68.00 | 3.22 | 1.05 | * | * | * | * | * | * |
| LL99PL5 501 | 5.30 | 68.90 | 3.25 | 1.07 | * | * | * | * | * | * |
| LL99PL6 606 | 5.34 | 68.10 | 3.26 | 1.07 | 84.40 | * | 608.50 | * | * | * |
| PHENOL 4.0% 50°C | | | | | | | | | | |
| LH01PM1 1 | 5.44 | 68.40 | 3.26 | 1.06 | 68.44 | 70.38 | 420.80 | 391.42 | 12.48 | 10.96 |
| LH07PM1 7 | 5.93 | 72.70 | 3.36 | 1.09 | 57.38 | 57.74 | 399.38 | 346.90 | 10.95 | 10.19 |
| LH14PM1 14 | 5.87 | 67.20 | 3.40 | 1.10 | 63.14 | 61.64 | 376.10 | 316.02 | 10.65 | 9.55 |
| LH28PM1 28 | 6.03 | 71.80 | 3.42 | 1.11 | 59.02 | 60.10 | 331.46 | 313.46 | 10.43 | 9.48 |
| LH99PM1 37 | 5.79 | 72.80 | 3.34 | 1.09 | * | * | * | * | * | * |
| LH56PM1 56 | 6.32 | 75.50 | 3.43 | 1.12 | 57.90 | 56.02 | 347.44 | 310.76 | 9.47 | 8.71 |
| LH99PM2 120 | 5.69 | 72.00 | 3.31 | 1.08 | * | * | * | * | * | * |
| LH99PM3 239 | 5.69 | 72.20 | 3.31 | 1.08 | * | * | * | * | * | * |
| LH99PM4 375 | 5.82 | 72.80 | 3.34 | 1.09 | * | * | * | * | * | * |
| LH99PM5 500 | 5.95 | 73.60 | 3.37 | 1.10 | * | * | * | * | * | * |
| LH99PM6 609 | 6.11 | 74.80 | 3.38 | 1.10 | 64.90 | * | 349.00 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | | | | | |
| LL01PM1 1 | 4.87 | 64.80 | 3.12 | 1.03 | 78.10 | 79.04 | 394.54 | 338.20 | 13.73 | 13.93 |
| LL07PM1 7 | 5.82 | 71.20 | 3.34 | 1.09 | 58.62 | 59.46 | 397.18 | 355.08 | 10.09 | 9.52 |
| LL14PM1 14 | 5.74 | 69.00 | 3.38 | 1.09 | 62.52 | 62.78 | 362.02 | 327.28 | 10.05 | 8.74 |
| LL28PM1 28 | 5.95 | 71.50 | 3.40 | 1.11 | 54.28 | 55.44 | 381.90 | 346.48 | 9.54 | 8.74 |
| LL99PM1 37 | 5.39 | 66.60 | 3.34 | 1.08 | * | * | * | * | * | * |
| LL56PM1 56 | 6.25 | 73.80 | 3.42 | 1.12 | 56.94 | 56.90 | 344.90 | 297.04 | 9.82 | 8.20 |
| LL99PM2 107 | 5.51 | 67.70 | 3.37 | 1.10 | * | * | * | * | * | * |
| LL99PM3 240 | 5.61 | 68.40 | 3.00 | 1.10 | * | * | * | * | * | * |
| LL99PM4 375 | 5.81 | 69.70 | 3.45 | 1.11 | * | * | * | * | * | * |
| LL99PM5 501 | 5.90 | 63.10 | 3.46 | 1.12 | * | * | * | * | * | * |
| LL99PM6 606 | 5.95 | 70.30 | 3.47 | 1.12 | 52.30 | * | 534.30 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | |
| LH01SH1 1 | 4.43 | 60.20 | 3.01 | 1.00 | 91.30 | 95.93 | 475.20 | 424.88 | 14.58 | 17.09 |
| LH07SH1 7 | 4.43 | 60.10 | 3.00 | 1.00 | 88.28 | 96.18 | 410.96 | 410.24 | 16.13 | * |
| LH14SH1 14 | 4.28 | 58.60 | 3.01 | 1.00 | 93.51 | 100.01 | 323.36 | 387.60 | 13.43 | 15.43 |
| LH28SH1 28 | 4.25 | 58.60 | 3.01 | 1.00 | 99.86 | 97.72 | 400.64 | 382.48 | 16.45 | 14.00 |
| LH99SH1 36 | 4.26 | 59.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| LH56SH1 56 | 4.27 | 58.90 | 3.00 | 1.00 | 90.23 | 101.05 | 370.48 | 322.00 | 12.75 | 14.03 |
| LH99SH2 120 | 4.26 | 59.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| LH99SH3 241 | 4.26 | 59.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| LH99SH4 372 | 4.25 | 59.00 | 3.00 | 0.99 | * | * | * | * | * | * |
| LH99SH5 492 | 4.25 | 59.10 | 3.00 | 1.00 | * | * | * | * | * | * |
| LH99SH6 609 | 4.25 | 59.00 | 2.99 | 1.00 | 103.60 | * | 540.00 | * | * | * |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | |
| LL01SH1 1 | 4.38 | 59.80 | 3.01 | 1.00 | 84.90 | 93.69 | 359.80 | 405.92 | 15.07 | 15.58 |
| LL07SH1 7 | 4.43 | 60.30 | 3.00 | 1.00 | 89.42 | 88.70 | 429.76 | 408.32 | 16.06 | 15.62 |
| LL14SH1 14 | 4.29 | 59.70 | 3.01 | 1.00 | 85.93 | 92.22 | 434.16 | 425.92 | 15.35 | 17.08 |
| LL28SH1 28 | 4.23 | 58.50 | 3.00 | 1.00 | 94.09 | 91.75 | 420.96 | 438.56 | 11.64 | 15.74 |
| LL99SH1 36 | 4.21 | 58.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| LL56SH1 56 | 4.27 | 59.00 | 3.01 | 1.00 | 84.19 | 99.06 | 419.04 | 358.96 | 14.38 | 16.38 |
| LL99SH2 108 | 4.24 | 58.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| LL99SH3 241 | 4.21 | 58.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| LL99SH4 372 | 4.21 | 58.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| LL99SH5 492 | 4.20 | 58.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| LL99SH6 606 | 4.20 | 58.60 | 3.00 | 1.00 | 85.33 | * | 807.50 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | |
| LH01SM1 1 | 4.59 | 64.30 | 3.02 | 1.00 | 83.76 | 91.28 | 405.68 | 385.68 | 13.66 | 15.82 |
| LH07SM1 7 | 4.49 | 62.00 | 3.03 | 1.00 | 85.46 | 94.87 | 384.40 | 365.76 | 16.17 | 17.00 |
| LH14SM1 15 | 4.70 | 64.30 | 3.03 | 1.00 | 86.34 | 89.96 | 396.16 | 344.00 | 14.21 | 15.84 |
| LH28SM1 28 | 4.75 | 66.10 | 3.03 | 1.00 | 86.64 | 94.32 | 313.04 | 321.36 | 13.62 | 14.06 |
| LH99SM1 36 | 4.33 | 59.90 | 3.02 | 1.01 | * | * | * | * | * | * |
| LH56SM1 56 | 4.65 | 62.90 | 3.04 | 1.01 | 105.54 | 104.14 | 291.52 | 288.72 | 14.00 | 15.08 |
| LH99SM2 120 | 4.34 | 60.00 | 3.03 | 1.01 | * | * | * | * | * | * |
| LH99SM3 241 | 4.35 | 59.80 | 3.03 | 1.01 | * | * | * | * | * | * |
| LH99SM4 372 | 4.35 | 60.50 | 3.02 | 1.01 | * | * | * | * | * | * |
| LH99SM5 485 | 4.33 | 60.00 | 3.02 | 1.01 | * | * | * | * | * | * |
| LH99SM6 609 | 4.34 | 59.90 | 3.02 | 1.00 | 105.90 | * | 498.30 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | |
| LL01SM1 1 | 4.56 | 63.70 | 3.01 | 1.00 | 82.80 | 88.56 | 416.64 | 395.76 | 12.90 | 15.86 |
| LL07SM1 7 | 4.32 | 59.20 | 3.01 | 1.00 | 87.14 | 85.61 | 429.20 | 387.44 | 14.80 | 17.52 |
| LL14SM1 15 | 4.76 | 66.30 | 3.01 | 1.00 | 85.24 | 90.41 | 412.72 | 386.30 | 15.63 | 16.94 |
| LL28SM1 28 | 4.80 | 71.30 | 3.03 | 1.00 | 95.76 | 81.68 | 327.04 | 381.12 | 12.78 | 14.34 |
| LL99SM1 36 | 4.30 | 59.40 | 3.03 | 1.00 | * | * | * | * | * | * |
| LL56SM1 56 | 4.66 | 64.30 | 3.04 | 1.01 | 95.27 | 102.15 | 284.32 | 277.84 | 13.95 | 15.33 |
| LL99SM2 107 | 4.31 | 59.20 | 3.03 | 1.03 | * | * | * | * | * | * |
| LL99SM3 241 | 4.32 | 59.30 | 3.03 | 1.01 | * | * | * | * | * | * |
| LL99SM4 372 | 4.31 | 59.10 | 3.03 | 1.00 | * | * | * | * | * | * |
| LL99SM5 485 | 4.30 | 59.40 | 3.02 | 1.01 | * | * | * | * | * | * |
| LL99SM6 606 | 4.30 | 59.20 | 3.03 | 1.00 | 84.63 | * | 665.92 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | | |
| LH01WP1 1 | 4.65 | 64.30 | 3.03 | 1.01 | 85.50 | 104.56 | 404.10 | 305.68 | 13.94 | 15.14 |
| LH07WP1 7 | 4.97 | 68.30 | 3.08 | 1.02 | 95.28 | 103.60 | 295.36 | 316.88 | 10.94 | 12.54 |
| LH14WP1 14 | 4.85 | 65.70 | 3.10 | 1.03 | 87.92 | 91.44 | 348.08 | 386.72 | 13.30 | 13.14 |
| LH28WP1 28 | 4.87 | 66.10 | 3.12 | 1.03 | 96.08 | 102.32 | 305.92 | 309.92 | 12.50 | 13.90 |

EPICHLOROHYDRIN RUBBER: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 50°C | | | | | | | | | | |
| LH99WP1 36 | 5.01 | 67.50 | 3.17 | 1.04 | * | * | * | * | * | * |
| LH56WP1 55 | 5.41 | 70.40 | 3.16 | 1.05 | 101.58 | 112.25 | 295.52 | 292.88 | 13.96 | 15.35 |
| LH99WP2 120 | 5.17 | 68.70 | 3.21 | 1.05 | * | * | * | * | * | * |
| LH99WP3 241 | 5.21 | 69.10 | 3.22 | 1.06 | * | * | * | * | * | * |
| LH99WP4 364 | 5.24 | 69.20 | 3.23 | 1.06 | * | * | * | * | * | * |
| LH99WP5 483 | 5.25 | 69.30 | 3.06 | 1.06 | * | * | * | * | * | * |
| LH99WP6 609 | 5.26 | 69.00 | 3.23 | 1.06 | 105.00 | * | 538.00 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | | |
| LL01WP1 1 | 4.63 | 65.40 | 3.01 | 1.00 | 96.40 | 104.72 | 302.00 | 312.32 | 12.98 | 14.06 |
| LL07WP1 7 | 4.75 | 67.20 | 3.02 | 1.01 | 97.36 | 100.72 | 323.12 | 281.68 | 13.22 | 16.06 |
| LL14WP1 14 | 4.64 | 64.10 | 3.03 | 1.01 | 88.08 | 93.52 | 409.12 | 398.88 | 15.22 | 15.94 |
| LL28WP1 28 | 4.65 | 63.70 | 3.05 | 1.01 | 86.16 | 103.76 | 378.16 | 317.92 | 14.26 | 15.26 |
| LL99WP1 36 | 4.31 | 59.60 | 3.05 | 1.01 | * | * | * | * | * | * |
| LL56WP1 55 | 5.05 | 68.00 | 3.06 | 1.01 | 108.49 | 108.30 | 308.88 | 294.48 | 16.37 | 15.83 |
| LL99WP2 108 | 4.39 | 60.80 | 3.09 | 1.03 | * | * | * | * | * | * |
| LL99WP3 241 | 4.50 | 61.60 | 3.12 | 1.03 | * | * | * | * | * | * |
| LL99WP4 364 | 4.57 | 61.70 | 3.14 | 1.04 | * | * | * | * | * | * |
| LL99WP5 483 | 4.62 | 62.10 | 3.15 | 1.04 | * | * | * | * | * | * |
| LL99WP6 606 | 4.66 | 62.40 | 3.17 | 1.04 | 84.69 | * | 609.83 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | |
| LH01XM1 1 | 4.57 | 62.90 | 3.02 | 1.01 | 90.12 | 99.50 | 450.32 | 419.28 | 14.88 | 16.01 |
| LH07XM1 7 | 4.41 | 59.40 | 3.04 | 1.01 | 89.85 | 92.17 | 454.64 | 409.20 | 14.02 | 15.82 |
| LH14XM1 14 | 4.47 | 60.40 | 3.06 | 1.02 | 97.69 | 96.78 | 426.00 | 385.20 | 15.63 | 18.09 |
| LH28XM1 28 | 4.37 | 59.50 | 3.05 | 1.01 | 102.79 | 95.50 | 409.92 | 400.73 | 16.59 | 15.19 |
| LH99XM1 39 | 4.73 | 65.60 | 3.10 | 1.03 | * | * | * | * | * | * |
| LH56XM1 56 | 4.99 | 67.80 | 3.10 | 1.02 | 95.48 | 98.23 | 325.04 | 316.00 | 13.17 | 13.62 |
| LH99XM2 120 | 4.78 | 65.90 | 3.11 | 1.03 | * | * | * | * | * | * |
| LH99XM3 247 | 4.79 | 65.80 | 3.11 | 1.03 | * | * | * | * | * | * |
| LH99XM4 373 | 4.80 | 65.90 | 3.11 | 1.02 | * | * | * | * | * | * |
| LH99XM5 493 | 4.77 | 65.80 | 3.08 | 1.03 | * | * | * | * | * | * |
| LH99XM6 609 | 4.81 | 65.70 | 3.09 | 1.02 | 110.60 | * | 557.00 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | |
| LL01XM1 1 | 4.51 | 63.00 | 3.00 | 1.00 | 88.18 | 95.24 | 352.24 | 425.92 | 13.65 | 16.65 |
| LL07XM1 7 | 4.39 | 59.60 | 3.00 | 1.00 | 83.69 | 95.27 | 423.92 | 418.48 | 14.36 | 15.42 |
| LL14XM1 14 | 4.38 | 60.10 | 3.02 | 1.01 | 90.52 | 102.22 | 435.28 | 330.64 | 15.51 | 17.43 |
| LL28XM1 28 | 4.27 | 58.40 | 3.04 | 1.01 | 96.10 | 91.11 | 379.20 | 434.00 | 15.74 | 15.49 |
| LL99XM1 39 | 4.57 | 63.50 | 3.05 | 1.01 | * | * | * | * | * | * |
| LL56XM1 56 | 4.49 | 61.00 | 3.04 | 1.02 | 90.38 | 96.39 | 443.52 | 418.00 | 11.51 | 14.16 |
| LL99XM2 107 | 4.63 | 64.10 | 3.06 | 1.02 | * | * | * | * | * | * |
| LL99XM3 247 | 4.70 | 64.80 | 3.09 | 1.02 | * | * | * | * | * | * |
| LL99XM4 373 | 4.73 | 64.90 | 3.09 | 1.02 | * | * | * | * | * | * |
| LL99XM5 493 | 4.73 | 64.90 | 3.09 | 1.03 | * | * | * | * | * | * |
| LL99XM6 606 | 4.76 | 65.40 | 3.10 | 1.03 | 93.61 | * | 583.92 | * | * | * |

# EPI_CO : STATISTICS

EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| LH01AM1 1 | 5 | 3.650 | 5 | 2.160 | 5 | 46.400 | 5 | 26.430 | 5 | 0.817 | 5 | 0.456 |
| LH07AM1 7 | 5 | 2.567 | 5 | 3.250 | 5 | 13.910 | 5 | 7.266 | 5 | 0.975 | 5 | 0.665 |
| LH14AM1 14 | 5 | 2.851 | 5 | 1.338 | 5 | 38.413 | 5 | 9.104 | 5 | 0.228 | 5 | 0.559 |
| LH28AM1 27 | 5 | 2.120 | 5 | 3.666 | 5 | 23.130 | 5 | 28.263 | 5 | 0.702 | 5 | 0.361 |
| LH56AM1 56 | 5 | 7.732 | 5 | 4.180 | 5 | 55.590 | 5 | 23.110 | 5 | 0.392 | 5 | 0.752 |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| LL01AM1 1 | 5 | 1.210 | 5 | 1.190 | 5 | 26.380 | 5 | 17.420 | 5 | 0.794 | 5 | 0.268 |
| LL07AM1 7 | 5 | 1.730 | 5 | 3.940 | 5 | 6.470 | 5 | 15.290 | 5 | 0.838 | 5 | 0.551 |
| LL14AM1 14 | 5 | 1.210 | 5 | 1.452 | 5 | 14.630 | 5 | 16.270 | 5 | 0.510 | 5 | 0.600 |
| LL28AM1 27 | 5 | 0.557 | 5 | 1.594 | 5 | 13.340 | 5 | 14.630 | 5 | 0.632 | 5 | 0.186 |
| LL56AM1 56 | 5 | 2.232 | 5 | 1.250 | 5 | 32.485 | 5 | 8.900 | 5 | 0.732 | 5 | 0.527 |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| LH01BM1 1 | 5 | 1.326 | 5 | 4.716 | 5 | 16.922 | 5 | 25.525 | 5 | 0.086 | 5 | 0.402 |
| LH07BM1 7 | 5 | 3.192 | 5 | 1.658 | 5 | 31.025 | 5 | 7.508 | 5 | 0.334 | 5 | 0.310 |
| LH14BM1 14 | 5 | 1.279 | 5 | 2.670 | 5 | 15.632 | 5 | 13.860 | 5 | 0.336 | 5 | 0.142 |
| LH28BM1 28 | 5 | 1.365 | 5 | 0.893 | 5 | 20.023 | 5 | 7.649 | 5 | 0.301 | 5 | 0.130 |
| LH56BM1 56 | 5 | 3.179 | 5 | 0.777 | 5 | 57.272 | 5 | 14.173 | 5 | 0.234 | 5 | 0.248 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| LL01BM1 1 | 5 | 1.466 | 5 | 1.099 | 5 | 25.128 | 5 | 18.108 | 5 | 0.157 | 5 | 0.162 |
| LL07BM1 7 | 5 | 0.598 | 5 | 2.869 | 5 | 15.583 | 5 | 13.342 | 5 | 0.269 | 5 | 0.306 |
| LL14BM1 14 | 5 | 2.114 | 5 | 1.611 | 5 | 32.420 | 5 | 14.697 | 5 | 0.121 | 5 | 0.667 |
| LL28BM1 28 | 5 | 9.464 | 5 | 2.110 | 5 | 67.840 | 5 | 24.668 | 5 | 0.176 | 5 | 0.294 |
| LL56BM1 56 | 5 | 0.930 | 5 | 1.262 | 5 | 19.867 | 5 | 16.300 | 5 | 0.132 | 5 | 0.116 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| LH01DH1 1 | 5 | 2.778 | 5 | 1.108 | 5 | 16.551 | 5 | 17.032 | 5 | 0.130 | 5 | 0.310 |
| LH07DH1 7 | 5 | 1.180 | 5 | 4.130 | 5 | 8.370 | 5 | 44.070 | 5 | 0.270 | 5 | 0.280 |
| LH14DH1 14 | 5 | 1.960 | 5 | 1.180 | 5 | 24.220 | 5 | 4.510 | 5 | 0.140 | 5 | 0.210 |
| LH28DH1 28 | 5 | 1.065 | 5 | 1.124 | 5 | 7.013 | 5 | 15.142 | 5 | 0.270 | 5 | 0.334 |
| LH56DH1 56 | 5 | 3.113 | 5 | 1.624 | 5 | 27.884 | 5 | 12.625 | 5 | 0.224 | 5 | 0.377 |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| LL01DH1 1 | 5 | 0.682 | 5 | 1.270 | 5 | 8.548 | 5 | 18.528 | 5 | 0.229 | 5 | 0.329 |
| LL07DH1 7 | 5 | 1.320 | 5 | 0.720 | 5 | 2.360 | 5 | 10.510 | 5 | 0.440 | 5 | 0.160 |
| LL14DH1 14 | 5 | 0.380 | 5 | 2.180 | 5 | 13.830 | 5 | 30.180 | 5 | 0.380 | 5 | 0.290 |
| LL28DH1 28 | 5 | 2.327 | 4 | 0.929 | 5 | 12.185 | 4 | 9.881 | 5 | 0.356 | 5 | 0.319 |
| LL56DH1 56 | 5 | 3.364 | 5 | 1.759 | 5 | 18.106 | 5 | 20.800 | 5 | 0.320 | 5 | 0.209 |

EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| LH01DL1 1 | 5 | 5.791 | 5 | 2.455 | 5 | 71.876 | 5 | 13.524 | 5 | 0.444 | 5 | 0.413 |
| LH07DL1 7 | 5 | 0.950 | 5 | 1.030 | 5 | 25.350 | 5 | 33.950 | 5 | 0.200 | 5 | 0.370 |
| LH14DL1 14 | 5 | 2.550 | 5 | 2.340 | 5 | 41.760 | 5 | 13.830 | 5 | 0.220 | 5 | 0.230 |
| LH28DL1 28 | 4 | 3.590 | 5 | 0.688 | 4 | 25.890 | 5 | 7.895 | 5 | 0.352 | 5 | 0.458 |
| LH56DL1 56 | 5 | 2.493 | 5 | 1.365 | 5 | 3.283 | 5 | 11.038 | 5 | 0.267 | 5 | 0.338 |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| LL01DL1 1 | 5 | 1.907 | 5 | 2.697 | 5 | 38.447 | 5 | 17.485 | 5 | 0.276 | 5 | 0.233 |
| LL07DL1 7 | 5 | 1.200 | 5 | 1.340 | 5 | 18.100 | 5 | 16.970 | 5 | 0.380 | 5 | 0.530 |
| LL14DL1 14 | 5 | 2.430 | 5 | 1.390 | 5 | 16.870 | 5 | 17.800 | 5 | 0.130 | 5 | 0.590 |
| LL28DL1 28 | 5 | 1.062 | 5 | 1.340 | 5 | 13.722 | 5 | 9.930 | 5 | 0.581 | 5 | 0.198 |
| LL56DL1 56 | 5 | 1.551 | 5 | 2.340 | 5 | 19.322 | 5 | 7.532 | 5 | 0.381 | 5 | 0.213 |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| LH01DM1 1 | 5 | 2.488 | 5 | 2.256 | 5 | 17.038 | 5 | 18.720 | 5 | 0.098 | 5 | 0.642 |
| LH07DM1 7 | 5 | 0.410 | 5 | 1.290 | 5 | 4.470 | 5 | 21.140 | 5 | 0.290 | 5 | 0.210 |
| LH14DM1 14 | 5 | 1.480 | 5 | 1.500 | 5 | 11.430 | 5 | 17.790 | 5 | 0.310 | 5 | 0.340 |
| LH28DM1 28 | 5 | 1.599 | 5 | 1.716 | 5 | 21.536 | 5 | 17.579 | 5 | 0.293 | 5 | 0.373 |
| LH56DM1 56 | 5 | 4.226 | 5 | 2.272 | 5 | 26.862 | 5 | 11.256 | 5 | 0.289 | 5 | 0.228 |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| LL01DM1 1 | 5 | 1.637 | 5 | 1.289 | 5 | 15.719 | 5 | 14.677 | 5 | 0.337 | 5 | 0.329 |
| LL07DM1 7 | 5 | 3.450 | 5 | 1.320 | 5 | 75.610 | 5 | 11.800 | 5 | 0.340 | 5 | 0.130 |
| LL14DM1 14 | 5 | 1.140 | 5 | 2.440 | 5 | 45.490 | 5 | 36.340 | 5 | 0.290 | 5 | 0.440 |
| LL28DM1 28 | 5 | 1.697 | 5 | 1.295 | 5 | 5.309 | 5 | 14.570 | 5 | 0.128 | 5 | 0.160 |
| LL56DM1 56 | 5 | 0.826 | 5 | 1.773 | 5 | 19.685 | 5 | 25.401 | 5 | 0.416 | 5 | 0.124 |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| LH01FH1 1 | 5 | 1.992 | 5 | 1.280 | 5 | 30.590 | 5 | 14.250 | 5 | 0.265 | 5 | 0.256 |
| LH07FH1 7 | 5 | 3.229 | 5 | 1.682 | * | * | 5 | 7.160 | 5 | 0.923 | 5 | 1.006 |
| LH14FH1 14 | 5 | 4.573 | 5 | 1.780 | 5 | 28.480 | 5 | 5.370 | 5 | 1.125 | 5 | 0.342 |
| LH28FH1 28 | 5 | 1.403 | 5 | 1.802 | 5 | 5.660 | 5 | 15.320 | 5 | 0.148 | 5 | 0.358 |
| LH56FH1 56 | 5 | 1.729 | 5 | 1.947 | 5 | 8.000 | 5 | 3.350 | 5 | 0.217 | 5 | 0.233 |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| LL01FH1 1 | 5 | 1.841 | 5 | 2.154 | 5 | 45.830 | 5 | 36.400 | 5 | 1.065 | 5 | 3.819 |
| LL07FH1 7 | 5 | 1.472 | 5 | 2.695 | 5 | 20.710 | 5 | 14.310 | 5 | 2.063 | 5 | 1.770 |
| LL14FH1 14 | 5 | 1.663 | 5 | 0.335 | 5 | 13.860 | 5 | 10.040 | 5 | 0.192 | 5 | 0.910 |
| LL28FH1 28 | 5 | 1.145 | 5 | 1.706 | 5 | 3.580 | 5 | 5.370 | 5 | 1.102 | 5 | 1.418 |
| LL56FH1 56 | 5 | 1.081 | 5 | 2.028 | 5 | 13.450 | 5 | 20.860 | 5 | 0.502 | 5 | 0.089 |

EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| LH01FL1 1 | 5 | 0.822 | 5 | 0.816 | 5 | 15.529 | 5 | 5.918 | 5 | 0.615 | 5 | 1.211 |
| LH07FL1 7 | 5 | 1.802 | 5 | 3.341 | 5 | 18.550 | 5 | 21.650 | 5 | 0.889 | 5 | 0.450 |
| LH14FL1 14 | 5 | 1.425 | 5 | 2.622 | 5 | 9.120 | 5 | 28.430 | 5 | 0.602 | 5 | 0.594 |
| LH28FL1 28 | 5 | 6.705 | 5 | 4.460 | 5 | 25.040 | 5 | 11.520 | 5 | 0.227 | 5 | 0.459 |
| LH56FL2 56 | 5 | 1.635 | 5 | 1.442 | 5 | 17.300 | 5 | 22.520 | 5 | 0.230 | 5 | 0.250 |
| LH56FL1 56 | 5 | 1.640 | 5 | 1.549 | 5 | 14.860 | 5 | 4.560 | 5 | 0.546 | 5 | 0.055 |
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| LL01FL1 1 | 5 | 4.764 | 5 | 2.300 | 5 | 61.827 | 5 | 14.676 | 5 | 0.504 | 5 | 1.661 |
| LL07FL1 7 | 5 | 6.108 | 5 | 1.649 | 5 | 78.100 | 5 | 15.970 | 5 | 0.531 | 5 | 0.952 |
| LL14FL1 14 | 5 | 5.040 | 5 | 2.513 | 5 | 57.650 | 5 | 30.380 | 5 | 0.288 | 5 | 1.171 |
| LL28FL1 28 | 5 | 3.401 | 5 | 1.889 | 5 | 46.600 | 5 | 10.810 | 5 | 0.325 | 5 | 0.567 |
| LL56FL2 56 | 5 | 6.873 | 5 | 6.321 | 5 | 44.850 | 5 | 24.170 | 5 | 0.327 | 5 | 0.367 |
| LL56FL1 56 | 5 | 2.806 | 5 | 1.152 | 5 | 19.180 | 5 | 29.340 | 5 | 0.462 | 5 | 0.424 |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| LH01FM1 1 | 5 | 1.183 | 5 | 1.759 | 5 | 20.565 | 5 | 12.635 | 5 | 0.472 | 5 | 0.776 |
| LH07FM1 7 | 5 | 1.930 | 5 | 2.076 | 5 | 13.680 | 5 | 14.590 | 5 | 1.073 | 5 | 1.163 |
| LH14FM1 14 | 5 | 1.340 | 5 | 2.892 | 5 | 12.330 | 5 | 7.160 | 5 | 0.486 | 5 | 0.604 |
| LH28FM1 28 | 5 | 1.004 | 5 | 1.315 | 5 | 12.840 | 5 | 9.120 | 5 | 2.285 | 5 | 1.515 |
| LH56FM1 56 | 5 | 1.043 | 5 | 1.277 | 5 | 7.160 | 5 | 14.310 | 5 | 0.114 | 5 | 0.270 |
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| LL01FM1 1 | 5 | 0.961 | 5 | 2.438 | 5 | 17.674 | 5 | 29.536 | 5 | 1.069 | 5 | 0.353 |
| LL07FM1 7 | 5 | 0.715 | 5 | 1.370 | 5 | 35.100 | 5 | 23.170 | 5 | 0.563 | 5 | 0.800 |
| LL14FM1 14 | 5 | 1.523 | 5 | 1.480 | 5 | 22.630 | 5 | 15.590 | 5 | 0.364 | 5 | 0.673 |
| LL28FM1 28 | 5 | 2.838 | 5 | 0.400 | 5 | 6.930 | 5 | 17.980 | 5 | 0.390 | 5 | 0.701 |
| LL56FM1 56 | 5 | 1.625 | 5 | 1.534 | 5 | 23.600 | 5 | 14.810 | 5 | 0.235 | 5 | 0.277 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| LH01MH1 1 | 5 | 2.920 | 5 | 2.300 | 5 | 11.920 | 5 | 11.460 | 5 | 0.730 | 5 | 0.330 |
| LH07MH1 7 | 5 | 1.210 | 5 | 2.040 | 5 | * | 5 | 9.470 | 5 | 0.530 | 5 | 0.870 |
| LH14MH1 14 | 5 | 2.690 | 5 | 2.147 | 5 | 5.860 | 5 | 3.795 | * | * | * | * |
| LH28MH1 28 | 5 | 2.360 | 5 | 3.409 | 4 | 10.026 | 5 | 19.494 | 5 | 0.624 | 5 | 0.431 |
| LH56MH1 55 | 5 | 2.370 | 5 | 4.750 | 5 | 12.950 | 5 | 14.790 | 5 | 0.330 | 5 | 0.200 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| LL01MH1 1 | 5 | 1.660 | 5 | 1.910 | 5 | 10.890 | 5 | 10.320 | 5 | 0.800 | 5 | 0.370 |
| LL07MH1 7 | 5 | 1.840 | 5 | 1.450 | 5 | 14.080 | 5 | 16.570 | 5 | 0.670 | 5 | 0.767 |
| LL14MH1 14 | 5 | 1.870 | 5 | 1.876 | 5 | 33.620 | 5 | 9.495 | 5 | 0.555 | 5 | 0.261 |
| LL28MH1 28 | 5 | 6.966 | 5 | 1.706 | 5 | 45.300 | 5 | 5.289 | 5 | 0.165 | 5 | 0.748 |
| LL56MH1 55 | 5 | 1.730 | 5 | 2.100 | 5 | 7.640 | 5 | 5.750 | 5 | 0.390 | 5 | 0.290 |

*EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS*

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| LH01ML1 1 | 5 | 1.214 | 5 | 1.386 | 5 | 32.855 | 5 | 7.785 | 5 | 0.390 | 5 | 0.807 |
| LH07ML1 7 | 5 | 6.510 | 5 | 2.999 | 5 | 71.803 | 5 | 8.513 | 5 | 1.238 | 5 | 1.404 |
| LH14ML1 14 | 5 | 3.250 | 5 | 2.810 | 5 | 3.160 | 5 | 4.750 | 5 | 0.424 | 5 | 1.430 |
| LH28ML1 28 | 5 | 8.143 | 5 | 3.197 | 5 | 57.868 | 5 | 7.647 | 5 | 0.099 | 5 | 0.488 |
| LH56ML1 55 | 5 | 2.018 | 5 | 3.063 | 5 | 7.680 | 5 | 10.830 | 5 | 0.255 | 5 | 0.412 |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| LL01ML1 1 | 5 | 4.912 | 5 | 4.644 | 5 | 12.470 | 5 | 20.480 | 5 | 0.498 | 5 | 0.374 |
| LL07ML1 7 | 5 | 1.187 | 5 | 2.806 | 5 | 10.470 | 5 | 44.230 | 5 | 0.756 | 5 | 1.370 |
| LL14ML1 14 | 5 | 2.010 | 5 | 1.660 | 5 | 26.460 | 5 | 13.510 | * | * | * | * |
| LL28ML1 28 | 5 | 1.513 | 5 | 1.678 | 5 | 14.371 | 5 | 11.353 | 5 | 0.443 | 5 | 0.908 |
| LL56ML1 55 | 5 | 1.533 | 5 | 1.520 | 5 | 20.520 | 5 | 26.730 | 5 | 0.339 | 5 | 0.215 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| LH01MM1 1 | 5 | 2.713 | 5 | 1.658 | 5 | 14.418 | 5 | 9.613 | 5 | 0.385 | 5 | 0.498 |
| LH07MM1 7 | 5 | 1.990 | 5 | 0.980 | 5 | 18.720 | 5 | 12.480 | 5 | 0.283 | 5 | 0.830 |
| LH14MM1 14 | 5 | 9.288 | 5 | 1.212 | 5 | 55.600 | 5 | 8.980 | 5 | 0.400 | 5 | 0.865 |
| LH28MM1 28 | 5 | 6.359 | 5 | 1.931 | 5 | 37.640 | 5 | 13.751 | 5 | 0.730 | 5 | 0.568 |
| LH56MM1 55 | 5 | 3.250 | 5 | 2.540 | 5 | 27.470 | 5 | 12.950 | 5 | 0.195 | 5 | 0.517 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| LL01MM1 1 | 5 | 2.007 | 5 | 1.820 | 5 | 7.340 | 5 | 8.380 | 5 | 0.330 | 5 | 0.360 |
| LL07MM1 7 | 5 | 1.130 | 5 | 1.210 | 5 | 8.580 | 5 | 14.500 | 5 | 0.550 | 5 | 1.300 |
| LL14MM1 14 | 5 | 8.940 | 5 | 1.130 | 5 | 52.650 | 5 | 21.200 | 5 | 0.593 | 5 | 0.735 |
| LL28MM1 28 | 5 | 2.919 | 5 | 1.111 | 5 | 39.854 | 5 | 29.441 | 5 | 0.592 | 5 | 1.194 |
| LL56MM1 55 | 5 | 1.950 | 5 | 1.780 | 5 | 5.720 | 5 | 22.220 | 5 | 0.133 | 5 | 0.280 |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| LH01OM1 1 | 5 | 1.877 | 5 | 3.035 | 5 | 11.790 | 5 | 45.050 | 5 | 0.614 | 5 | 0.305 |
| LH07OM1 7 | 5 | 8.718 | 5 | 0.446 | 5 | 93.521 | 5 | 6.510 | 5 | 0.901 | 5 | 2.900 |
| LH14OM1 13 | 5 | 1.447 | 5 | 1.250 | 5 | 24.454 | 5 | 7.770 | 5 | 0.470 | 5 | 0.661 |
| LH28OM1 28 | 5 | 1.600 | 5 | 1.600 | 5 | 32.000 | 5 | 16.000 | 5 | 0.500 | 5 | 0.600 |
| LH56OM1 56 | 5 | 2.066 | 5 | 2.511 | 5 | 10.367 | 5 | 28.502 | 5 | 0.292 | 5 | 0.248 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| LL01OM1 1 | 5 | 2.615 | 5 | 2.057 | 5 | 9.137 | 5 | 9.631 | 5 | 1.248 | 5 | 0.263 |
| LL07OM1 7 | 5 | 1.696 | 5 | 1.699 | 5 | 17.651 | 5 | 7.989 | 5 | 0.405 | 5 | 0.444 |
| LL14OM1 13 | 5 | 2.083 | 5 | 1.674 | 5 | 24.533 | 5 | 5.940 | 5 | 0.511 | 5 | 0.332 |
| LL28OM1 28 | 5 | 0.400 | 5 | 2.800 | 5 | 16.000 | 5 | 28.000 | 5 | 0.200 | 5 | 0.040 |
| LL56OM1 56 | 5 | 5.398 | 5 | 1.848 | 5 | 75.219 | 5 | 20.704 | 5 | 0.306 | 5 | 0.353 |

EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| LH010P1 1 | 5 | 1.780 | 5 | 2.839 | 5 | 32.409 | 5 | 8.251 | 5 | 0.694 | 5 | 1.213 |
| LH070P1 7 | 5 | 2.400 | 5 | 0.800 | 5 | 36.000 | 5 | 12.000 | 5 | 0.200 | 5 | 0.500 |
| LH140P1 14 | 5 | 1.400 | 5 | 0.900 | 5 | 5.200 | 5 | 16.000 | 5 | 0.300 | 5 | 0.300 |
| LH280P1 28 | 5 | 3.550 | 5 | 0.918 | 5 | 44.720 | 5 | 10.520 | 5 | 0.404 | 5 | 0.254 |
| LH560P1 56 | 5 | 1.735 | 5 | 1.735 | 5 | 13.651 | 5 | 24.288 | 5 | 1.070 | 5 | 1.407 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| LL010P1 1 | 5 | 1.048 | 5 | 2.629 | 5 | 31.382 | 5 | 33.417 | 5 | 0.492 | 5 | 0.672 |
| LL070P1 7 | 5 | 1.100 | 5 | 1.900 | 5 | 24.000 | 5 | 14.500 | 5 | 0.300 | 5 | 0.300 |
| LL140P1 14 | 5 | 3.200 | 5 | 11.200 | 5 | 51.000 | 5 | 75.000 | 5 | 0.200 | 5 | 0.200 |
| LL280P1 28 | 5 | 1.676 | 5 | 1.299 | 5 | 13.896 | 5 | 15.328 | 5 | 0.399 | 5 | 0.429 |
| LL560P1 56 | 5 | 3.347 | 5 | 1.640 | 5 | 68.251 | 5 | 16.725 | 5 | 0.522 | 5 | 0.593 |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| LH01PH1 1 | * | * | 5 | 1.930 | * | * | 5 | 12.680 | 5 | 0.222 | 5 | 0.160 |
| LH88PH1 1 | * | * | * | * | * | * | 5 | * | * | * | * | * |
| LH07PH1 7 | 5 | 1.571 | 5 | 1.334 | 5 | 36.120 | 5 | 25.295 | 5 | 0.062 | 5 | 0.200 |
| LH14PH1 14 | 5 | 1.440 | 5 | 1.210 | 5 | 14.690 | 5 | 12.170 | 5 | 0.150 | 5 | 0.137 |
| LH28PH1 28 | 5 | 1.823 | 5 | 1.670 | 5 | 10.282 | 5 | 6.070 | 5 | 0.210 | 5 | 0.172 |
| LH56PH1 56 | 5 | 3.047 | 5 | 1.528 | 5 | 25.391 | 5 | 24.077 | 5 | 0.134 | 5 | 0.189 |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| LL01PH1 1 | 5 | 1.366 | 5 | 2.671 | 5 | 6.109 | 5 | 9.666 | 5 | 0.411 | 5 | 0.329 |
| LL07PH1 7 | 5 | 3.850 | 5 | 4.350 | 5 | 25.501 | 5 | 10.430 | 5 | 2.245 | 5 | 0.155 |
| LL14PH1 14 | 5 | 3.080 | 5 | 2.310 | 5 | 25.240 | 5 | 10.860 | 5 | 0.540 | 5 | 1.330 |
| LL28PH1 28 | 5 | 3.200 | 5 | 2.163 | 5 | 18.300 | 5 | 8.123 | 5 | 0.380 | 5 | 0.223 |
| LL56PH1 56 | 5 | 1.070 | 5 | 3.074 | 5 | 9.857 | 5 | 16.719 | 5 | 0.183 | 5 | 0.185 |
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| LH01PL1 1 | 5 | 1.300 | 5 | 1.920 | 5 | 6.500 | 5 | 10.200 | 5 | 0.210 | 5 | 0.530 |
| LH07PL1 7 | 5 | 7.496 | 5 | 2.418 | 5 | 98.707 | 5 | 25.151 | 5 | 0.828 | 5 | 0.417 |
| LH14PL1 14 | 5 | 2.420 | 5 | 3.170 | 5 | 19.600 | 5 | 31.780 | 5 | 0.089 | 5 | 0.156 |
| LH28PL1 28 | 5 | 1.808 | 5 | 1.839 | 5 | 14.067 | 5 | 13.970 | 5 | 0.335 | 5 | 0.604 |
| LH56PL1 56 | 5 | 0.900 | 5 | 2.610 | 5 | 4.450 | 5 | 17.177 | 5 | 0.288 | 5 | 0.356 |
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| LL01PL1 1 | 5 | 1.200 | 5 | 1.530 | 5 | 9.420 | 5 | 21.460 | 5 | 0.200 | 5 | 0.290 |
| LL07PL1 7 | 5 | 0.565 | 5 | 1.353 | 5 | 9.718 | 5 | 12.593 | 5 | 0.391 | 5 | 0.338 |
| LL14PL1 14 | 5 | 2.190 | 5 | 1.840 | 5 | 45.560 | 5 | 13.400 | 5 | 0.460 | 5 | 0.104 |
| LL28PL1 28 | 5 | 1.250 | 5 | 1.306 | 5 | 6.154 | 5 | 6.118 | 5 | 0.262 | 5 | 0.372 |
| LL56PL1 56 | 5 | 0.927 | 5 | 2.435 | 5 | 3.571 | 5 | 8.399 | 5 | 0.300 | 5 | 0.369 |

EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| LH01PM1 1 | 5 | 1.230 | 5 | 1.200 | 5 | 17.880 | 5 | 22.700 | 5 | 0.120 | 5 | 0.200 |
| LH07PM1 7 | 5 | 1.151 | 5 | 0.867 | 5 | 9.449 | 5 | 19.844 | 5 | 0.265 | 5 | 0.143 |
| LH14PM1 14 | 5 | 0.401 | 5 | 1.396 | 5 | 15.330 | 5 | 21.372 | 5 | 0.446 | 5 | 0.181 |
| LH28PM1 28 | 5 | 1.420 | 5 | 1.100 | 5 | 8.000 | 5 | 5.590 | 5 | 0.290 | 5 | 0.310 |
| LH56PM1 56 | 5 | 2.148 | 5 | 2.066 | 5 | 13.897 | 5 | 15.343 | 5 | 0.274 | 5 | 0.392 |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| LL01PM1 1 | 5 | 1.903 | 5 | 0.776 | 5 | 7.649 | 5 | 17.089 | 5 | 0.139 | 5 | 0.473 |
| LL07PM1 7 | 5 | 1.409 | 5 | 1.033 | 5 | 18.052 | 5 | 14.728 | 5 | 0.153 | 5 | 0.153 |
| LL14PM1 14 | 5 | 0.930 | 5 | 1.598 | 5 | 16.826 | 5 | 8.950 | 5 | 0.223 | 5 | 0.210 |
| LL28PM1 28 | 5 | 1.357 | 5 | 1.032 | 5 | 16.892 | 5 | 17.464 | 5 | 0.224 | 5 | 0.123 |
| LL56PM1 56 | 5 | 0.765 | 5 | 0.635 | 5 | 6.971 | 5 | 24.537 | 5 | 0.058 | 5 | 0.201 |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| LH01SH1 1 | 5 | 1.450 | 5 | 1.630 | 5 | 14.883 | 5 | 30.829 | 5 | 0.297 | 5 | 0.247 |
| LH07SH1 7 | 5 | 4.059 | 5 | 1.850 | 5 | 45.730 | 5 | 10.015 | 5 | 0.126 | * | * |
| LH14SH1 14 | 5 | 7.810 | 5 | 1.693 | 5 | 86.289 | 5 | 14.814 | 5 | 0.168 | 5 | 0.135 |
| LH28SH1 28 | 5 | 0.547 | 5 | 0.752 | 5 | 30.481 | 5 | 12.522 | 5 | 0.334 | 5 | 0.166 |
| LH56SH1 56 | 5 | 1.408 | 5 | 2.798 | 5 | 15.179 | 5 | 7.228 | 5 | 0.287 | 5 | 0.337 |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| LL01SH1 1 | 5 | 6.392 | 5 | 0.887 | 4 | 99.194 | 5 | 14.700 | 5 | 0.167 | 5 | 0.296 |
| LL07SH1 7 | 5 | 4.594 | 5 | 3.222 | 5 | 48.778 | 5 | 32.933 | 5 | 0.224 | 5 | 0.349 |
| LL14SH1 14 | 5 | 1.116 | 5 | 1.487 | 5 | 21.071 | 5 | 15.382 | 5 | * | 5 | 0.229 |
| LL28SH1 28 | 5 | 0.703 | 5 | 3.734 | 5 | 17.987 | 5 | 61.988 | 5 | 0.201 | 5 | 0.341 |
| LL56SH1 56 | 5 | 1.590 | 5 | 1.544 | 5 | 23.242 | 5 | 39.765 | 5 | 0.429 | 5 | 0.105 |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| LH01SM1 1 | 5 | 1.315 | 5 | 3.030 | 5 | 30.590 | 5 | 40.160 | 5 | 0.477 | 5 | 0.460 |
| LH07SM1 7 | 5 | 1.519 | 5 | 1.640 | 5 | 21.855 | 5 | 30.524 | 5 | 0.586 | 5 | 0.605 |
| LH14SM1 15 | 5 | 0.804 | 5 | 1.140 | 5 | 12.000 | 5 | 29.240 | 5 | 0.895 | 5 | 0.908 |
| LH28SM1 28 | 5 | 4.397 | 5 | 2.160 | 5 | 53.417 | 5 | 31.500 | 5 | 0.642 | 5 | 0.931 |
| LH56SM1 56 | 5 | 1.724 | 5 | 2.340 | 5 | 6.400 | 5 | 18.980 | 5 | 0.690 | 5 | 0.311 |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| LL01SM1 1 | 5 | 1.880 | 5 | 0.361 | 5 | 24.130 | 5 | 20.170 | 5 | 0.910 | 5 | 0.300 |
| LL07SM1 7 | 5 | 1.588 | 5 | 1.450 | 5 | 18.182 | 5 | 13.990 | 5 | 0.648 | 5 | 0.599 |
| LL14SM1 15 | 5 | 4.409 | 5 | 2.090 | 5 | 39.607 | 5 | 27.640 | 5 | 0.412 | 5 | 0.452 |
| LL28SM1 28 | 5 | 0.367 | 5 | 2.010 | 5 | 9.430 | 5 | 28.590 | 5 | 0.807 | 5 | 0.261 |
| LL56SM1 56 | 5 | 0.991 | 5 | 1.420 | 5 | 8.720 | 5 | 10.910 | 5 | 0.560 | 5 | 0.670 |

EPICHLOROHYDRIN: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 50°C | | | | | | | | | | | | |
| LH01WP1 1 | 5 | 6.100 | 5 | 1.740 | 5 | 71.300 | 5 | 13.470 | 5 | 0.384 | 5 | 1.040 |
| LH07WP1 7 | 5 | 2.230 | 5 | 0.800 | 5 | 30.620 | 5 | 11.898 | 5 | 0.430 | 5 | 0.540 |
| LH14WP1 14 | 5 | 2.010 | 5 | 1.730 | 5 | 17.730 | 5 | 16.430 | 5 | 0.141 | 5 | 0.385 |
| LH28WP1 28 | 5 | 1.560 | 5 | 2.160 | 5 | 19.850 | 5 | 17.010 | 5 | 0.447 | 5 | 0.510 |
| LH56WP1 55 | 5 | 2.660 | 5 | 1.890 | 5 | 27.740 | 5 | 12.180 | 5 | 1.760 | 5 | 1.210 |
| WATER 100.0% 23°C | | | | | | | | | | | | |
| LL01WP1 1 | 5 | 2.530 | 5 | 1.210 | 5 | 3.400 | 5 | 3.490 | 5 | 0.180 | 5 | 0.570 |
| LL07WP1 7 | 5 | 0.361 | 5 | 1.750 | 5 | 8.380 | 5 | 10.913 | 5 | 0.415 | 5 | 0.590 |
| LL14WP1 14 | 5 | 2.230 | 5 | 1.212 | 5 | 30.730 | 5 | 18.150 | 5 | 0.832 | 5 | 0.167 |
| LL28WP1 28 | 5 | 3.810 | 5 | 0.880 | 5 | 39.720 | 5 | 19.800 | 5 | 0.300 | 5 | 1.080 |
| LL56WP1 55 | 5 | 2.045 | 5 | 3.010 | 5 | 11.820 | 5 | 15.108 | 5 | 0.667 | 5 | 1.440 |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| LH01XM1 1 | 5 | 0.994 | 5 | 3.828 | 5 | 8.404 | 5 | 33.411 | 5 | 0.196 | 5 | 0.195 |
| LH07XM1 7 | 5 | 1.572 | 5 | 0.820 | 5 | 23.784 | 5 | 6.493 | 5 | 0.279 | 5 | 0.506 |
| LH14XM1 14 | 5 | 1.638 | 5 | 1.804 | 5 | 23.968 | 5 | 27.820 | 5 | 0.295 | 5 | 0.857 |
| LH28XM1 28 | 5 | 1.256 | 5 | 3.191 | 5 | 18.761 | 5 | 38.948 | 5 | 0.425 | 5 | 2.673 |
| LH56XM1 56 | 5 | 1.906 | 5 | 0.812 | 5 | 28.340 | 5 | 12.182 | 5 | 0.572 | 5 | 1.205 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| LL01XM1 1 | 5 | 3.738 | 5 | 1.983 | 5 | * | 5 | 33.267 | 5 | 0.159 | 5 | 0.185 |
| LL07XM1 7 | 5 | 12.878 | 5 | 1.179 | 5 | * | 5 | 21.488 | 5 | 0.533 | 5 | 0.359 |
| LL14XM1 14 | 5 | 2.858 | 5 | 0.927 | 5 | 25.244 | 5 | 28.332 | 5 | 0.266 | 5 | 0.891 |
| LL28XM1 28 | 5 | 3.048 | 5 | 6.557 | 5 | 35.539 | 5 | 75.463 | 5 | 0.246 | 5 | 0.238 |
| LL56XM1 56 | 5 | 3.806 | 5 | 2.315 | 5 | 55.074 | 5 | 33.707 | 5 | 0.942 | 5 | 0.168 |

# EPI_CO : RETENTION OF PROPERTIES

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | |
| LH01AM1 1 | 3.1 | 1.5 | 4.1 | 94 | 103 | 107 | 118 | 97 | 112 |
| LH07AM1 7 | 5.1 | 3.9 | 6.8 | 98 | 114 | 116 | 125 | 92 | 99 |
| LH14AM1 14 | 5.4 | 3.8 | 8.1 | 108 | 113 | 112 | 116 | 84 | 101 |
| LH28AM1 27 | 8.0 | 7.0 | 13.8 | 103 | 116 | 116 | 122 | 87 | 104 |
| LH99AM1 39 | 8.0 | 4.7 | 9.9 | * | * | * | * | * | * |
| LH56AM1 56 | 10.1 | 7.4 | 15.2 | 100 | 125 | 93 | 93 | 84 | 98 |
| LH99AM2 121 | 15.5 | 10.5 | 25.2 | * | * | * | * | * | * |
| LH99AM3 241 | 23.6 | 14.9 | 32.5 | * | * | * | * | * | * |
| LH99AM4 374 | 26.1 | 15.5 | 35.2 | * | * | * | * | * | * |
| LH99AM5 484 | 31.1 | 18.2 | 43.0 | * | * | * | * | * | * |
| LH99AM6 609 | 33.0 | 18.9 | 45.2 | 83 | * | 63 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | |
| LL01AM1 1 | 1.1 | .2 | 1.1 | 92 | 101 | 115 | 117 | 91 | 109 |
| LL07AM1 7 | 1.5 | .7 | 1.8 | 96 | 108 | 113 | 118 | 98 | 113 |
| LL14AM1 14 | 1.7 | .7 | 1.8 | 101 | 104 | 114 | 114 | 85 | 111 |
| LL28AM1 27 | 1.9 | 1.2 | 2.1 | 101 | 107 | 116 | 120 | 98 | 116 |
| LL99AM1 39 | 1.5 | .7 | 2.0 | * | * | * | * | * | * |
| LL56AM1 56 | 3.2 | 2.2 | 4.8 | 106 | 116 | 84 | 92 | 92 | 103 |
| LL99AM2 101 | 2.1 | 1.4 | 2.9 | * | * | * | * | * | * |
| LL99AM3 241 | 2.2 | 1.2 | 2.6 | * | * | * | * | * | * |
| LL99AM4 374 | 2.9 | 1.2 | 2.0 | * | * | * | * | * | * |
| LL99AM5 484 | 3.0 | 1.0 | 3.1 | * | * | * | * | * | * |
| LL99AM6 606 | 3.9 | 1.7 | 4.0 | 98 | * | 114 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | |
| LH01BM1 1 | 1.3 | .5 | 1.1 | 101 | 105 | 122 | 119 | 87 | 101 |
| LH07BM1 7 | 1.3 | 1.3 | 1.8 | 101 | 107 | 93 | 110 | 91 | 109 |
| LH14BM1 14 | 2.0 | .9 | .9 | 101 | 101 | 100 | 101 | 83 | 92 |
| LH28BM1 28 | 1.3 | .3 | .4 | 101 | 110 | 80 | 78 | 74 | 83 |
| LH99BM1 38 | * | .6 | .2 | * | * | * | * | * | * |
| LH56BM1 56 | 2.9 | 1.4 | 2.3 | 103 | 110 | 77 | 93 | 73 | 92 |
| LH99BM2 121 | 1.8 | 1.0 | 1.5 | * | * | * | * | * | * |
| LH99BM3 241 | 2.7 | .8 | * | * | * | * | * | * | * |
| LH99BM4 373 | .7 | * | .3 | * | * | * | * | * | * |
| LH99BM5 485 | .1 | .3 | .9 | * | * | * | * | * | * |
| LH99BM6 609 | 2.0 | .3 | .2 | 122 | * | 48 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | |
| LL01BM1 1 | .5 | .7 | 1.1 | 94 | 103 | 113 | 120 | 84 | 102 |
| LL07BM1 7 | .8 | .2 | .1 | 99 | 104 | 123 | 125 | 91 | 105 |
| LL14BM1 14 | 1.1 | .5 | .5 | 95 | 104 | 118 | 118 | 88 | 110 |
| LL28BM1 28 | 1.6 | 1.1 | 2.1 | 99 | 106 | 82 | 124 | 95 | 108 |
| LL99BM1 38 | 1.9 | 1.2 | 2.7 | * | * | * | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | |
| LL56BM1 56 | 2.6 | 1.1 | 3.4 | 103 | 102 | 120 | 139 | 90 | 109 |
| LL99BM2 101 | 1.8 | 1.0 | 2.8 | * | * | * | * | * | * |
| LL99BM3 241 | 4.0 | 1.4 | 2.7 | * | * | * | * | * | * |
| LL99BM4 373 | 2.5 | 2.1 | 3.0 | * | * | * | * | * | * |
| LL99BM5 485 | 1.9 | 1.0 | 2.1 | * | * | * | * | * | * |
| LL99BM6 606 | 2.0 | 1.2 | 2.6 | 95 | * | 82 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | |
| LH01DH1 1 | 6.2 | 1.1 | 5.6 | 88 | 93 | 101 | 95 | 86 | 90 |
| LH07DH1 7 | 20.6 | 7.8 | 22.2 | 88 | 85 | 99 | 108 | 82 | 78 |
| LH14DH1 14 | 17.9 | 8.6 | 17.7 | 79 | 87 | 93 | 96 | 75 | 84 |
| LH28DH1 28 | 24.8 | 12.4 | 32.0 | 72 | 77 | 98 | 97 | 70 | 72 |
| LH99DH1 37 | 32.3 | 14.2 | 40.8 | * | * | * | * | * | * |
| LH56DH1 56 | 17.6 | 9.9 | 24.9 | 95 | 98 | 88 | 87 | 88 | 91 |
| LH99DH2 121 | 31.8 | 15.7 | 44.3 | * | * | * | * | * | * |
| LH99DH3 234 | 24.7 | 11.9 | 33.9 | * | * | * | * | * | * |
| LH99DH4 365 | 26.2 | 14.1 | 35.6 | * | * | * | * | * | * |
| LH99DH5 499 | 28.7 | 17.2 | 36.1 | * | * | * | * | * | * |
| LH99DH6 609 | 30.7 | 18.3 | 40.2 | 105 | * | 66 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | |
| LL01DH1 1 | 6.6 | 3.3 | 6.5 | 87 | 93 | 98 | 96 | 87 | 97 |
| LL07DH1 7 | 9.0 | 5.4 | 13.1 | 84 | 90 | 106 | 104 | 81 | 84 |
| LL14DH1 14 | 18.3 | 8.2 | 20.0 | 84 | 87 | 110 | 105 | 70 | 79 |
| LL28DH1 28 | 17.8 | 8.7 | 21.2 | 80 | 85 | 117 | 115 | 72 | 80 |
| LL99DH1 37 | 22.1 | 9.9 | 27.9 | * | * | * | * | * | * |
| LL56DH1 56 | 17.5 | 8.4 | 22.0 | 82 | 89 | 102 | 103 | 78 | 82 |
| LL99DH2 101 | 23.7 | 12.7 | 34.5 | * | * | * | * | * | * |
| LL99DH3 234 | 25.9 | 13.2 | 35.6 | * | * | * | * | * | * |
| LL99DH4 365 | 24.1 | 12.1 | 32.4 | * | * | * | * | * | * |
| LL99DH5 500 | 21.8 | 11.5 | 35.1 | * | * | * | * | * | * |
| LL99DH6 606 | 34.4 | 15.2 | 47.5 | 112 | * | 89 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | |
| LH01DL1 1 | 3.1 | 1.5 | 3.5 | 82 | 94 | 105 | 106 | 91 | 101 |
| LH07DL1 7 | 6.9 | 3.8 | 9.2 | 88 | 94 | 108 | 103 | 90 | 96 |
| LH14DL1 14 | 10.3 | 5.1 | 13.3 | 87 | 93 | 91 | 96 | 82 | 90 |
| LH28DL1 28 | 14.5 | 8.1 | 19.6 | 88 | 93 | 87 | 90 | 80 | 81 |
| LH99DL1 37 | 14.6 | 7.5 | 20.0 | * | * | * | * | * | * |
| LH56DL1 56 | 15.2 | 7.8 | 20.3 | 91 | 97 | 63 | 78 | 84 | 92 |
| LH99DL2 121 | 16.9 | 9.3 | 24.1 | * | * | * | * | * | * |
| LH99DL3 234 | 21.0 | 10.9 | 29.5 | * | * | * | * | * | * |
| LH99DL4 364 | 21.8 | 9.8 | 30.9 | * | * | * | * | * | * |
| LH99DL5 499 | 22.9 | 8.3 | 29.8 | * | * | * | * | * | * |
| LH99DL6 609 | 22.7 | 10.7 | 33.3 | 105 | * | 71 | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | |
| LL01DL1 1 | 1.5 | .6 | .8 | 88 | 95 | 99 | 95 | 100 | 106 |
| LL07DL1 7 | 3.9 | 2.1 | 4.6 | 88 | 94 | 114 | 110 | 91 | 102 |
| LL14DL1 14 | 5.0 | 2.5 | 6.1 | 86 | 92 | 106 | 98 | 88 | 94 |
| LL28DL1 28 | 6.5 | 3.5 | 7.8 | 87 | 93 | 104 | 105 | 88 | 94 |
| LL99DL1 37 | 6.6 | 3.2 | 8.4 | * | * | * | * | * | * |
| LL56DL1 56 | 7.3 | 3.8 | 9.1 | 88 | 94 | 105 | 105 | 93 | 102 |
| LL99DL2 101 | 8.3 | 4.3 | 11.6 | * | * | * | * | * | * |
| LL99DL3 234 | 10.7 | 5.3 | 14.3 | * | * | * | * | * | * |
| LL99DL4 364 | 12.2 | 6.5 | 16.5 | * | * | * | * | * | * |
| LL99DL5 500 | 13.8 | 6.7 | 17.9 | * | * | * | * | * | * |
| LL99DL6 606 | 14.7 | 7.5 | 19.9 | 104 | * | 98 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | |
| LH01DM1 1 | 17.2 | 10.2 | 20.6 | 85 | 91 | 102 | 102 | 79 | 87 |
| LH07DM1 7 | 11.5 | 5.9 | 14.3 | 84 | 90 | 113 | 113 | 83 | 91 |
| LH14DM1 14 | 14.3 | 7.5 | 19.1 | 82 | 88 | 98 | 96 | 78 | 83 |
| LH28DM1 28 | 18.0 | 9.3 | 24.1 | 82 | 87 | 93 | 87 | 75 | 77 |
| LH99DM1 37 | 20.6 | 10.0 | 26.9 | * | * | * | * | * | * |
| LH56DM1 56 | 16.0 | 8.4 | 22.0 | 92 | 98 | 79 | 80 | 87 | 93 |
| LH99DM2 121 | 24.4 | 12.7 | 34.2 | * | * | * | * | * | * |
| LH99DM3 234 | 24.2 | 12.7 | 35.0 | * | * | * | * | * | * |
| LH99DM4 365 | 25.0 | 12.6 | 34.2 | * | * | * | * | * | * |
| LH99DM5 499 | 26.2 | 13.9 | 37.4 | * | * | * | * | * | * |
| LH99DM6 609 | 29.7 | 14.8 | 41.2 | 103 | * | 63 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | |
| LL01DM1 1 | 3.9 | 2.0 | 3.4 | 88 | 95 | 97 | 89 | 96 | 100 |
| LL07DM1 7 | 6.2 | 4.3 | 8.1 | 86 | 92 | 101 | 114 | 88 | 99 |
| LL14DM1 14 | 11.2 | 5.1 | 12.1 | 85 | 89 | 97 | 103 | 73 | 79 |
| LL28DM1 28 | 13.9 | 6.8 | 16.9 | 87 | 90 | 108 | 104 | 77 | 83 |
| LL99DM1 37 | 14.5 | 6.2 | 17.6 | * | * | * | * | * | * |
| LL56DM1 56 | 12.4 | 6.3 | 15.4 | 88 | 92 | 107 | 106 | 84 | 93 |
| LL99DM2 102 | 15.9 | 7.7 | 21.6 | * | * | * | * | * | * |
| LL99DM3 234 | 32.5 | 7.7 | 21.7 | * | * | * | * | * | * |
| LL99DM4 365 | 20.0 | 9.2 | 25.9 | * | * | * | * | * | * |
| LL99DM5 500 | 19.5 | 9.7 | 26.4 | * | * | * | * | * | * |
| LL99DM6 606 | 17.3 | 8.9 | 24.2 | 106 | * | 104 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | |
| LH01FH1 1 | 4.7 | 2.7 | 6.1 | 86 | 95 | 108 | 106 | 54 | 83 |
| LH07FH1 7 | 53.1 | 23.9 | 71.3 | 53 | 55 | * | 71 | 45 | 46 |
| LH14FH1 14 | 60.2 | 26.9 | 78.4 | 48 | 54 | 57 | 59 | 45 | 45 |
| LH28FH1 28 | 58.1 | 26.3 | 81.4 | 56 | 57 | 66 | 62 | 37 | 41 |
| LH99FH1 39 | 58.7 | 26.4 | 77.7 | * | * | * | * | * | * |
| LH56FH1 56 | 65.9 | 29.4 | 88.6 | 52 | 53 | 66 | 59 | 30 | 29 |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| | | | FURFURAL 8.0% 50°C | | | | | | |
| LH99FH2 121 | 101.0 | 39.3 | 131.1 | * | * | * | * | * | * |
| LH99FH3 233 | 67.9 | 23.3 | 96.1 | * | * | * | * | * | * |
| LH99FH4 368 | 64.8 | 28.1 | 88.6 | * | * | * | * | * | * |
| LH99FH5 499 | 84.3 | 34.8 | 111.1 | * | * | * | * | * | * |
| LH99FH6 609 | 98.5 | 40.3 | 124.9 | 46 | * | 22 | * | * | * |
| | | | FURFURAL 8.0% 23°C | | | | | | |
| LL01FH1 1 | 1.2 | .8 | 1.8 | 88 | 93 | 109 | 111 | 127 | 171 |
| LL07FH1 7 | 51.9 | 24.5 | 70.0 | 49 | 55 | 67 | 67 | 55 | 58 |
| LL14FH1 14 | 60.3 | 27.3 | 78.2 | 49 | 50 | 64 | 63 | 39 | 42 |
| LL28FH1 28 | 55.6 | 25.8 | 79.6 | 61 | 62 | 87 | 82 | 48 | 45 |
| LL99FH1 39 | 66.7 | 26.9 | 85.5 | * | * | * | * | * | * |
| LL56FH1 56 | 62.1 | 26.5 | 80.8 | 48 | 53 | 67 | 70 | 37 | 36 |
| LL99FH2 102 | 83.1 | 34.2 | 113.5 | * | * | * | * | * | * |
| LL99FH3 233 | 89.6 | 34.9 | 118.2 | * | * | * | * | * | * |
| LL99FH4 368 | 65.2 | 30.8 | 94.2 | * | * | * | * | * | * |
| LL99FH5 500 | 79.1 | 33.2 | 103.7 | * | * | * | * | * | * |
| LL99FH6 606 | 78.9 | 33.0 | 102.6 | 36 | * | 23 | * | * | * |
| | | | FURFURAL 1.0% 50°C | | | | | | |
| LH01FL1 1 | 4.5 | 2.2 | 5.3 | 85 | 91 | 119 | 110 | 108 | 159 |
| LH07FL1 7 | 11.4 | 6.6 | 15.5 | 88 | 93 | 112 | 118 | 104 | 110 |
| LH14FL1 14 | 13.9 | 7.2 | 18.0 | 90 | 93 | 95 | 93 | 96 | 171 |
| LH28FL1 28 | 16.1 | 8.7 | 21.5 | 87 | 89 | 85 | 94 | 76 | 78 |
| LH99FL1 39 | 17.7 | 8.7 | 24.5 | * | * | * | * | * | * |
| LH56FL1 56 | 19.4 | 10.9 | 27.6 | 85 | 92 | 88 | 83 | 74 | 76 |
| LH56FL2 56 | 19.6 | 10.2 | 26.8 | 92 | 87 | 83 | 84 | 80 | 78 |
| LH99FL2 121 | 25.5 | 12.8 | 35.6 | * | * | * | * | * | * |
| LH99FL3 233 | 29.7 | 14.4 | 41.7 | * | * | * | * | * | * |
| LH99FL4 367 | 32.9 | 15.6 | 45.0 | * | * | * | * | * | * |
| LH99FL5 499 | 35.4 | 17.2 | 49.7 | * | * | * | * | * | * |
| LH99FL6 609 | 37.0 | 18.2 | 51.4 | 103 | * | 54 | * | * | * |
| | | | FURFURAL 1.0% 23°C | | | | | | |
| LL01FL1 1 | 1.5 | 1.0 | 1.6 | 85 | 92 | 102 | 107 | 108 | 162 |
| LL07FL1 7 | 4.1 | 1.9 | 4.6 | 87 | 95 | 107 | 113 | 110 | 128 |
| LL14FL1 14 | 6.0 | 3.5 | 7.7 | 85 | 92 | 106 | 106 | 108 | 125 |
| LL28FL1 28 | 8.3 | 4.8 | 11.3 | 85 | 91 | 119 | 120 | 87 | 98 |
| LL99FL1 39 | 8.3 | 3.9 | 10.5 | * | * | * | * | * | * |
| LL56FL1 56 | 10.7 | 5.7 | 12.9 | 86 | 92 | 114 | 114 | 92 | 98 |
| LL56FL2 56 | 10.2 | 5.2 | 13.1 | 84 | 98 | 110 | 117 | 88 | 100 |
| LL99FL2 102 | 11.2 | 5.7 | 15.2 | * | * | * | * | * | * |
| LL99FL3 233 | 14.6 | 7.7 | 20.4 | * | * | * | * | * | * |
| LL99FL4 367 | 16.7 | 8.1 | 21.2 | * | * | * | * | * | * |
| LL99FL5 500 | 18.5 | 9.1 | 24.4 | * | * | * | * | * | * |
| LL99FL6 606 | 19.7 | 9.6 | 38.3 | 103 | * | 99 | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| | | | FURFURAL 4.0% 50°C | | | | | | |
| LH01FM1 1 | 16.6 | 8.1 | 20.0 | 82 | 85 | 113 | 113 | 90 | 123 |
| LH07FM1 7 | 25.0 | 12.5 | 32.0 | 76 | 77 | 102 | 99 | 88 | 85 |
| LH14FM1 14 | 29.4 | 14.9 | 39.8 | 71 | 75 | 92 | 92 | 72 | 74 |
| LH28FM1 28 | 32.9 | 16.3 | 43.9 | 72 | 74 | 83 | 82 | 61 | 73 |
| LH99FM1 39 | 32.4 | 16.2 | 44.3 | * | * | * | * | * | * |
| LH56FM1 56 | 40.2 | 20.2 | 55.4 | 71 | 73 | 76 | 73 | 55 | 59 |
| LH99FM2 121 | 51.1 | 29.4 | 77.8 | * | * | * | * | * | * |
| LH99FM3 233 | 68.3 | 31.0 | 95.6 | * | * | * | * | * | * |
| LH99FM4 367 | 62.7 | 30.0 | 89.6 | * | * | * | * | * | * |
| LH99FM5 499 | 65.0 | 30.5 | 92.0 | * | * | * | * | * | * |
| LH99FM6 609 | 63.7 | 29.2 | 87.3 | 80 | * | 38 | * | * | * |
| | | | FURFURAL 4.0% 23°C | | | | | | |
| LL01FM1 1 | 10.7 | 5.7 | 12.3 | 85 | 86 | 108 | 103 | 96 | 127 |
| LL07FM1 7 | 18.9 | 9.8 | 24.1 | 79 | 86 | 116 | 116 | 92 | 98 |
| LL14FM1 14 | 23.0 | 12.0 | 30.3 | 76 | 78 | 119 | 112 | 75 | 88 |
| LL28FM1 28 | 25.0 | 12.6 | 32.1 | 73 | 76 | 109 | 119 | 66 | 83 |
| LL99FM1 39 | 100.0 | 100.0 | 100.0 | * | * | * | * | * | * |
| LL56FM1 56 | 28.3 | 14.7 | 37.7 | 75 | 79 | 96 | 98 | 68 | 68 |
| LL99FM2 105 | 34.2 | 16.2 | 46.1 | * | * | * | * | * | * |
| LL99FM3 233 | 40.1 | 18.7 | 54.4 | * | * | * | * | * | * |
| LL99FM4 367 | 35.9 | 16.2 | 46.9 | * | * | * | * | * | * |
| LL99FM5 500 | 47.5 | 21.9 | 62.0 | * | * | * | * | * | * |
| LL99FM6 606 | 54.8 | 24.6 | 75.6 | 82 | * | 57 | * | * | * |
| | | | METHYL ETHYL KETONE 26.0% 50°C | | | | | | |
| LH01MH1 1 | 72.6 | 38.4 | 130.2 | 44 | 41 | 62 | 56 | 38 | 44 |
| LH07MH1 7 | 68.5 | 43.4 | 115.0 | 51 | 54 | 85 | 64 | 52 | 53 |
| LH14MH1 14 | 76.8 | 41.1 | 135.7 | 39 | 41 | 47 | 44 | 37 | 46 |
| LH99MH1 36 | 60.7 | 29.4 | 93.1 | * | * | * | * | * | * |
| LH56MH1 55 | 61.3 | 33.5 | 102.7 | 37 | 36 | 45 | 43 | 37 | 37 |
| LH99MH2 120 | 65.7 | 35.6 | 105.2 | * | * | * | * | * | * |
| LH99MH3 247 | 45.6 | 22.2 | 57.8 | * | * | * | * | * | * |
| LH99MH4 367 | 43.7 | 21.6 | 63.3 | * | * | * | * | * | * |
| LH99MH5 500 | 38.2 | 20.1 | 49.2 | * | * | * | * | * | * |
| LH99MH6 609 | 29.2 | 16.1 | 43.4 | 42 | * | 41 | * | * | * |
| | | | METHYL ETHYL KETONE 26.0% 23°C | | | | | | |
| LL01MH1 1 | 66.1 | 36.9 | 117.8 | 44 | 42 | 64 | 57 | 40 | 48 |
| LL07MH1 7 | 40.4 | 34.1 | 99.3 | 53 | 54 | 74 | 72 | 52 | 52 |
| LL14MH1 14 | 43.8 | 27.0 | 76.8 | 61 | 62 | 92 | 91 | 67 | 75 |
| LL28MH1 28 | 67.4 | 33.3 | 102.2 | 41 | 42 | 55 | 54 | 44 | 47 |
| LL99MH1 36 | 69.1 | 33.1 | 102.8 | * | * | * | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | |
| LL56MH1 55 | 56.5 | 35.9 | 111.3 | 40 | 42 | 51 | 49 | 41 | 44 |
| LL99MH2 109 | 41.7 | 27.5 | 79.1 | * | * | * | * | * | * |
| LL99MH3 247 | 51.3 | 23.4 | 64.6 | * | * | * | * | * | * |
| LL99MH4 367 | 42.7 | 21.8 | 59.9 | * | * | * | * | * | * |
| LL99MH5 501 | 70.6 | 20.6 | 55.0 | * | * | * | * | * | * |
| LL99MH6 606 | 43.4 | 23.3 | 64.3 | 75 | * | 79 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | |
| LH01ML1 1 | 6.8 | 3.6 | 10.6 | 88 | 96 | 118 | 121 | 89 | 97 |
| LH07ML1 7 | 12.0 | 6.4 | 17.9 | 87 | 94 | 102 | 118 | 99 | 112 |
| LH14ML1 14 | 15.5 | 8.6 | 22.3 | 91 | 96 | 91 | 97 | 102 | 128 |
| LH28ML1 28 | 20.1 | 10.6 | 28.8 | 88 | 93 | 91 | 98 | 88 | 82 |
| LH99ML1 37 | 20.0 | 10.1 | 28.7 | * | * | * | * | * | * |
| LH56ML1 55 | 19.1 | 9.8 | 38.5 | 89 | 97 | 84 | 92 | 91 | 91 |
| LH99ML2 121 | 23.0 | 11.8 | 32.5 | * | * | * | * | * | * |
| LH99ML3 247 | 22.1 | 11.1 | 30.6 | * | * | * | * | * | * |
| LH99ML4 367 | 22.7 | 12.5 | 28.8 | * | * | * | * | * | * |
| LH99ML5 500 | 22.5 | 11.7 | 31.0 | * | * | * | * | * | * |
| LH99ML6 609 | 23.5 | 12.2 | 33.1 | 97 | * | 59 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | |
| LL01ML1 1 | 2.0 | 1.3 | 2.7 | 94 | 96 | 113 | 115 | 108 | 109 |
| LL07ML1 7 | 4.7 | 2.8 | 6.8 | 94 | 99 | 119 | 112 | 102 | 117 |
| LL14ML1 14 | 5.7 | 3.3 | 8.8 | 91 | 96 | 114 | 114 | | |
| LL28ML1 28 | 8.1 | 4.7 | 11.6 | 90 | 97 | 125 | 127 | 95 | 104 |
| LL99ML1 37 | 9.8 | 4.9 | 13.5 | * | * | * | * | * | * |
| LL56ML1 55 | 9.1 | 6.0 | 14.6 | 91 | 95 | 117 | 114 | 106 | 107 |
| LL99ML2 109 | 12.2 | 6.6 | 18.3 | * | * | * | * | * | * |
| LL99ML3 247 | 15.5 | 7.7 | 21.6 | * | * | * | * | * | * |
| LL99ML4 367 | 17.6 | 7.9 | 26.8 | * | * | * | * | * | * |
| LL99ML5 501 | 18.7 | 9.4 | 25.7 | * | * | * | * | * | * |
| LL99ML6 606 | 19.3 | 10.1 | 27.8 | 103 | * | 97 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | |
| LH01MM1 1 | 27.6 | 15.5 | 45.6 | 73 | 73 | 111 | 105 | 73 | 71 |
| LH07MM1 7 | 28.9 | 16.5 | 46.2 | 78 | 79 | 100 | 101 | 75 | 84 |
| LH14MM1 14 | 35.4 | 4.4 | 36.2 | 68 | 73 | 78 | 81 | 74 | 85 |
| LH28MM1 28 | 41.3 | 22.2 | 64.7 | 59 | 67 | 70 | 72 | 52 | 56 |
| LH99MM1 37 | 40.2 | 20.4 | 60.0 | * | * | * | * | * | * |
| LH56MM1 55 | 26.7 | 13.8 | 25.9 | 81 | 83 | 91 | 91 | 78 | 80 |
| LH99MM2 121 | 40.5 | 20.8 | 60.7 | * | * | * | * | * | * |
| LH99MM3 247 | 33.3 | 22.3 | 50.0 | * | * | * | * | * | * |
| LH99MM4 367 | 21.4 | 11.7 | 30.5 | * | * | * | * | * | * |
| LH99MM5 500 | 24.7 | 13.4 | 30.1 | * | * | * | * | * | * |
| LH99MM6 609 | 24.0 | 13.2 | 35.1 | 83 | * | 70 | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | |
| LL01MM1 1 | 11.8 | 10.1 | 27.1 | 80 | 83 | 121 | 120 | 83 | 76 |
| LL07MM1 7 | 21.7 | 13.5 | 35.2 | 85 | 90 | 117 | 120 | 75 | 86 |
| LL14MM1 14 | 22.4 | 13.6 | 36.0 | 78 | 86 | 94 | 115 | 89 | 101 |
| LL28MM1 28 | 35.1 | 19.1 | 54.1 | 73 | 72 | 110 | 104 | 66 | 67 |
| LL99MM1 37 | 34.7 | 17.4 | 50.5 | * | * | * | * | * | * |
| LL56MM1 55 | 26.7 | 14.8 | 40.3 | 77 | 77 | 112 | 109 | 75 | 78 |
| LL99MM2 109 | 38.6 | 23.2 | 68.9 | * | * | * | * | * | * |
| LL99MM3 247 | 37.3 | 17.1 | 49.1 | * | * | * | * | * | * |
| LL99MM4 367 | 31.5 | 15.9 | 44.6 | * | * | * | * | * | * |
| LL99MM5 501 | 32.7 | 11.8 | 34.5 | * | * | * | * | * | * |
| LL99MM6 606 | 32.0 | 16.9 | 43.4 | 90 | * | 90 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | |
| LH01OM1 1 | 2.6 | 1.5 | 3.8 | 91 | 95 | 116 | 118 | 93 | 109 |
| LH07OM1 7 | 6.4 | 4.0 | 9.9 | 93 | 105 | 104 | 121 | 112 | 134 |
| LH14OM1 13 | 8.0 | 4.2 | 10.4 | 97 | 105 | 110 | 118 | 98 | 114 |
| LH28OM1 28 | 12.2 | 7.3 | 17.5 | 97 | 101 | 93 | 90 | 74 | 84 |
| LH99OM1 39 | 14.6 | 7.2 | 19.4 | * | * | * | * | * | * |
| LH56OM1 56 | 16.3 | 7.9 | 22.5 | 97 | 100 | 92 | 89 | 81 | 93 |
| LH99OM2 121 | 18.2 | 8.8 | 23.9 | * | * | * | * | * | * |
| LH99OM3 247 | 18.1 | 8.9 | 25.1 | * | * | * | * | * | * |
| LH99OM4 371 | 20.1 | 9.9 | 26.9 | * | * | * | * | * | * |
| LH99OM5 494 | 19.3 | 9.6 | 27.3 | * | * | * | * | * | * |
| LH99OM6 609 | 20.6 | 9.6 | 27.1 | 120 | * | 78 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | |
| LL01OM1 1 | .5 | .3 | .1 | 93 | 97 | 120 | 121 | 93 | 119 |
| LL07OM1 7 | 2.0 | .8 | 2.1 | 95 | 103 | 123 | 125 | 101 | 118 |
| LL14OM1 13 | 1.3 | 1.5 | 3.0 | 96 | 104 | 120 | 129 | 97 | 111 |
| LL28OM1 28 | 4.2 | 1.8 | 4.5 | 93 | 99 | 126 | 132 | 82 | 86 |
| LL99OM1 39 | 5.1 | 2.4 | 6.7 | * | * | * | * | * | * |
| LL56OM1 56 | 5.0 | 2.6 | 7.1 | 91 | 102 | 112 | 134 | 97 | 110 |
| LL99OM2 105 | 7.1 | 3.3 | 9.7 | * | * | * | * | * | * |
| LL99OM3 247 | 9.9 | 4.9 | 13.3 | * | * | * | * | * | * |
| LL99OM4 371 | 11.4 | 5.5 | 15.3 | * | * | * | * | * | * |
| LL99OM5 494 | 12.0 | 6.5 | 17.2 | * | * | * | * | * | * |
| LL99OM6 606 | 13.1 | 6.7 | 17.9 | 112 | * | 89 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | |
| LH01OP1 1 | .2 | .7 | .7 | 94 | 99 | 122 | 118 | 112 | 127 |
| LH07OP1 7 | .4 | .5 | .6 | 101 | 93 | 108 | 127 | 87 | 101 |
| LH14OP1 14 | .4 | .2 | .6 | 93 | 102 | 119 | 122 | 88 | 103 |
| LH28OP1 28 | .5 | .2 | .1 | 90 | 99 | 117 | 122 | 97 | 122 |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | |
| LH990P1 39 | 2.1 | .2 | 1.3 | * | * | * | * | * | * |
| LH560P1 56 | 1.0 | .5 | 1.3 | 93 | 103 | 120 | 98 | 95 | 99 |
| LH990P2 121 | 1.8 | .3 | 1.0 | * | * | * | * | * | * |
| LH990P3 241 | 1.5 | 1.1 | 3.2 | * | * | * | * | * | * |
| LH990P4 371 | 2.1 | .2 | 1.5 | * | * | * | * | * | * |
| LH990P5 489 | 2.1 | .3 | 1.8 | * | * | * | * | * | * |
| LH990P6 609 | 2.3 | .8 | 2.8 | 116 | * | 78 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | |
| LL010P1 1 | .4 | .2 | .3 | 94 | 101 | 121 | 123 | 116 | 131 |
| LL070P1 7 | .2 | .2 | * | 88 | 96 | 124 | 120 | 85 | 97 |
| LL140P1 14 | .1 | .2 | .3 | 90 | 101 | 108 | 113 | 87 | 105 |
| LL280P1 28 | .1 | .6 | .9 | 95 | 99 | 121 | 116 | 107 | 113 |
| LL990P1 39 | .2 | .2 | .2 | * | * | * | * | * | * |
| LL560P1 56 | .2 | .2 | .2 | 95 | 99 | 96 | 114 | 100 | 116 |
| LL990P2 106 | .4 | .3 | .5 | * | * | * | * | * | * |
| LL990P3 241 | * | .5 | .1 | * | * | * | * | * | * |
| LL990P4 371 | .4 | .2 | .1 | * | * | * | * | * | * |
| LL990P5 489 | .1 | .3 | .3 | * | * | * | * | * | * |
| LL990P6 606 | .3 | * | .7 | 94 | * | 94 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | |
| LH01PH1 1 | 48.8 | 23.8 | 68.2 | * | 50 | * | 60 | 38 | 39 |
| LH88PH1 1 | 140.0 | 100.0 | 100.0 | 100 | * | 100 | * | * | * |
| LH07PH1 7 | 60.2 | 27.5 | 82.2 | 43 | 44 | 64 | 64 | 34 | 34 |
| LH14PH1 14 | 67.4 | 30.7 | 92.6 | 46 | 46 | 59 | 58 | 30 | 33 |
| LH28PH1 28 | 66.1 | 29.8 | 89.3 | 45 | 47 | 57 | 58 | 30 | 30 |
| LH99PH1 38 | 41.0 | 19.7 | 55.0 | * | * | * | * | * | * |
| LH56PH1 56 | 61.8 | 28.0 | 81.8 | 46 | 46 | 63 | 63 | 29 | 29 |
| LH99PH2 120 | 36.9 | 17.5 | 48.1 | * | * | * | * | * | * |
| LH99PH3 239 | 45.7 | 20.5 | 59.4 | * | * | * | * | * | * |
| LH99PH4 375 | 82.7 | 34.3 | 112.3 | * | * | * | * | * | * |
| LH99PH5 500 | 90.9 | 37,8 | 123.6 | * | * | * | * | * | * |
| LH99PH6 609 | 97.7 | 40.0 | 129.8 | 33 | * | 24 | * | * | * |
| PHENOL 8.0% 23°C | | | | | | | | | |
| LL01PH1 1 | 43.8 | 20.7 | 60.4 | 51 | 58 | 65 | 72 | 42 | 45 |
| LL07PH1 7 | 70.4 | 31.4 | 94.9 | 37 | 40 | 51 | 54 | 24 | 28 |
| LL14PH1 14 | 76.4 | 34.0 | 105.1 | 36 | 41 | 35 | 49 | 27 | 23 |
| LL28PH1 28 | 77.4 | 34.3 | 106.2 | 39 | 42 | 48 | 46 | 25 | 29 |
| LL99PH1 38 | 57.9 | 25.1 | 76.9 | * | * | * | * | * | * |
| LL56PH1 56 | 76.9 | 34.2 | 104.9 | 38 | 40 | 51 | 50 | 26 | 25 |
| LL99PH2 106 | 58.8 | 25.9 | 79.7 | * | * | * | * | * | * |
| LL99PH3 239 | 52.7 | 23.0 | 66.2 | * | * | * | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 8.0% 23°C | | | | | | |
| LL99PH4 375 | 93.8 | 38.2 | 128.3 | * | * | * | * | * | * |
| LL99PH5 501 | 95.5 | 56.3 | 153.9 | * | * | * | * | * | * |
| LL99PH6 606 | 89.2 | 36.3 | 119.5 | 47 | * | 25 | * | * | * |
| | | | PHENOL 1.0% 50°C | | | | | | |
| LH01PL1 1 | 2.8 | 2.3 | 6.0 | 89 | 95 | 110 | 106 | 94 | 103 |
| LH07PL1 7 | 11.7 | 6.3 | 15.9 | 85 | 92 | 99 | 127 | 94 | 108 |
| LH14PL1 14 | 15.1 | 7.9 | 20.8 | 88 | 92 | 113 | 119 | 92 | 98 |
| LH28PL1 28 | 17.7 | 9.3 | 23.9 | 88 | 94 | 100 | 105 | 89 | 96 |
| LH99PL1 37 | 17.5 | 8.5 | 23.5 | * | * | * | * | * | * |
| LH56PL1 56 | 19.2 | 10.8 | 27.0 | 89 | 91 | 102 | 101 | 83 | 91 |
| LH99PL2 120 | 20.0 | 10.4 | 27.7 | * | * | * | * | * | * |
| LH99PL3 239 | 23.3 | 10.2 | 28.4 | * | * | * | * | * | * |
| LH99PL4 374 | 21.9 | 10.5 | 28.6 | * | * | * | * | * | * |
| LH99PL5 500 | 23.8 | 11.8 | 32.5 | * | * | * | * | * | * |
| LH99PL6 609 | 24.0 | 10.4 | 29.7 | 107 | * | 63 | * | * | * |
| | | | PHENOL 1.0% 23°C | | | | | | |
| LL01PL1 1 | .7 | .6 | 1.9 | 89 | 96 | 103 | 101 | 92 | 109 |
| LL07PL1 7 | 5.0 | 2.8 | 6.2 | 91 | 96 | 108 | 102 | 101 | 107 |
| LL14PL1 14 | 7.0 | 3.4 | 100.0 | 93 | 100 | 124 | 125 | 98 | 103 |
| LL28PL1 28 | 9.5 | 5.0 | 12.4 | 94 | 102 | 119 | 119 | 97 | 103 |
| LL99PL1 37 | 9.5 | 4.5 | 11.8 | * | * | * | * | * | * |
| LL56PL1 56 | 12.2 | 6.6 | 15.9 | 89 | 97 | 122 | 125 | 94 | 106 |
| LL99PL2 108 | 12.8 | 7.1 | 18.2 | * | * | * | * | * | * |
| LL99PL3 240 | 15.8 | 7.9 | 13.5 | * | * | * | * | * | * |
| LL99PL4 374 | 17.6 | 9.0 | 22.8 | * | * | * | * | * | * |
| LL99PL5 501 | 20.6 | 10.4 | 27.8 | * | * | * | * | * | * |
| LL99PL6 606 | 21.5 | 9.1 | 27.2 | 96 | * | 80 | * | * | * |
| | | | PHENOL 4.0% 50°C | | | | | | |
| LH01PM1 1 | 21.3 | 10.3 | 27.9 | 74 | 77 | 114 | 114 | 76 | 72 |
| LH07PM1 7 | 30.9 | 15.6 | 40.8 | 62 | 63 | 108 | 101 | 67 | 67 |
| LH14PM1 14 | 34.5 | 11.4 | 39.8 | 69 | 68 | 102 | 92 | 65 | 63 |
| LH28PM1 28 | 36.1 | 17.5 | 48.6 | 64 | 66 | 90 | 91 | 64 | 62 |
| LH99PM1 37 | 28.1 | 14.3 | 38.7 | * | * | * | * | * | * |
| LH56PM1 56 | 38.5 | 18.9 | 52.3 | 63 | 62 | 94 | 91 | 58 | 57 |
| LH99PM2 120 | 25.9 | 13.0 | 34.6 | * | * | * | * | * | * |
| LH99PM3 239 | 25.8 | 13.3 | 35.2 | * | * | * | * | * | * |
| LH99PM4 375 | 28.8 | 14.3 | 38.6 | * | * | * | * | * | * |
| LH99PM5 500 | 31.8 | 15.5 | 43.2 | * | * | * | * | * | * |
| LH99PM6 609 | 35.3 | 17.4 | 45.8 | 74 | * | 46 | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 4.0% 23°C | | | | | | |
| LL01PM1 1 | 9.1 | 7.5 | 14.8 | 85 | 87 | 107 | 99 | 84 | 92 |
| LL07PM1 7 | 30.1 | 15.6 | 40.6 | 64 | 65 | 107 | 104 | 62 | 63 |
| LL14PM1 14 | 32.8 | 16.2 | 43.3 | 68 | 69 | 98 | 95 | 61 | 58 |
| LL28PM1 28 | 35.8 | 18.0 | 48.5 | 59 | 61 | 103 | 101 | 58 | 58 |
| LL99PM1 37 | 28.6 | 13.1 | 36.7 | * | * | * | * | * | * |
| LL56PM1 56 | 39.4 | 19.8 | 52.6 | 62 | 63 | 93 | 87 | 60 | 54 |
| LL99PM2 107 | 31.5 | 14.9 | 42.1 | * | * | * | * | * | * |
| LL99PM3 240 | 33.8 | 16.1 | 28.0 | * | * | * | * | * | * |
| LL99PM4 375 | 38.6 | 18.3 | 51.6 | * | * | * | * | * | * |
| LL99PM5 501 | 40.7 | 7.1 | 39.0 | * | * | * | * | * | * |
| LL99PM6 606 | 41.8 | 19.4 | 55.6 | 60 | * | 70 | * | * | * |
| | | | SODIUM CHLORIDE 35.0% 50°C | | | | | | |
| LH01SH1 1 | .7 | .3 | .1 | 99 | 105 | 128 | 124 | 89 | 112 |
| LH07SH1 7 | .6 | .2 | .1 | 96 | 106 | 111 | 120 | 98 | |
| LH14SH1 14 | .7 | .7 | 1.5 | 102 | 110 | 87 | 113 | 82 | 102 |
| LH28SH1 28 | .9 | .7 | 1.0 | 109 | 107 | 108 | 112 | 100 | 92 |
| LH99SH1 36 | .8 | .2 | .1 | * | * | * | * | * | * |
| LH56SH1 56 | .8 | .7 | 1.0 | 98 | 111 | 100 | 94 | 78 | 92 |
| LH99SH2 120 | .7 | .2 | .4 | * | * | * | * | * | * |
| LH99SH3 241 | .7 | .2 | .2 | * | * | * | * | * | * |
| LH99SH4 372 | .6 | .2 | .7 | * | * | * | * | * | * |
| LH99SH5 492 | .5 | * | .2 | * | * | * | * | * | * |
| LH99SH6 609 | .6 | .2 | .7 | 118 | * | 71 | * | * | * |
| | | | SODIUM CHLORIDE 35.0% 23°C | | | | | | |
| LL01SH1 1 | .2 | .2 | .1 | 92 | 103 | 97 | 118 | 92 | 102 |
| LL07SH1 7 | .4 | .2 | .1 | 97 | 97 | 116 | 119 | 98 | 103 |
| LL14SH1 14 | .5 | .2 | .4 | 93 | 101 | 117 | 124 | 94 | 112 |
| LL28SH1 28 | .6 | .5 | .6 | 102 | 101 | 114 | 128 | 71 | 104 |
| LL99SH1 36 | .9 | .3 | .1 | * | * | * | * | * | * |
| LL56SH1 56 | .8 | .5 | 1.0 | 92 | 109 | 113 | 105 | 88 | 108 |
| LL99SH2 108 | 1.4 | .3 | 1.0 | * | * | * | * | * | * |
| LL99SH3 241 | .8 | .2 | .1 | * | * | * | * | * | * |
| LL99SH4 372 | .9 | .3 | .3 | * | * | * | * | * | * |
| LL99SH5 492 | .5 | .3 | .1 | * | * | * | * | * | * |
| LL99SH6 606 | .6 | .2 | .1 | 97 | * | 107 | * | * | * |
| | | | SODIUM CHLORIDE 10.0% 50°C | | | | | | |
| LH01SM1 1 | 1.8 | * | .9 | 91 | 100 | 110 | 112 | 83 | 104 |
| LH07SM1 7 | 3.4 | 1.3 | 3.3 | 93 | 104 | 104 | 107 | 99 | 112 |
| LH14SM1 15 | .8 | 1.1 | 2.7 | 94 | 99 | 107 | 100 | 87 | 104 |
| LH28SM1 28 | 3.7 | 2.2 | 3.3 | 94 | 104 | 85 | 94 | 83 | 93 |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | |
| LH99SM1 36 | 2.7 | 1.2 | 2.5 | * | * | * | * | * | * |
| LH56SM1 56 | 3.8 | 1.8 | 4.0 | 115 | 114 | 79 | 84 | 85 | 99 |
| LH99SM2 120 | 3.0 | 1.4 | 3.1 | * | * | * | * | * | * |
| LH99SM3 241 | 3.3 | 1.0 | 2.7 | * | * | * | * | * | * |
| LH99SM4 372 | 3.2 | 2.2 | 3.5 | * | * | * | * | * | * |
| LH99SM5 485 | 2.8 | 1.4 | 2.4 | * | * | * | * | * | * |
| LH99SM6 609 | 3.0 | 1.2 | 2.0 | 121 | * | 66 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | |
| LL01SM1 1 | .6 | * | .4 | 90 | 97 | 113 | 115 | 79 | 104 |
| LL07SM1 7 | 1.5 | .3 | .1 | 95 | 94 | 116 | 113 | 90 | 115 |
| LL14SM1 15 | 1.7 | 1.2 | 1.8 | 93 | 99 | 112 | 113 | 95 | 111 |
| LL28SM1 28 | 3.0 | 9.9 | 10.8 | 104 | 90 | 88 | 111 | 78 | 94 |
| LL99SM1 36 | 2.3 | .8 | 2.6 | * | * | * | * | * | * |
| LL56SM1 56 | 3.2 | 1.1 | 3.3 | 104 | 112 | 77 | 81 | 85 | 101 |
| LL99SM2 107 | 2.5 | .5 | 5.0 | * | * | * | * | * | * |
| LL99SM3 241 | 2.7 | .7 | 2.8 | * | * | * | * | * | * |
| LL99SM4 372 | 2.6 | .3 | 2.1 | * | * | * | * | * | * |
| LL99SM5 485 | 2.2 | .8 | 2.6 | * | * | * | * | * | * |
| LL99SM6 606 | 2.3 | .5 | 2.1 | 96 | * | 88 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | |
| LH01WP1 1 | 2.9 | 1.4 | 3.1 | 93 | 115 | 109 | 89 | 85 | 100 |
| LH07WP1 7 | 6.3 | 3.5 | 8.9 | 104 | 114 | 80 | 92 | 67 | 83 |
| LH14WP1 14 | 8.5 | 5.0 | 11.4 | 96 | 100 | 94 | 113 | 81 | 86 |
| LH28WP1 28 | 9.9 | 4.1 | 11.6 | 104 | 112 | 83 | 90 | 76 | 91 |
| LH99WP1 36 | 13.2 | 7.0 | 18.4 | * | * | * | * | * | * |
| LH56WP1 55 | 13.2 | 7.0 | 19.7 | 110 | 123 | 80 | 85 | 85 | 101 |
| LH99WP2 120 | 16.7 | 8.9 | 23.1 | * | * | * | * | * | * |
| LH99WP3 241 | 17.6 | 9.5 | 25.4 | * | * | * | * | * | * |
| LH99WP4 364 | 18.5 | 9.7 | 25.2 | * | * | * | * | * | * |
| LH99WP5 483 | 18.7 | 9.8 | 19.5 | * | * | * | * | * | * |
| LH99WP6 609 | 18.9 | 9.4 | 25.1 | 120 | * | 71 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | |
| LL01WP1 1 | 1.0 | * | .5 | 105 | 115 | 82 | 91 | 79 | 93 |
| LL07WP1 7 | 2.4 | 1.4 | 3.0 | 106 | 111 | 87 | 82 | 81 | 106 |
| LL14WP1 14 | 3.4 | 2.1 | 3.7 | 96 | 103 | 111 | 116 | 93 | 105 |
| LL28WP1 28 | 4.9 | 2.1 | 4.9 | 94 | 114 | 102 | 93 | 87 | 100 |
| LL99WP1 36 | 4.9 | 2.2 | 5.8 | * | * | * | * | * | * |
| LL56WP1 55 | 5.4 | 2.9 | 6.9 | 118 | 119 | 83 | 86 | 100 | 104 |
| LL99WP2 108 | 6.8 | 4.3 | 10.6 | * | * | * | * | * | * |
| LL99WP3 241 | 9.5 | 5.7 | 13.8 | * | * | * | * | * | * |

EPICHLOROHYDRIN: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|
| | | | WATER 100.0% 23°C | | | | | | |
| LL99WP4 364 | 11.3 | 5.8 | 15.3 | * | * | * | * | * | * |
| LL99WP5 483 | 12.5 | 6.5 | 16.9 | * | * | * | * | * | * |
| LL99WP6 606 | 13.3 | 7.0 | 18.5 | 96 | * | 80 | * | * | * |
| | | | POTASSIUM DICHROMATE 10.0% 50°C | | | | | | |
| LH01XM1 1 | 2.2 | 1.6 | 3.2 | 98 | 109 | 122 | 122 | 91 | 105 |
| LH07XM1 7 | 4.2 | 2.6 | 5.6 | 98 | 101 | 123 | 119 | 86 | 104 |
| LH14XM1 14 | 5.2 | 3.2 | 7.1 | 106 | 106 | 115 | 112 | 95 | 119 |
| LH28XM1 28 | 5.0 | 2.6 | 6.2 | 112 | 105 | 111 | 117 | 101 | 100 |
| LH99XM1 39 | 7.7 | 4.6 | 10.9 | * | * | * | * | * | * |
| LH56XM1 56 | 8.0 | 4.8 | 11.2 | 104 | 108 | 88 | 92 | 80 | 90 |
| LH99XM2 120 | 8.7 | 5.1 | 11.7 | * | * | * | * | * | * |
| LH99XM3 247 | 9.0 | 4.9 | 11.8 | * | * | * | * | * | * |
| LH99XM4 373 | 9.3 | 5.1 | 11.3 | * | * | * | * | * | * |
| LH99XM5 493 | 8.6 | 4.9 | 10.8 | * | * | * | * | * | * |
| LH99XM6 609 | 9.5 | 4.8 | 10.8 | 126 | * | 73 | * | * | * |
| | | | POTASSIUM DICHROMATE 10.0% 23°C | | | | | | |
| LL01XM1 1 | .7 | 1.0 | 1.3 | 96 | 105 | 95 | 124 | 83 | 110 |
| LL07XM1 7 | 1.7 | .2 | .9 | 91 | 105 | 115 | 122 | 88 | 101 |
| LL14XM1 14 | 2.1 | .8 | 2.3 | 98 | 112 | 118 | 96 | 95 | 115 |
| LL28XM1 28 | 3.4 | 1.6 | 3.6 | 104 | 100 | 102 | 127 | 96 | 102 |
| LL99XM1 39 | 4.0 | 1.4 | 4.8 | * | * | * | * | * | * |
| LL56XM1 56 | 3.9 | 2.2 | 5.6 | 98 | 106 | 120 | 122 | 70 | 93 |
| LL99XM2 107 | 5.5 | 2.4 | 7.0 | * | * | * | * | * | * |
| LL99XM3 247 | 7.1 | 3.5 | 9.1 | * | * | * | * | * | * |
| LL99XM4 373 | 7.7 | 3.7 | 9.5 | * | * | * | * | * | * |
| LL99XM5 493 | 7.8 | 3.7 | 9.9 | * | * | * | * | * | * |
| LL99XM6 606 | 8.5 | 4.5 | 10.9 | 107 | * | 77 | * | * | * |

# HDPE : FINAL PROPERTIES

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | |
| HH01AM1 1 | 1.44 | 31.90 | 3.00 | 1.00 | 159.28 | 174.32 | 686.64 | 630.40 | 26.64 | 32.61 |
| HH01AM2 1 | 1.34 | 30.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| HH07AM2 7 | 1.37 | 31.30 | 3.00 | 0.98 | * | * | * | * | * | * |
| HH07AM1 7 | 1.41 | 31.90 | 3.01 | 1.00 | 158.32 | 163.44 | 659.84 | 625.52 | 29.90 | 31.20 |
| HH14AM1 14 | 1.56 | 34.70 | 3.00 | 0.99 | 144.08 | 140.88 | 641.44 | 571.52 | 25.90 | 24.62 |
| HH14AM2 14 | 1.55 | 35.40 | 3.00 | 0.99 | * | * | * | * | * | * |
| HH99AM1 28 | 1.44 | 32.00 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH28AM1 29 | 1.54 | 34.20 | 3.00 | 1.00 | 138.96 | 161.04 | 612.48 | 583.36 | 25.88 | 28.94 |
| HH28AM2 29 | * | * | * | * | * | * | * | * | * | * |
| HH56AM1 56 | 25.18 | 32.10 | 7.47 | 6.99 | 152.40 | 151.92 | 673.04 | 603.52 | 30.10 | 29.70 |
| HH56AM2 56 | 1.58 | 34.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99AM2 144 | 1.45 | 30.90 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99AM3 252 | 1.44 | 31.10 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99AM4 368 | 1.44 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99AM5 511 | 1.44 | 31.20 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99AM6 621 | 1.44 | 31.50 | 2.68 | 1.00 | * | * | * | * | * | * |
| HH99AM7 770 | 1.44 | 30.80 | 3.01 | 0.99 | 96.25 | * | 1563.50 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | |
| HL01AM2 1 | 1.33 | 30.20 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL01AM1 1 | 1.57 | 35.30 | 3.00 | 1.00 | 160.88 | 168.88 | 642.24 | 611.92 | 32.44 | 27.40 |
| HL07AM2 7 | 1.33 | 30.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL07AM1 7 | 1.40 | 31.80 | 3.00 | 1.00 | 135.92 | 146.96 | 670.64 | 600.48 | 26.54 | 28.06 |
| HL14AM2 14 | 1.33 | 30.00 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL14AM1 14 | 1.34 | 30.50 | 3.01 | 1.00 | 166.64 | 172.40 | 664.64 | 629.52 | 32.10 | 32.94 |
| HL99AM1 28 | 1.38 | 30.10 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL28AM1 29 | 1.56 | 34.70 | 3.00 | 1.00 | 151.28 | 155.60 | 668.48 | 582.40 | 28.78 | 30.90 |
| HL28AM2 29 | * | * | * | * | * | * | * | * | * | * |
| HL56AM2 56 | 1.57 | 34.80 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56AM1 56 | 25.21 | 32.30 | 7 43 | 6.90 | 157.52 | 165.52 | 698.24 | 655.12 | 30.70 | 30.50 |
| HL99AM2 144 | 1.38 | 29.80 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99AM3 238 | 1.38 | 30.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99AM4 368 | 1.39 | 30.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99AM5 511 | 1.38 | 29.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99AM6 621 | 1.38 | 30.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99AM7 768 | 1.38 | 30.30 | 3.01 | 1.00 | 116.33 | * | 1791.58 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | |
| HH01BM1 1 | 1.48 | 32.60 | 3.01 | 1.00 | 163.68 | 190.30 | 611.93 | 644.96 | 25.48 | 30.16 |
| HH07BM1 7 | 1.35 | 29.90 | 3.00 | 1.00 | 145.81 | 169.58 | 617.04 | 637.12 | 29.07 | 28.04 |
| HH14BM1 13 | 1.58 | 34.90 | 3.01 | 1.00 | 143.30 | 141.61 | 635.44 | 580.88 | 26.68 | 26.04 |
| HH28BM1 28 | 1.38 | 30.60 | 3.01 | 1.00 | 160.07 | 165.38 | 634.80 | 608.80 | 23.48 | 26.18 |
| HH99BM1 29 | 1.38 | 30.30 | 3.00 | 1.00 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| HH56BM1 56 | 1.45 | 32.20 | 3.00 | 1.00 | 157.37 | 165.32 | 694.72 | 619.44 | 29.55 | 30.52 |
| HH99BM2 144 | 1.39 | 29.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99BM3 252 | 1.39 | 30.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99BM4 368 | 1.38 | 30.40 | 3.00 | * | * | * | * | * | * | * |
| HH99BM5 510 | 1.38 | 29.90 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99BM6 622 | 1.38 | 37.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99BM7 770 | 1.38 | 29.40 | 3.01 | 1.00 | 119.25 | * | 1818.83 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | |
| HL01BM1 1 | 1.45 | 32.10 | 2.98 | 1.00 | 131.38 | 166.20 | 602.60 | 643.04 | 24.54 | 26.41 |
| HL07BM1 7 | 1.51 | 33.40 | 3.00 | 1.00 | 138.89 | 167.78 | 592.16 | 627.44 | 30.22 | 31.38 |
| HL14BM1 14 | 1.54 | 33.80 | 3.00 | 1.00 | 130.62 | 154.26 | 607.52 | 574.08 | 26.97 | 26.63 |
| HL28BM1 28 | 1.45 | 32.40 | 3.01 | 1.00 | 148.89 | 159.18 | 640.64 | 624.64 | 27.41 | 27.08 |
| HL99BM1 28 | 1.40 | 30.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56BM1 56 | 1.56 | 34.50 | 3.00 | 1.00 | 165.93 | 140.38 | 680.56 | 574.96 | 28.33 | 30.13 |
| HL99BM2 144 | 1.41 | 30.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99BM3 238 | 1.40 | 31.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99BM4 368 | 1.42 | 31.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99BM5 510 | 1.41 | 30.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99BM6 622 | 1.41 | 32.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99BM7 768 | 1.41 | 29.70 | 3.00 | 1.00 | 113.58 | * | 1738.00 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | |
| HH01DH1 1 | 1.68 | 35.60 | 3.03 | 1.01 | 133.56 | 138.56 | 630.24 | 600.32 | 24.27 | 23.71 |
| HH07DH1 7 | 1.45 | 31.30 | 3.03 | 1.00 | 120.23 | 134.80 | 570.15 | 567.10 | 22.00 | 22.80 |
| HH14DH1 14 | 1.50 | 32.50 | 3.03 | 1.00 | 122.00 | 139.50 | 571.00 | 579.00 | 23.20 | 23.50 |
| HH28DH1 28 | 1.54 | 33.00 | 3.04 | 1.01 | 121.20 | 136.10 | 576.80 | 578.60 | 24.70 | 25.20 |
| HH99DH1 28 | 1.43 | 30.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56DH1 56 | 1.39 | * | 3.01 | 1.00 | * | * | * | * | 23.30 | 24.00 |
| HH99DH2 133 | 1.42 | 30.60 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DH3 244 | 1.45 | 30.90 | 3.02 | 0.99 | * | * | * | * | * | * |
| HH99DH4 364 | 1.42 | 31.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99DH5 495 | 1.42 | 31.50 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DH6 629 | 1.42 | 32.40 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DH7 763 | 1.43 | 32.00 | 3.01 | 0.99 | 95.00 | * | 1565.00 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | |
| HL01DH1 1 | 1.45 | 31.10 | 3.03 | 1.01 | 128.76 | 140.56 | 629.04 | 597.96 | 23.90 | 24.04 |
| HL07DH1 7 | 1.42 | 30.70 | 3.01 | 1.00 | 127.70 | 129.60 | 598.90 | 547.60 | 22.70 | 22.80 |
| HL14DH1 14 | 1.60 | 34.10 | 3.03 | 1.01 | 129.20 | 130.40 | 607.30 | 557.90 | 23.30 | 24.10 |
| HL99DH1 28 | 1.43 | 30.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL28DH1 28 | 1.61 | 35.00 | 3.03 | 1.01 | 128.10 | 136.^0j§§§§G | | | | |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | |
| HL99DH4 364 | 1.43 | 31.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL99DH5 495 | 1.43 | 30.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99DH6 630 | 1.43 | 31.90 | 3.02 | 0.99 | * | * | * | * | * | * |
| HL99DH7 761 | 1.43 | 33.10 | 3.02 | 0.99 | 118.25 | * | 1785.13 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | |
| HH01DL1 1 | 1.35 | 30.00 | 3.01 | 1.00 | 131.32 | 139.92 | 642.60 | 612.20 | 23.55 | 23.96 |
| HH07DL1 7 | 1.41 | 31.30 | 3.01 | 1.00 | 121.70 | 133.90 | 586.20 | 560.30 | 22.95 | 23.30 |
| HH14DL1 14 | 1.39 | 30.50 | 3.01 | 1.00 | 127.70 | 139.50 | 604.00 | 579.00 | 23.50 | 23.90 |
| HH99DL1 28 | 1.41 | 30.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH28DL1 28 | 1.41 | 30.90 | 3.01 | 1.00 | 126.20 | 138.40 | 600.60 | 569.10 | 25.70 | 26.50 |
| HH56DL1 56 | 1.56 | 34.20 | 3.01 | 1.00 | * | * | * | * | 23.40 | 24.20 |
| HH99DL2 139 | 1.41 | 30.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99DL3 246 | 1.42 | 30.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99DL4 370 | 1.40 | 30.60 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DL5 496 | 1.41 | 30.40 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DL6 631 | 1.41 | 31.80 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DL7 765 | 1.41 | 32.30 | 3.01 | 0.99 | 116.50 | * | 1870.00 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | |
| HL01DL1 1 | 1.36 | 30.40 | 3.01 | 1.00 | 133.56 | 142.30 | 625.90 | 612.52 | 23.63 | 24.60 |
| HL07DL1 7 | 1.51 | 33.30 | 3.01 | 1.00 | 130.40 | 136.20 | 606.40 | 556.70 | 22.80 | 22.90 |
| HL14DL1 14 | 1.68 | 34.70 | 3.01 | 1.00 | 132.00 | 136.40 | 611.60 | 562.40 | 23.40 | 24.10 |
| HL99DL1 28 | 1.42 | 31.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL28DL1 28 | 1.46 | 32.30 | 3.01 | 1.00 | 130.50 | 134.30 | 620.00 | 566.00 | 25.70 | 26.50 |
| HL56DL1 56 | 1.58 | 34.10 | 3.01 | 1.00 | * | * | * | * | 23.00 | 24.20 |
| HL99DL2 136 | 1.43 | 30.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99DL3 233 | 1.42 | 31.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99DL4 366 | 1.42 | 30.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99DL5 496 | 1.42 | 30.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99DL6 632 | 1.42 | 31.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99DL7 763 | 1.42 | 32.10 | 3.00 | 1.00 | 123.75 | * | 1861.75 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | |
| HH01DM1 1 | 1.44 | 31.10 | 3.01 | 1.00 | 129.72 | 141.84 | 632.56 | 601.74 | 24.25 | 24.40 |
| HH07DM1 7 | 1.48 | 32.20 | 3.02 | 1.01 | 117 40 | 133.40 | 578.00 | 585.00 | 22.30 | 21.80 |
| HH14DM1 14 | 1.60 | 35.20 | 3.03 | 1.01 | 129.10 | 135.90 | 599.80 | 571.10 | 23.30 | 23.20 |
| HH28DM1 28 | 1.45 | 31.30 | 3.02 | 1.00 | 128.70 | 132.70 | 615.00 | 568.90 | 24.30 | 26.00 |
| HH99DM1 28 | 1.48 | 31.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56DM1 56 | 1.42 | 30.90 | 3.02 | 1.00 | * | * | * | * | 24.40 | 23.80 |
| HH99DM3 245 | 1.54 | 32.20 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99DM4 365 | 1.48 | 31.90 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DM5 496 | 1.48 | 32.10 | 3.01 | 0.99 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | |
| HH99DM6 630 | 1.48 | 34.30 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99DM7 764 | 1.48 | 33.80 | 3.01 | 0.99 | 100.25 | * | 1652.00 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | |
| HL01DM1 1 | 1.41 | 31.00 | 3.02 | 1.00 | 142.78 | 143.70 | 663.10 | 598.06 | 24.44 | 24.70 |
| HL07DM1 7 | 1.62 | 35.10 | 3.01 | 1.01 | 127.10 | 143.70 | 608.00 | 564.60 | 22.50 | 24.50 |
| HL14DM1 14 | 1.45 | 31.30 | 3.01 | 1.00 | 132.10 | 134.00 | 618.00 | 566.00 | 24.50 | 24.80 |
| HL28DM1 28 | 1.41 | 30.90 | 3.02 | 1.00 | 126.00 | 137.50 | 600.00 | 579.00 | 24.60 | 27.20 |
| HL99DM1 28 | 1.43 | 31.10 | 3.00 | 0.99 | * | * | * | * | * | * |
| HL56DM1 56 | 1.41 | 30.40 | 3.01 | 1.00 | * | * | * | * | 24.10 | 24.70 |
| HL99DM2 135 | 1.44 | 31.10 | 3.01 | 0.99 | * | * | * | * | * | * |
| HL99DM3 233 | 1.43 | 31.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99DM4 365 | 1.43 | 31.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99DM5 496 | 1.43 | 31.30 | 3.01 | 0.99 | * | * | * | * | * | * |
| HL99DM6 631 | 1.43 | 32.50 | 3.01 | 0.99 | * | * | * | * | * | * |
| HL99DM7 762 | 1.43 | 32.00 | 3.01 | 0.99 | 112.38 | * | 1741.38 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | |
| HH01FH1 1 | 1.44 | 31.80 | 3.01 | 1.00 | 113.59 | 124.26 | 523.92 | 508.40 | 26.66 | 32.66 |
| HH07FH1 7 | 1.57 | 34.20 | 3.03 | 1.00 | 120.50 | 128.30 | 587.00 | 546.00 | 23.28 | 24.48 |
| HH14FH1 14 | 1.46 | 32.30 | 3.01 | 1.00 | 122.13 | 133.44 | 576.00 | 543.60 | 24.60 | 25.02 |
| HH28FH1 28 | 1.48 | 32.20 | 3.01 | 1.00 | 131.47 | 145.00 | 576.70 | 556.00 | 24.42 | 24.90 |
| HH99FH1 28 | 1.52 | 32.30 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH56FH1 56 | 1.43 | 30.40 | 2.99 | 1.00 | 128.27 | 143.28 | 501.30 | 519.20 | 25.00 | 25.20 |
| HH99FH2 117 | 1.51 | 32.50 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FH3 236 | 1.51 | 32.50 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FH4 350 | 1.51 | 32.60 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FH5 485 | 1.51 | 33.50 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FH6 616 | 1.58 | 35.40 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99FH7 750 | 1.51 | 34.70 | 3.02 | 0.99 | 100.75 | * | 1590.50 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | |
| HL01FH1 1 | 1.48 | 32.50 | 3.00 | 1.00 | 121.34 | 121.03 | 550.16 | 496.24 | 27.56 | 31.20 |
| HL07FH1 7 | 1.36 | 29.90 | 3.01 | 1.00 | 119.80 | 128.80 | 552.00 | 535.00 | 25.20 | 26.00 |
| HL14FH1 14 | 1.46 | 32.50 | 3.01 | 1.00 | 127.47 | 135.04 | 592.00 | 542.40 | 23.94 | 24.82 |
| HL99FH1 28 | 1.46 | 31.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL28FH1 28 | 1.62 | 35.40 | 3.01 | 1.00 | 139.90 | 133.50 | 631.00 | 522.00 | 22.86 | 24.12 |
| HL56FH1 56 | 1.41 | 31.00 | 3.00 | 1.00 | 129.07 | 134.00 | 526.70 | 543.50 | 25.04 | 25.54 |
| HL99FH2 117 | 1.46 | 31.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99FH3 219 | 1.46 | 32.10 | 3.02 | 1.01 | * | * | * | * | * | * |
| HL99FH4 350 | 1.46 | 31.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99FH5 485 | 1.50 | 32.40 | 3.02 | 1.01 | * | * | * | * | * | * |
| HL99FH6 617 | 1.48 | 33.20 | 3.02 | 1.01 | * | * | * | * | * | * |
| HL99FH7 748 | 1.47 | 36.30 | 3.01 | 1.00 | 83.70 | * | 1313.25 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 50°C | | | | | | | | | | |
| HH01FL1 1 | 1.37 | 29.90 | 3.01 | 1.00 | 143.00 | 120.25 | 519.52 | 491.84 | 27.76 | 33.92 |
| HH07FL1 7 | 1.42 | 31.60 | 3.01 | 1.00 | 119.33 | 125.50 | 561.30 | 550.00 | 24.14 | 24.10 |
| HH14FL1 14 | 1.56 | 34.20 | 3.01 | 1.00 | 120.48 | 124.80 | 576.80 | 534.80 | 27.76 | 27.36 |
| HH28FL1 28 | 1.62 | 36.20 | 3.01 | 1.00 | 119.50 | 140.48 | 493.20 | 513.20 | 26.73 | 26.49 |
| HH99FL1 29 | 1.51 | 32.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56FL1 56 | 1.53 | 33.80 | 3.01 | 1.00 | 136.00 | 144.32 | 536.00 | 531.20 | 25.36 | 24.68 |
| HH99FL2 124 | 1.51 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99FL3 242 | 1.53 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99FL4 356 | 1.51 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99FL5 489 | 1.52 | 32.70 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99FL6 622 | 1.53 | 34.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FL7 756 | 1.52 | 31.80 | 3.01 | 1.00 | 100.00 | * | 1563.00 | * | * | * |
| FURFURAL 1.0% 23°C | | | | | | | | | | |
| HL01FL1 1 | 1.39 | 30.20 | 3.00 | 1.00 | 108.39 | 117.56 | 487.36 | 485.76 | 31.98 | 33.04 |
| HL07FL1 7 | 1.58 | 35.40 | 3.01 | 1.01 | 118.93 | 130.30 | 559.30 | 536.50 | 24.04 | 25.26 |
| HL14FL1 14 | 1.56 | 34.30 | 3.01 | 1.00 | 114.50 | 124.40 | 552.00 | 535.60 | 26.24 | 28.50 |
| HL28FL1 28 | 1.58 | 34.80 | 3.01 | 1.00 | * | * | * | * | 25.53 | 24.88 |
| HL28FL2 28 | 1.39 | 30.90 | 3.00 | 1.00 | 130.60 | 138.93 | 590.00 | 558.70 | 25.20 | 25.78 |
| HL99FL1 29 | 1.50 | 33.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL56FL1 56 | 1.52 | 33.80 | 3.01 | 1.00 | 132.40 | 135.44 | 597.00 | 508.40 | 25.74 | 27.76 |
| HL99FL2 124 | 1.49 | 32.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99FL3 225 | 1.49 | 33.50 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99FL4 356 | 1.50 | 32.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99FL5 489 | 1.50 | 32.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99FL6 623 | 1.50 | 32.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99FL7 754 | 1.50 | 33.90 | 3.01 | 1.00 | 114.50 | * | 1701.67 | * | * | * |
| FURFURAL 4.0% 50°C | | | | | | | | | | |
| HH01FM1 1 | 1.60 | 34.80 | 3.01 | 1.00 | 115.16 | 118.84 | 520.00 | 491.92 | 31.94 | 31.42 |
| HH07FM1 7 | 1.44 | 31.40 | 3.02 | 1.00 | 120.40 | 131.30 | 558.70 | 531.00 | 24.14 | 24.26 |
| HH14FM1 14 | 1.41 | 30.80 | 3.01 | 1.00 | 119.50 | 133.30 | 578.50 | 556.50 | 24.26 | 24.00 |
| HH28FM1 28 | 1.61 | 35.50 | 3.01 | 1.00 | 123.50 | 134.40 | 697.30 | 658.70 | 23.32 | 23.26 |
| HH99FM1 29 | 1.44 | 30.80 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH56FM1 56 | 1.57 | 34.20 | 3.01 | 1.00 | 130.00 | 146.00 | 569.30 | 582.40 | 25.70 | 26.20 |
| HH99FM2 124 | 1.40 | 30.90 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FM3 242 | 1.44 | 31.20 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99FM4 356 | 1.44 | 31.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99FM5 490 | 1.45 | 31.50 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99FM6 622 | 1.49 | 33.30 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99FM7 756 | 1.44 | 30.80 | 3.02 | 1.00 | 86.67 | * | 1418.67 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 4.0% 23°C | | | | | | | | | | |
| HL01FM1 1 | 1.51 | 33.40 | 3.01 | 1.00 | 109.62 | 122.22 | 512.00 | 504.72 | 31.00 | 32.08 |
| HL07FM1 7 | 1.47 | 32.30 | 3.02 | 1.01 | 120.30 | 130.24 | 630.50 | 551.20 | 24.06 | 25.10 |
| HL14FM1 14 | 1.55 | 33.80 | 3.01 | 1.00 | 128.67 | 138.67 | 605.30 | 519.30 | 24.70 | 24.94 |
| HL28FM1 28 | 1.39 | 30.30 | 3.01 | 1.00 | 118.90 | 134.96 | 666.00 | 621.60 | 22.96 | 22.78 |
| HL99FM1 29 | 1.52 | 32.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL56FM1 56 | 1.58 | 34.40 | 3.01 | 1.00 | 128.00 | 141.60 | 662.70 | 625.60 | 23.62 | 24.72 |
| HL99FM2 124 | 1.52 | 32.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99FM3 228 | 1.52 | 33.40 | 3.02 | 1.01 | * | * | * | * | * | * |
| HL99FM4 356 | 1.52 | 32.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99FM5 490 | 1.52 | 33.10 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99FM6 623 | 1.53 | 33.60 | 3.11 | 1.05 | * | * | * | * | * | * |
| HL99FM7 754 | 1.53 | 35.20 | 3.01 | 1.00 | 86.08 | * | 1334.00 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | |
| HH01MH1 1 | 1.55 | 34.20 | 3.04 | 1.01 | 137.68 | 148.72 | 636.08 | 608.40 | 25.26 | 26.10 |
| HH07MH1 7 | 1.57 | 34.00 | 3.04 | 1.01 | 154.14 | 151.77 | 676.64 | 602.24 | 25.37 | 26.64 |
| HH14MH1 14 | 1.40 | 31.40 | 3.04 | 1.01 | 131.66 | 158.50 | 578.16 | 621.28 | 24.70 | 25.28 |
| HH28MH1 28 | 1.54 | 33.40 | 3.03 | 1.01 | 137.06 | 149.32 | 631.90 | 605.04 | 25.37 | 25.64 |
| HH99MH1 29 | 1.45 | 31.00 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH56MH1 57 | 1.46 | 32.10 | 3.02 | 1.00 | 138.58 | 156.26 | 647.20 | 656.00 | 24.94 | 24.58 |
| HH99MH2 122 | 1.45 | 30.70 | 3.04 | 1.00 | * | * | * | * | * | * |
| HH99MH3 240 | 1.45 | 31.20 | 3.04 | 1.00 | * | * | * | * | * | * |
| HH99MH4 358 | 1.45 | 30.80 | 3.04 | 1.00 | * | * | * | * | * | * |
| HH99MH5 493 | 1.44 | 31.00 | 3.03 | 0.99 | * | * | * | * | * | * |
| HH99MH6 626 | 1.43 | 32.00 | 3.03 | 0.99 | * | * | * | * | * | * |
| HH99MH7 759 | 1.43 | 32.60 | 3.03 | 0.99 | 84.17 | * | 1237.00 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | |
| HL01MH1 1 | 1.45 | 31.80 | 3.02 | 1.00 | 136.40 | 152.40 | 622.88 | 607.44 | 25.18 | 26.34 |
| HL07MH1 7 | 1.54 | 33.70 | 3.03 | 1.01 | 149.99 | 149.00 | 658.88 | 586.32 | 25.37 | 25.99 |
| HL14MH1 14 | 1.42 | 31.70 | 3.03 | 1.00 | 143.35 | 152.58 | 629.44 | 596.48 | 28.38 | 27.55 |
| HL28MH1 28 | 1.56 | 34.40 | 3.01 | 1.00 | 147.94 | 149.19 | 660.24 | 600.96 | 25.44 | 26.69 |
| HL99MH1 29 | 1.40 | 30.10 | 3.03 | 1.01 | * | * | * | * | * | * |
| HL56MH1 57 | 1.40 | 31.40 | 3.00 | 1.00 | 178.47 | 145.34 | 580.00 | 586.16 | 24.98 | 25.24 |
| HL99MH2 122 | 1.41 | 29.70 | 3.03 | 1.01 | * | * | * | * | * | * |
| HL99MH3 235 | 1.40 | 30.30 | 3.03 | 1.01 | * | * | * | * | * | * |
| HL99MH4 358 | 1.41 | 29.90 | 3.03 | 1.00 | * | * | * | * | * | * |
| HL99MH5 493 | 1.40 | 29.90 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL99MH6 627 | 1.41 | 30.00 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99MH7 757 | 1.40 | 30.30 | 3.03 | 1.00 | 91.75 | * | 1523.50 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | |
| HH01ML1 1 | 1.52 | 33.30 | 3.01 | 1.00 | 142.64 | 138.48 | 652.48 | 588.72 | 24.90 | 25.18 |
| HH07ML1 7 | 1.44 | 31.90 | 3.02 | 1.00 | 150.74 | 148.10 | 654.88 | 579.28 | 26.17 | 27.06 |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | |
| HH14ML1 14 | 1.60 | 35.70 | 3.01 | 1.00 | 142.68 | 160.94 | 634.80 | 624.48 | 25.51 | 25.24 |
| HH28ML1 28 | 1.52 | 34.40 | 3.01 | 1.00 | 144.44 | 150.47 | 652.64 | 612.00 | 24.79 | 25.85 |
| HH99ML1 28 | 1.54 | 33.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56ML1 57 | 1.35 | 30.50 | 3.00 | 0.98 | 135.94 | 154.89 | 616.60 | 618.32 | 25.54 | 25.94 |
| HH99ML2 120 | 1.55 | 33.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99ML3 240 | 1.55 | 34.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99ML4 358 | 1.54 | 33.10 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99ML5 493 | 1.55 | 33.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99ML6 626 | 1.53 | 34.10 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99ML7 759 | 1.53 | 34.70 | 3.02 | 0.99 | 101.38 | * | 1525.13 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | |
| HL01ML1 1 | 1.57 | 34.50 | 3.00 | 1.00 | 136.24 | 148.72 | 613.20 | 590.64 | 26.62 | 27.38 |
| HL07ML1 7 | 1.54 | 33.90 | 3.01 | 1.00 | 147.90 | 165.30 | 636.40 | 643.68 | 25.85 | 26.44 |
| HL14ML1 14 | 1.58 | 35.10 | 3.01 | 1.01 | 141.37 | 151.98 | 641.04 | 602.32 | 25.09 | 26.46 |
| HL28ML1 28 | 1.41 | 31.30 | 3.00 | 1.00 | 147.16 | 160.38 | 640.80 | 620.16 | 27.85 | 28.94 |
| HL99ML1 28 | 1.42 | 30.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56ML1 57 | 1.48 | 33.00 | 3.00 | 1.00 | 146.94 | 153.13 | 665.84 | 611.52 | 25.81 | 25.63 |
| HL99ML2 120 | 1.43 | 30.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99ML3 235 | 1.42 | 31.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99ML4 358 | 1.43 | 30.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99ML5 494 | 1.43 | 31.00 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99ML6 627 | 1.42 | 30.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99ML7 757 | 1.42 | 31.10 | 3.01 | 1.00 | 126.25 | * | 1841.83 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | |
| HH01MM1 1 | 1.40 | 31.10 | 3.03 | 0.99 | 136.40 | 142.96 | 607.76 | 576.08 | 24.54 | 25.10 |
| HH07MM1 7 | 1.58 | 34.70 | 3.00 | 1.00 | 153.85 | 143.83 | 676.08 | 560.72 | 26.70 | 26.95 |
| HH14MM1 14 | 1.52 | 33.50 | 3.02 | 1.01 | 148.17 | 144.95 | 661.60 | 589.92 | 26.42 | 26.99 |
| HH99MM1 28 | 1.54 | 33.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH28MM1 28 | 1.45 | 31.50 | 3.01 | 1.00 | 135.83 | 152.79 | 615.76 | 612.32 | 26.25 | 28.10 |
| HH56MM1 57 | 1.36 | 30.10 | 3.01 | 1.00 | 136.62 | 150.73 | 646.16 | 621.76 | 25.14 | 25.64 |
| HH99MM2 120 | 1.42 | 30.00 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99MM3 239 | 1.40 | 30.50 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99MM4 357 | 1.40 | 29.90 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99MM5 493 | 1.40 | 30.10 | 3.02 | 0.99 | * | * | * | * | * | * |
| HH99MM6 625 | 1.39 | 31.40 | 3.02 | 0.99 | * | * | * | * | * | * |
| HH99MM7 758 | 1.39 | 30.90 | 3.02 | 0.99 | 89.08 | * | 1508.33 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | |
| HL01MM1 1 | 1.51 | 32.90 | 3.01 | 1.00 | 140.56 | 145.20 | 652.48 | 601.76 | 24.66 | 25.10 |
| HL07MM1 7 ^0j????J | | | | | | | | | | |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | |
| HL99MM1 28 | 1.42 | 30.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL56MM1 57 | 1.37 | 30.50 | 3.00 | 1.00 | 143.99 | 162.30 | 643.44 | 638.00 | 25.15 | 25.00 |
| HL99MM2 120 | 1.43 | 30.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL99MM3 234 | 1.41 | 31.20 | 3.02 | 1.01 | * | * | * | * | * | * |
| HL99MM4 357 | 1.41 | 30.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99MM5 493 | 1.42 | 30.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99MM6 626 | 1.42 | 30.70 | 3.01 | 1.67 | * | * | * | * | * | * |
| HL99MM7 756 | 1.41 | 30.70 | 3.02 | 1.00 | 92.60 | * | 1490.25 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | |
| HH01OM1 1 | 1.53 | 33.40 | 3.01 | 1.01 | 142.16 | 146.00 | 619.60 | 570.88 | 25.45 | 25.80 |
| HH07OM1 7 | 1.38 | 30.10 | 3.01 | 1.00 | 139.92 | 150.48 | 636.32 | 611.20 | 24.98 | 26.08 |
| HH14OM1 13 | 1.60 | 36.00 | 3.02 | 1.00 | 129.04 | 139.12 | 588.96 | 571.92 | 25.73 | 26.91 |
| HH28OM1 28 | 1.46 | 31.60 | 3.02 | 1.00 | 148.76 | 156.15 | 640.32 | 623.50 | 25.92 | 26.80 |
| HH99OM1 28 | 1.47 | 31.00 | 3.04 | 1.00 | 107.67 | * | 1650.00 | * | * | * |
| HH56OM1 56 | 1.35 | 29.70 | 3.02 | 1.00 | 147.60 | 151.12 | 647.36 | 595.20 | 25.87 | 25.92 |
| HH99OM2 128 | 1.48 | * | 3.07 | 1.01 | * | * | * | * | * | * |
| HH99OM3 251 | 1.50 | 30.80 | 3.08 | 1.00 | * | * | * | * | * | * |
| HH99OM4 364 | 1.49 | 30.50 | 3.08 | 1.01 | * | * | * | * | * | * |
| HH99OM5 503 | 1.50 | 30.80 | 3.08 | 1.00 | * | * | * | * | * | * |
| HH99OM6 626 | 1.49 | 31.70 | 3.09 | 1.01 | * | * | * | * | * | * |
| HH99OM7 765 | 1.50 | 31.00 | 3.08 | 1.01 | 107.67 | * | 1650.00 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | |
| HL01OM1 1 | 1.56 | 34.30 | 3.01 | 1.00 | 143.60 | 146.32 | 648.00 | 591.36 | 25.20 | 25.71 |
| HL07OM1 7 | 1.46 | 31.70 | 3.00 | 1.00 | 139.92 | 146.16 | 651.04 | 604.72 | 25.83 | 25.55 |
| HL14OM1 13 | 1.57 | 34.60 | 3.01 | 1.00 | 136.24 | 119.70 | 626.72 | 483.30 | 26.00 | 25.39 |
| HL99OM1 28 | 1.44 | 31.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL28OM1 28 | 1.53 | 33.10 | 3.01 | 1.01 | 144.50 | 160.31 | 677.52 | 681.12 | 24.80 | 25.50 |
| HL56OM1 56 | 1.41 | 30.90 | 3.01 | 1.00 | 160.40 | 167.28 | 685.92 | 622.16 | 28.39 | 25.37 |
| HL99OM2 128 | 1.45 | 31.30 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99OM3 237 | 1.44 | 31.70 | 3.02 | 1.01 | * | * | * | * | * | * |
| HL99OM4 364 | 1.45 | 31.40 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99OM5 503 | 1.46 | 31.20 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL99OM6 626 | 1.46 | 31.80 | 3.03 | 1.01 | * | * | * | * | * | * |
| HL99OM7 763 | 1.47 | 34.10 | 3.04 | 1.00 | 112.25 | * | 1769.00 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | |
| HH01OP1 1 | 1.48 | 32.90 | 3.02 | 1.01 | 128.56 | 138.00 | 614.32 | 595.04 | 24.82 | 24.78 |
| HH07OP1 7 | 1.39 | 30.00 | 3.05 | 1.01 | 144.10 | * | 663.92 | * | 23.80 | 23.00 |
| HH14OP1 14 | 1.53 | 32.50 | 3.06 | 1.01 | 136.10 | 150.71 | 630.80 | 627.84 | 22.70 | 22.70 |
| HH28OP1 28 | 1.41 | 29.80 | 3.09 | 1.01 | 137.20 | 146.16 | 626.10 | 604.48 | 23.01 | 23.55 |
| HH99OP1 28 | 1.57 | 32.50 | 3.08 | 1.01 | * | * | * | * | * | * |
| HH56OP1 56 | 1.53 | 32.10 | 3.08 | 1.01 | 139.44 | 143.36 | 615.52 | 607.68 | 24.23 | 25.34 |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | |
| HH990P2 141 | 1.58 | 32.50 | 3.09 | 1.01 | * | * | * | * | * | * |
| HH990P3 257 | 1.59 | 32.60 | 3.09 | 1.01 | * | * | * | * | * | * |
| HH990P4 385 | 1.58 | 32.60 | 3.12 | 1.01 | * | * | * | * | * | * |
| HH990P5 509 | 1.59 | 33.00 | 3.10 | 1.00 | * | * | * | * | * | * |
| HH990P6 627 | 1.59 | 33.50 | 3.20 | 1.01 | * | * | * | * | * | * |
| HH990P7 771 | 1.58 | 32.80 | 3.09 | 1.01 | 113.00 | * | 1700.00 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | |
| HL010P1 1 | 1.37 | 29.70 | 3.01 | 1.00 | 126.16 | 146.80 | 597.36 | 617.52 | 24.81 | 25.97 |
| HL070P1 7 | 1.37 | 30.40 | 3.01 | 1.00 | 147.02 | 164.38 | 670.00 | 654.64 | 25.30 | 26.10 |
| HL140P1 14 | 1.44 | 32.20 | 3.01 | 0.99 | 138.06 | 141.51 | 632.64 | 585.68 | 23.50 | 23.70 |
| HL990P1 28 | 1.51 | 32.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL280P1 28 | 1.60 | 35.10 | 3.01 | 1.00 | 142.64 | 158.16 | 667.44 | 629.36 | * | 24.93 |
| HL560P1 56 | 1.51 | 33.10 | 3.01 | 1.00 | 142.56 | 140.24 | 648.40 | 576.48 | 24.90 | 25.98 |
| HL990P2 141 | 1.53 | 32.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL990P3 244 | 1.53 | 34.10 | 3.03 | 1.01 | * | * | * | * | * | * |
| HL990P4 385 | 1.54 | 32.50 | 3.03 | 1.00 | * | * | * | * | * | * |
| HL990P5 509 | 1.56 | 32.90 | 3.04 | 1.00 | * | * | * | * | * | * |
| HL990P6 627 | 1.56 | 33.30 | 3.05 | 1.01 | * | * | * | * | * | * |
| HL990P7 769 | 1.56 | 34.40 | 3.05 | 1.01 | 104.58 | * | 1663.58 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | |
| HH01PH1 1 | 1.55 | 33.80 | 3.01 | 1.00 | 136.12 | 140.30 | 633.88 | 584.40 | 23.90 | 24.60 |
| HH07PH1 7 | 1.51 | 32.90 | 3.01 | 1.00 | 131.82 | 124.60 | 623.80 | 539.70 | 24.39 | 24.05 |
| HH14PH1 14 | 1.38 | 30.60 | 3.01 | 1.00 | 127.58 | 128.46 | 612.10 | 564.24 | 24.19 | 24.78 |
| HH28PH1 28 | 1.37 | 29.90 | 3.01 | 1.00 | 130.08 | 138.14 | 609.24 | 581.90 | 24.39 | 24.47 |
| HH99PH1 29 | 1.45 | 31.10 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH56PH1 56 | 1.53 | 33.50 | 3.01 | 1.00 | 133.76 | 128.54 | 631.26 | 565.76 | 22.48 | 22.98 |
| HH99PH2 121 | 1.46 | 30.90 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99PH3 243 | 1.45 | 31.10 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99PH4 362 | 1.45 | 31.10 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99PH5 499 | 1.44 | 31.10 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99PH6 624 | 1.44 | 31.60 | 3.02 | 0.99 | * | * | * | * | * | * |
| HH99PH7 757 | 1.44 | 31.90 | 3.02 | 0.99 | 117.00 | * | 1722.38 | * | * | * |
| PHENOL 8.0% 23°C | | | | | | | | | | |
| HL01PH1 1 | 1.42 | 30.90 | 3.00 | * | 129.46 | 134.08 | 615.56 | 579.34 | 24.42 | 25.03 |
| HL07PH1 7 | 1.41 | 31.20 | 3.00 | 1.00 | 131.58 | 128.92 | 634.46 | 570.82 | 23.86 | 24.65 |
| HL14PH1 14 | 1.40 | 29.90 | 3.01 | 1.00 | 126.14 | 135.04 | 606.06 | 574.22 | 24.49 | 26.09 |
| HL28PH1 28 | 1.35 | 30.00 | 3.01 | 1.00 | 133.54 | 140.08 | 625.42 | 587.56 | 24.57 | 24.06 |
| HL99PH1 29 | 1.46 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56PH1 56 | 1.36 | 30.00 | 3.01 | 1.00 | 132.96 | 138.96 | 621.00 | 585.22 | 23.30 | 24.84 |
| HL99PH2 121 | 1.46 | 31.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PH3 230 | 1.46 | 32.40 | 3.01 | 1.01 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 8.0% 23°C | | | | | | | | | | |
| HL99PH4 362 | 1.45 | 31.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PH5 499 | 1.46 | 31.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PH6 625 | 1.46 | 30.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PH7 755 | 1.47 | 33.90 | 3.01 | 1.00 | 107.17 | * | 1685.75 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | | | | | |
| HH99PL4 1 | * | * | * | * | * | * | * | * | * | * |
| HH01PL1 1 | 1.46 | 31.80 | 3.00 | 1.00 | 129.10 | 140.48 | 610.18 | 576.00 | 24.89 | 24.80 |
| HH07PL1 7 | 1.35 | 29.70 | 3.00 | 1.00 | 132.38 | 140.14 | 627.58 | 591.00 | 24.20 | 26.30 |
| HH14PL1 14 | 1.49 | 32.20 | 3.01 | 1.00 | 129.44 | 137.74 | 616.92 | 592.52 | 24.56 | 25.20 |
| HH28PL1 28 | 1.33 | 29.20 | 3.01 | 0.99 | 131.46 | 140.28 | 609.00 | 582.78 | 24.60 | 25.73 |
| HH99PL1 28 | 1.41 | 30.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56PL1 56 | 1.60 | 35.80 | 3.01 | 1.00 | 124.08 | 138.50 | 582.02 | 583.40 | 24.04 | 23.70 |
| HH99PL2 122 | 1.41 | 30.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99PL3 245 | 1.42 | 30.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99PL5 499 | 1.41 | 30.50 | 3.02 | 0.99 | * | * | * | * | * | * |
| HH99PL6 625 | 1.41 | 32.00 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99PL7 758 | 1.41 | 32.70 | 3.01 | 0.99 | 97.38 | * | 1460.38 | * | * | * |
| PHENOL 1.0% 23°C | | | | | | | | | | |
| HL01PL1 1 | 1.44 | 32.00 | 3.00 | 1.00 | 129.60 | 139.42 | 552.50 | 515.40 | 24.37 | 24.39 |
| HL07PL1 7 | 1.54 | 36.10 | 3.00 | 1.01 | 121.14 | 139.60 | 581.98 | 578.00 | 25.03 | 26.39 |
| HL14PL1 14 | 1.33 | 29.30 | 3.01 | 1.00 | 128.66 | 139.64 | 613.76 | 586.04 | 24.33 | 25.09 |
| HL28PL1 28 | 1.56 | 34.40 | 3.01 | 1.00 | 130.55 | 137.28 | 620.47 | 566.04 | 24.74 | 25.90 |
| HL99PL1 28 | 1.42 | 30.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56PL1 56 | 1.42 | 31.40 | 3.01 | 1.00 | 134.84 | 140.48 | 619.00 | 578.90 | 25.15 | 24.68 |
| HL99PL2 122 | 1.42 | 30.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PL3 233 | 1.42 | 31.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PL4 363 | 1.43 | 30.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PL5 499 | 1.42 | 30.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PL6 626 | 1.42 | 31.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PL7 756 | 1.42 | 31.70 | 3.01 | 1.00 | 97.75 | * | 1557.42 | * | * | * |
| PHENOL 4.0% 50°C | | | | | | | | | | |
| HH01PM1 1 | 1.41 | 31.20 | 3.00 | 1.00 | 138.04 | 127.64 | 569.52 | 610.40 | 24.02 | 23.77 |
| HH07PM1 7 | 1.45 | 32.10 | 3.01 | 1.00 | 135.56 | 140.56 | 621.80 | 585.28 | 24.91 | 25.84 |
| HH14PM1 14 | 1.49 | 32.40 | 3.01 | 1.00 | 130.50 | 139.64 | 600.36 | 569.98 | 24.94 | * |
| HH28PM1 28 | 1.34 | 29.40 | 3.01 | 1.00 | 132.40 | 134.12 | 614.04 | 563.34 | 24.42 | 24.24 |
| HH99PM1 29 | 1.52 | 32.30 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH56PM1 56 | 1.36 | 29.80 | 3.01 | 1.00 | 134.20 | 141.58 | 632.82 | 586.34 | 23.47 | 24.50 |
| HH99PM2 121 | 1.53 | 32.40 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99PM3 244 | 1.50 | 32.50 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99PM4 362 | 1.52 | 32.60 | 3.02 | 1.00 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 50°C | | | | | | | | | | |
| HH99PM5 499 | 1.53 | 33.30 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99PM6 624 | 1.52 | 33.90 | 3.03 | 1.00 | * | * | * | * | * | * |
| HH99PM7 757 | 1.53 | 35.20 | 3.03 | 1.00 | 82.50 | * | 1306.58 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | | | | | |
| HL01PM1 1 | 1.47 | 32.40 | 3.00 | 1.00 | 130.04 | 128.02 | 622.06 | 555.56 | 22.99 | 24.10 |
| HL07PM1 7 | 1.44 | 31.70 | 3.01 | 1.00 | 119.78 | 138.62 | 567.40 | 589.72 | 24.45 | 24.80 |
| HL14PM1 14 | 1.35 | 29.90 | 3.01 | 1.00 | 125.74 | 139.84 | 607.18 | 582.40 | 25.11 | 25.36 |
| HL28PM1 28 | 1.47 | 31.90 | 3.01 | 1.00 | 127.10 | 133.00 | 605.00 | 567.00 | 24.20 | 24.83 |
| HL99PM1 29 | 1.46 | 31.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL56PM1 56 | 1.34 | 29.70 | 3.01 | 1.00 | 130.48 | 141.10 | 631.92 | 602.02 | 24.56 | 24.30 |
| HL99PM2 121 | 1.47 | 31.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99PM3 231 | 1.46 | 32.00 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99PM4 362 | 1.46 | 31.60 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PM5 499 | 1.47 | 31.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99PM6 625 | 1.46 | 32.20 | 3.02 | 1.00 | * | * | * | * | * | * |
| HL99PM7 755 | 1.47 | 32.20 | 3.02 | 1.00 | 114.25 | * | 1683.50 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | |
| HH01SH1 1 | 1.51 | 32.90 | 3.01 | 1.00 | 145.99 | 151.30 | 586.56 | 671.52 | 24.24 | 25.24 |
| HH07SH1 7 | 1.50 | 32.90 | 3.01 | 1.00 | 135.18 | 150.86 | 606.88 | 646.40 | 24.60 | 25.33 |
| HH14SH1 14 | 1.53 | 33.90 | 3.00 | 1.00 | 141.74 | 164.28 | 655.92 | 630.11 | 27.26 | 27.12 |
| HH99SH1 28 | 1.52 | 33.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH28SH1 28 | 1.44 | 32.30 | 3.01 | 1.00 | 156.49 | 171.72 | 636.32 | 606.70 | 27.70 | 25.32 |
| HH56SH1 56 | 1.32 | 29.70 | 3.02 | 1.00 | 149.14 | 147.02 | 673.20 | 597.04 | 27.00 | 27.79 |
| HH99SH2 131 | 1.51 | 32.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SH3 253 | 1.53 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SH4 379 | 1.51 | 33.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SH5 510 | 1.52 | 32.80 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99SH6 630 | 1.51 | 35.20 | 3.02 | 1.00 | * | * | * | * | * | * |
| HH99SH7 771 | 1.51 | 31.20 | 3.01 | 0.99 | 98.00 | * | 1597.50 | * | * | * |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | |
| HL01SH1 1 | 1.38 | 30.50 | 3.01 | 1.00 | 141.96 | 155.98 | 652.64 | 633.44 | 24.89 | 26.31 |
| HL07SH1 7 | 1.44 | 31.80 | 3.00 | 1.00 | 134.68 | 134.12 | 598.24 | 615.20 | 24.87 | 26.95 |
| HL14SH1 14 | 1.53 | 34.40 | 3.01 | 1.00 | 141.62 | 151.67 | 654.72 | 628.11 | 24.72 | 28.42 |
| HL28SH1 28 | 1.37 | 30.70 | 3.00 | 1.00 | 145.13 | 162.86 | 656.67 | 614.40 | 23.93 | 26.84 |
| HL99SH1 28 | 1.55 | 34.70 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56SH1 56 | 1.32 | 29.50 | 3.00 | 1.00 | 140.76 | 151.24 | 664.80 | 619.68 | 25.18 | 26.45 |
| HL99SH2 131 | 1.54 | 33.20 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99SH3 246 | 1.53 | 33.80 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99SH4 379 | 1.55 | 33.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99SH5 510 | 1.54 | 33.10 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99SH6 630 | 1.53 | 33.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99SH7 769 | 1.54 | 35.90 | 3.01 | 1.00 | 108.75 | * | 1553.20 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | |
| HH01SM2 1 | 1.44 | 31.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH01SM1 1 | 1.61 | 35.40 | 3.01 | 1.00 | 148.56 | 147.60 | 674.56 | 597.28 | 29.30 | 27.30 |
| HH07SM1 7 | 1.55 | 33.80 | 3.00 | 1.00 | 144.88 | 143.92 | 664.56 | 590.40 | 26.94 | 29.26 |
| HH07SM2 7 | 1.58 | 34.50 | 3.01 | 1.00 | * | 174.64 | * | * | * | * |
| HH14SM1 14 | 27.33 | 34.80 | 7.46 | 6.94 | 165.84 | 152.56 | 655.92 | 564.96 | 30.34 | 29.06 |
| HH14SM2 15 | 1.54 | 34.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH28SM2 28 | 1.53 | 33.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SM1 28 | 1.48 | 32.40 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH28SM1 28 | 27.40 | 35.10 | 7.40 | 6.92 | 159.92 | 179.12 | 633.84 | 651.84 | 30.86 | 29.06 |
| HH56SM2 56 | 1.39 | 29.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56SM1 61 | 23.80 | 30.30 | 7.35 | 6.93 | 142.96 | 153.52 | 642.96 | 623.04 | 26.94 | 28.54 |
| HH99SM2 132 | 1.48 | 31.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SM3 254 | 1.47 | 31.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SM4 370 | 1.46 | 32.10 | 3.01 | 1.01 | * | * | * | * | * | * |
| HH99SM5 511 | 1.46 | 32.50 | 3.00 | 0.99 | * | * | * | * | * | * |
| HH99SM6 624 | 1.46 | 33.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99SM7 772 | 1.47 | 31.00 | 3.01 | 0.99 | 125.00 | * | 1800.00 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | |
| HL01SM1 1 | 1.53 | 33.70 | 3.01 | 1.00 | 146.32 | 146.96 | 600.08 | 587.12 | 30.46 | 29.14 |
| HL01SM2 1 | 1.58 | 34.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL07SM1 7 | 1.56 | 34.30 | 3.00 | 1.00 | 149.84 | 2.96 | 668.80 | 660.64 | 27.58 | 30.22 |
| HL07SM2 7 | 1.58 | 35.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL14SM1 14 | 26.65 | 34.00 | 7.43 | 6.94 | 168.24 | 137.36 | 668.96 | 504.96 | 29.78 | 28.90 |
| HL14SM2 15 | 1.61 | 35.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL28SM2 28 | 1.50 | 32.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99SM1 28 | 1.45 | 32.50 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL28SM1 28 | 26.01 | 35.00 | 7.42 | 6.54 | 154.80 | 113.52 | 629.52 | 426.72 | 29.02 | 31.62 |
| HL56SM2 56 | 1.58 | 34.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56SM1 61 | 25.64 | 31.90 | 7.46 | 6.94 | 159.92 | 152.72 | 672.64 | 608.80 | 28.82 | 29.82 |
| HL99SM2 132 | 1.46 | 31.90 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99SM3 246 | 1.46 | 32.20 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99SM4 370 | 1.46 | 32.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99SM5 511 | 1.47 | 31.70 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99SM6 624 | 1.46 | 32.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99SM7 770 | 1.47 | 36.90 | 3.01 | 1.00 | 125.00 | * | 1800.00 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | | |
| HH01WP2 1 | 1.63 | * | * | * | * | * | * | * | * | * |
| HH01WP1 1 | 1.50 | 33.00 | 3.01 | 1.00 | 157.68 | 166.96 | 637.12 | 681.10 | 31.02 | 28.42 |
| HH07WP1 7 | 1.53 | 34.00 | 3.01 | 1.00 | 162.64 | 162.00 | 695.10 | 640.88 | 25.94 | 26.78 |
| HH07WP2 7 | 1.59 | 34.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH14WP1 14 | 27.18 | 33.70 | 7.48 | 6.98 | 164.70 | 173.10 | 580.70 | 599.40 | 30.10 | 29.90 |
| HH14WP2 14 | 1.65 | 36.10 | 3.00 | 1.00 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 50°C | | | | | | | | | | |
| HH99WP1 28 | 1.48 | 33.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH28WP2 28 | 1.57 | 34.70 | 3.00 | 1.00 | 148.40 | 157.20 | 700.72 | 629.44 | 26.18 | 26.02 |
| HH28WP1 28 | 1.57 | 34.30 | 3.00 | 1.00 | 158.24 | 168.72 | 706.96 | 628.00 | 26.86 | 28.70 |
| HH56WP2 56 | 1.58 | 34.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH56WP1 56 | 27.28 | 32.50 | 7.41 | 7.39 | 158.20 | 159.94 | 659.40 | 614.90 | 28.50 | 29.30 |
| HH99WP2 133 | 1.48 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99WP3 254 | 1.53 | 32.70 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99WP4 370 | 1.51 | 33.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99WP5 503 | 1.52 | 32.90 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99WP6 622 | 1.51 | 33.90 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99WP7 772 | 1.52 | 31.80 | 3.01 | 1.00 | 118.00 | * | 1712.00 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | | |
| HL01WP2 1 | * | * | * | * | * | * | * | * | * | * |
| HL01WP1 1 | 1.61 | 36.20 | 1.00 | 1.00 | 150.48 | 157.52 | 680.08 | 641.12 | 27.30 | 26.46 |
| HL07WP1 7 | 1.54 | 33.90 | 3.01 | 1.00 | 152.88 | 181.20 | 640.72 | 652.08 | 29.78 | 31.62 |
| HL07WP2 7 | 1.54 | 33.70 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL14WP2 14 | 1.64 | 37.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL14WP1 14 | 27.25 | 32.70 | 7.45 | 7.22 | 143.40 | 183.20 | 613.00 | 639.00 | 30.10 | 26.50 |
| HL28WP2 28 | 1.57 | 34.80 | 3.00 | 1.00 | 163.60 | 163.00 | 704.72 | 639.60 | 30.60 | 25.50 |
| HL99WP1 28 | 1.49 | 32.10 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL28WP1 28 | 1.56 | 33.80 | 3.00 | 1.00 | 149.04 | 165.68 | 666.16 | 610.96 | 25.10 | 26.42 |
| HL56WP1 56 | 28.71 | 34.10 | 7.54 | 7.36 | 163.60 | 158.80 | 663.44 | 628.72 | 29.06 | 28.50 |
| HL56WP2 56 | 1.59 | 35.20 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99WP2 132 | 1.49 | 32.20 | 3.00 | 1.01 | * | * | * | * | * | * |
| HL99WP3 246 | 1.48 | 32.50 | 3.03 | 1.03 | * | * | * | * | * | * |
| HL99WP4 370 | 1.49 | 33.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99WP5 503 | 1.48 | 32.20 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99WP6 622 | 1.48 | 32.30 | 3.00 | 1.01 | * | * | * | * | * | * |
| HL99WP7 770 | 1.49 | 36.60 | 3.00 | 1.00 | 126.63 | * | 1796.25 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | |
| HH01XM1 1 | 1.59 | 36.20 | 3.00 | 1.00 | 144.62 | 161.45 | 584.93 | 622.64 | 25.76 | 26.04 |
| HH07XM1 7 | 1.40 | 30.80 | 3.01 | 1.00 | 160.50 | 168.15 | 652.32 | 629.44 | 30.38 | 29.63 |
| HH14XM1 14 | 1.35 | 31.30 | 3.01 | 1.00 | 146.41 | 137.82 | 651.60 | 553.76 | 26.86 | 25.54 |
| HH28XM1 28 | 1.34 | 29.90 | 3.00 | 1.00 | 167.90 | 174.50 | 690.88 | 665.44 | 26.83 | 25.72 |
| HH99XM1 28 | 1.40 | 30.00 | 3.00 | 1.00 | * | * | * | * | * | * |
| HH56XM1 55 | 1.53 | 33.70 | 3.00 | 1.00 | 162.44 | 162.12 | 664.72 | 630.64 | 27.32 | 25.90 |
| HH99XM2 118 | 1.40 | 30.50 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99XM3 231 | 1.41 | 31.30 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99XM4 363 | 1.40 | 30.50 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99XM5 489 | 1.40 | 30.30 | 3.01 | 0.99 | * | * | * | * | * | * |
| HH99XM6 609 | 1.40 | 32.10 | 3.01 | 1.00 | * | * | * | * | * | * |
| HH99XM7 749 | 1.40 | 30.10 | 3.01 | 0.99 | 80.83 | * | 1256.83 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | |
| HL01XM1 1 | 1.45 | 31.80 | 3.01 | 1.00 | 149.80 | 163.05 | 661.84 | 653.12 | 24.10 | 24.27 |
| HL07XM1 7 | 1.58 | 35.50 | 3.01 | 1.00 | 147.72 | 142.84 | 677.76 | 587.44 | 25.79 | 27.12 |
| HL14XM1 14 | 1.34 | 30.10 | 3.00 | 1.00 | 171.10 | 137.93 | 679.20 | 557.68 | 24.62 | 25.09 |
| HL28XM1 28 | 1.54 | 34.30 | 3.00 | 1.00 | 155.85 | 111.14 | 589.92 | 430.64 | 24.67 | 26.98 |
| HL99XM1 28 | 1.41 | 30.40 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL56XM1 55 | 1.57 | 35.20 | 3.00 | 1.00 | 140.54 | 153.50 | 668.64 | 636.96 | 27.66 | 28.92 |
| HL99XM2 118 | 1.41 | 30.60 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99XM3 223 | 1.40 | 31.60 | 3.01 | 1.01 | * | * | * | * | * | * |
| HL99XM4 363 | 1.40 | 30.80 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99XM5 489 | 1.42 | 30.30 | 3.00 | 1.00 | * | * | * | * | * | * |
| HL99XM6 640 | 1.40 | 31.80 | 3.01 | 1.00 | * | * | * | * | * | * |
| HL99XM7 747 | 1.39 | 33.60 | 3.00 | 1.00 | 99.75 | * | 1552.50 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | |
| HH01AM1 1 | * | * | * | * | * | * |
| HH01AM2 1 | 79.92 | 91.76 | 16.20 | 15.10 | * | * |
| HH07AM2 7 | 85.16 | 98.00 | 15.20 | 14.60 | * | * |
| HH07AM1 7 | * | * | * | * | * | * |
| HH14AM1 14 | * | * | * | * | * | * |
| HH14AM2 14 | 78.96 | 88.96 | 16.20 | 14.20 | * | * |
| HH99AM1 28 | * | * | * | * | * | * |
| HH28AM1 29 | * | * | * | * | * | * |
| HH28AM2 29 | 91.20 | 99.30 | 15.20 | 14.60 | * | * |
| HH56AM1 56 | * | * | * | * | * | * |
| HH56AM2 56 | 99.28 | 103.20 | 15.50 | 14.30 | * | * |
| HH99AM2 144 | * | * | * | * | * | * |
| HH99AM3 252 | * | * | * | * | * | * |
| HH99AM4 368 | * | * | * | * | * | * |
| HH99AM5 511 | * | * | * | * | * | * |
| HH99AM6 621 | * | * | * | * | * | * |
| HH99AM7 770 | 87.75 | * | 17.33 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | |
| HL01AM2 1 | 83.60 | 100.88 | 16.60 | 13.40 | * | * |
| HL01AM1 1 | * | * | * | * | * | * |
| HL07AM2 7 | 94.88 | 94.00 | 14.50 | 11.80 | * | * |
| HL07AM1 7 | * | * | * | * | * | * |
| HL14AM2 14 | 83.04 | 98.24 | 14.80 | 13.80 | * | * |
| HL14AM1 14 | * | * | * | * | * | * |
| HL99AM1 28 | * | * | * | * | * | * |
| HL28AM1 29 | * | * | * | * | * | * |
| HL28AM2 29 | 90.88 | 100.48 | 15.40 | 14.50 | * | * |
| HL56AM2 56 | 86.96 | 100.88 | 14.80 | 13.20 | * | * |
| HL56AM1 56 | * | * | * | * | * | * |
| HL99AM2 144 | * | * | * | * | * | * |
| HL99AM3 238 | * | * | * | * | * | * |
| HL99AM4 368 | * | * | * | * | * | * |
| HL99AM5 511 | * | * | * | * | * | * |
| HL99AM6 621 | * | * | * | * | * | * |
| HL99AM7 768 | 78.50 | * | 15.08 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| HH01BM1 1 | 103.20 | 108.32 | 14.00 | 14.00 | * | * |
| HH07BM1 7 | 90.72 | 100.48 | 15.10 | 15.60 | * | * |
| HH14BM1 13 | 85.20 | 90.00 | 14.80 | 14.20 | * | * |
| HH28BM1 28 | 90.30 | 98.00 | 16.20 | 15.00 | * | * |
| HH99BM1 29 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| HH56BM1 56 | 83.92 | 98.80 | 16.80 | 15.10 | * | * |
| HH99BM2 144 | * | * | * | * | * | * |
| HH99BM3 252 | * | * | * | * | * | * |
| HH99BM4 368 | * | * | * | * | * | * |
| HH99BM5 510 | * | * | * | * | * | * |
| HH99BM6 622 | * | * | * | * | * | * |
| HH99BM7 770 | 85.17 | * | 16.83 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | |
| HL01BM1 1 | * | * | * | * | * | * |
| HL07BM1 7 | 87.40 | 99.76 | 14.80 | 12.60 | * | * |
| HL14BM1 14 | * | 99.52 | * | 13.50 | * | * |
| HL28BM1 28 | * | * | * | * | * | * |
| HL99BM1 28 | * | * | * | * | * | * |
| HL56BM1 56 | 91.04 | 89.40 | 16.30 | 14.80 | * | * |
| HL99BM2 144 | * | * | * | * | * | * |
| HL99BM3 238 | * | * | * | * | * | * |
| HL99BM4 368 | * | * | * | * | * | * |
| HL99BM5 510 | * | * | * | * | * | * |
| HL99BM6 622 | * | * | * | * | * | * |
| HL99BM7 768 | 83.92 | * | 17.02 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | |
| HH01DH1 1 | 74.90 | 83.62 | 19.40 | 16.30 | * | * |
| HH07DH1 7 | 74.80 | 83.40 | 16.78 | 15.30 | * | * |
| HH14DH1 14 | 76.93 | 83.70 | 18.30 | 21.00 | * | * |
| HH28DH1 28 | 75.30 | 85.00 | 20.50 | 17.10 | * | * |
| HH99DH1 28 | * | * | * | * | * | * |
| HH56DH1 56 | * | * | * | * | * | * |
| HH99DH2 133 | * | * | * | * | * | * |
| HH99DH3 244 | * | * | * | * | * | * |
| HH99DH4 364 | * | * | * | * | * | * |
| HH99DH5 495 | * | * | * | * | * | * |
| HH99DH6 629 | * | * | * | * | * | * |
| HH99DH7 763 | 84.83 | * | 16.00 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | |
| HL01DH1 1 | 72.50 | 83.80 | 18.10 | 16.70 | * | * |
| HL07DH1 7 | 76.80 | 82.90 | 18.80 | 17.10 | * | * |
| HL14DH1 14 | 74.40 | 82.00 | 18.80 | 17.80 | * | * |
| HL99DH1 28 | * | * | * | * | * | * |
| HL28DH1 28 | 73.00 | 82.50 | 18.20 | 15.70 | * | * |
| HL56DH1 56 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | |
| HL99DH2 134 | * | * | * | * | * | * |
| HL99DH3 231 | * | * | * | * | * | * |
| HL99DH4 364 | * | * | * | * | * | * |
| HL99DH5 495 | * | * | * | * | * | * |
| HL99DH6 630 | * | * | * | * | * | * |
| HL99DH7 761 | 83.50 | * | 17.33 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | |
| HH01DL1 1 | 74.58 | 82.28 | 17.72 | 16.92 | * | * |
| HH07DL1 7 | 74.50 | 85.20 | 18.10 | 16.20 | * | * |
| HH14DL1 14 | 73.80 | 85.00 | 18.60 | 17.20 | * | * |
| HH99DL1 28 | * | * | * | * | * | * |
| HH28DL1 28 | 73.40 | 86.00 | 19.50 | 17.00 | * | * |
| HH56DL1 56 | * | * | * | * | * | * |
| HH99DL2 139 | * | * | * | * | * | * |
| HH99DL3 246 | * | * | * | * | * | * |
| HH99DL4 370 | * | * | * | * | * | * |
| HH99DL5 496 | * | * | * | * | * | * |
| HH99DL6 631 | * | * | * | * | * | * |
| HH99DL7 765 | 83.58 | * | 17.25 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | |
| HL01DL1 1 | 77.46 | 86.32 | 16.69 | 16.46 | * | * |
| HL07DL1 7 | 78.60 | 89.00 | 23.30 | 14.90 | * | * |
| HL14DL1 14 | 77.50 | 87.10 | 18.70 | 16.70 | * | * |
| HL99DL1 28 | * | * | * | * | * | * |
| HL28DL1 28 | 72.30 | 84.60 | 18.10 | 15.80 | * | * |
| HL56DL1 56 | * | * | * | * | * | * |
| HL99DL2 136 | * | * | * | * | * | * |
| HL99DL3 233 | * | * | * | * | * | * |
| HL99DL4 366 | * | * | * | * | * | * |
| HL99DL5 496 | * | * | * | * | * | * |
| HL99DL6 632 | * | * | * | * | * | * |
| HL99DL7 763 | 82.42 | * | 15.42 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | |
| HH01DM1 1 | 72.60 | 84.74 | 18.90 | 17.00 | * | * |
| HH07DM1 7 | 70.90 | 78.20 | 14.90 | 16.90 | * | * |
| HH14DM1 14 | 76.80 | 82.80 | 18.50 | 16.80 | * | * |
| HH28DM1 28 | 73.00 | 83.50 | 19.20 | 16.80 | * | * |
| HH99DM1 28 | * | * | * | * | * | * |
| HH56DM1 56 | * | * | * | * | * | * |
| HH99DM3 245 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | |
| HH99DM4 365 | * | * | * | * | * | * |
| HH99DM5 496 | * | * | * | * | * | * |
| HH99DM6 630 | * | * | * | * | * | * |
| HH99DM7 764 | 89.00 | * | 16.75 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | |
| HL01DM1 1 | 76.70 | 85.68 | 18.10 | 16.23 | * | * |
| HL07DM1 7 | 74.20 | 83.55 | 15.90 | 15.20 | * | * |
| HL14DM1 14 | 77.20 | 83.40 | 17.30 | 18.00 | * | * |
| HL28DM1 28 | 75.00 | 83.20 | 17.80 | 17.20 | * | * |
| HL99DM1 28 | * | * | * | * | * | * |
| HL56DM1 56 | * | * | * | * | * | * |
| HL99DM2 135 | * | * | * | * | * | * |
| HL99DM3 233 | * | * | * | * | * | * |
| HL99DM4 365 | * | * | * | * | * | * |
| HL99DM5 496 | * | * | * | * | * | * |
| HL99DM6 631 | * | * | * | * | * | * |
| HL99DM7 762 | 86.58 | * | 17.42 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | |
| HH01FH1 1 | 80.72 | 88.00 | 15.80 | 15.50 | * | * |
| HH07FH1 7 | 74.67 | 86.00 | 17.40 | 15.90 | * | * |
| HH14FH1 14 | 76.80 | 87.40 | 17.40 | 16.30 | * | * |
| HH28FH1 28 | 74.67 | 83.20 | 17.30 | 15.90 | * | * |
| HH99FH1 28 | * | * | * | * | * | * |
| HH56FH1 56 | 83.07 | 89.44 | 16.20 | 15.90 | * | * |
| HH99FH2 117 | * | * | * | * | * | * |
| HH99FH3 236 | * | * | * | * | * | * |
| HH99FH4 350 | * | * | * | * | * | * |
| HH99FH5 485 | * | * | * | * | * | * |
| HH99FH6 616 | * | * | * | * | * | * |
| HH99FH7 750 | 88.70 | * | 19.50 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | |
| HL01FH1 1 | 84.16 | 90.24 | 16.60 | 15.50 | * | * |
| HL07FH1 7 | 77.80 | 85.50 | 16.50 | 15.60 | * | * |
| HL14FH1 14 | 77.73 | 88.40 | 17.40 | 15.80 | * | * |
| HL99FH1 28 | * | * | * | * | * | * |
| HL28FH1 28 | 75.20 | 82.40 | 16.90 | 16.00 | * | * |
| HL56FH1 56 | 77.20 | 88.67 | 16.70 | 16.00 | * | * |
| HL99FH2 117 | * | * | * | * | * | * |
| HL99FH3 219 | * | * | * | * | * | * |
| HL99FH4 350 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| | | FURFURAL 8.0% 23°C | | | | |
| HL99FH5 485 | * | * | * | * | * | * |
| HL99FH6 617 | * | * | * | * | * | * |
| HL99FH7 748 | 83.92 | * | 16.30 | * | * | * |
| | | FURFURAL 1.0% 50°C | | | | |
| HH01FL1 1 | 83.00 | 89.28 | 16.80 | 15.80 | * | * |
| HH07FL1 7 | 78.80 | 88.40 | 16.90 | 15.90 | * | * |
| HH14FL1 14 | 76.16 | 85.84 | 17.40 | 17.20 | * | * |
| HH28FL1 28 | 80.20 | 90.00 | 15.80 | 15.80 | * | * |
| HH99FL1 29 | * | * | * | * | * | * |
| HH56FL1 56 | 79.07 | 90.27 | 16.70 | 16.70 | * | * |
| HH99FL2 124 | * | * | * | * | * | * |
| HH99FL3 242 | * | * | * | * | * | * |
| HH99FL4 356 | * | * | * | * | * | * |
| HH99FL5 489 | * | * | * | * | * | * |
| HH99FL6 622 | * | * | * | * | * | * |
| HH99FL7 756 | 93.83 | * | 18.25 | * | * | * |
| | | FURFURAL 1.0% 23°C | | | | |
| HL01FL1 1 | 83.00 | 92.56 | 16.00 | 13.80 | * | * |
| HL07FL1 7 | 78.13 | 87.87 | 16.70 | 15.60 | * | * |
| HL14FL1 14 | 77.80 | 84.88 | 16.50 | 16.90 | * | * |
| HL28FL1 28 | * | * | * | * | * | * |
| HL28FL2 28 | 76.40 | 84.80 | 16.40 | 15.40 | * | * |
| HL99FL1 29 | * | * | * | * | * | * |
| HL56FL1 56 | 78.53 | 92.53 | 15.40 | 13.80 | * | * |
| HL99FL2 124 | * | * | * | * | * | * |
| HL99FL3 225 | * | * | * | * | * | * |
| HL99FL4 356 | * | * | * | * | * | * |
| HL99FL5 489 | * | * | * | * | * | * |
| HL99FL6 623 | * | * | * | * | * | * |
| HL99FL7 754 | 86.75 | * | 15.75 | * | * | * |
| | | FURFURAL 4.0% 50°C | | | | |
| HH01FM1 1 | 82.32 | 90.24 | 16.50 | 14.80 | * | * |
| HH07FM1 7 | 77.60 | 87.73 | 16.40 | 15.60 | * | * |
| HH14FM1 14 | 76.80 | 86.93 | 16.70 | 15.60 | * | * |
| HH28FM1 28 | 76.00 | 85.50 | 17.40 | 16.70 | * | * |
| HH99FM1 29 | * | * | * | * | * | * |
| HH56FM1 56 | 82.80 | 90.27 | 17.20 | 15.90 | * | * |
| HH99FM2 124 | * | * | * | * | * | * |
| HH99FM3 242 | * | * | * | * | * | * |
| HH99FM4 356 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| FURFURAL 4.0% 50°C | | | | | | |
| HH99FM5 490 | * | * | * | * | * | * |
| HH99FM6 622 | * | * | * | * | * | * |
| HH99FM7 756 | 86.25 | * | 19.67 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | |
| HL01FM1 1 | 79.84 | 93.12 | 15.70 | 14.60 | * | * |
| HL07FM1 7 | 77.33 | 86.16 | 17.90 | 15.40 | * | * |
| HL14FM1 14 | 77.00 | 86.20 | 16.50 | 15.40 | * | * |
| HL28FM1 28 | 74.67 | 85.50 | 16.90 | 15.60 | * | * |
| HL99FM1 29 | * | * | * | * | * | * |
| HL56FM1 56 | 78.13 | 86.00 | 16.70 | 14.60 | * | * |
| HL99FM2 124 | * | * | * | * | * | * |
| HL99FM3 228 | * | * | * | * | * | * |
| HL99FM4 356 | * | * | * | * | * | * |
| HL99FM5 490 | * | * | * | * | * | * |
| HL99FM6 623 | * | * | * | * | * | * |
| HL99FM7 754 | 86.75 | * | 16.33 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | |
| HH01MH1 1 | 78.08 | 88.80 | 15.40 | 15.50 | * | * |
| HH07MH1 7 | 80.32 | 88.16 | 16.00 | 13.70 | * | * |
| HH14MH1 14 | 80.24 | 90.08 | 15.50 | 13.80 | * | * |
| HH28MH1 28 | 79.30 | 89.44 | 16.00 | 14.90 | * | * |
| HH99MH1 29 | * | * | * | * | * | * |
| HH56MH1 57 | 71.84 | 83.36 | 18.00 | 17.20 | * | * |
| HH99MH2 122 | * | * | * | * | * | * |
| HH99MH3 240 | * | * | * | * | * | * |
| HH99MH4 358 | * | * | * | * | * | * |
| HH99MH5 493 | * | * | * | * | * | * |
| HH99MH6 626 | * | * | * | * | * | * |
| HH99MH7 759 | 83.25 | * | 17.58 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | |
| HL01MH1 1 | 82.20 | 92.08 | 15.00 | 14.30 | * | * |
| HL07MH1 7 | 79.68 | 88.88 | 14.30 | 13.40 | * | * |
| HL14MH1 14 | 80.72 | 90.24 | 14.30 | 13.70 | * | * |
| HL28MH1 28 | 81.04 | 87.28 | 14.50 | 13.50 | * | * |
| HL99MH1 29 | * | * | * | * | * | * |
| HL56MH1 57 | 80.64 | 88.24 | 15.10 | 14.80 | * | * |
| HL99MH2 122 | * | * | * | * | * | * |
| HL99MH3 235 | * | * | * | * | * | * |
| HL99MH4 358 | * | * | * | * | * | * |
| HL99MH5 493 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | |
| HL99MH6 627 | * | * | * | * | * | * |
| HL99MH7 757 | 80.17 | * | 18.25 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | |
| HH01ML1 1 | 75.76 | 80.56 | 16.30 | 16.00 | * | * |
| HH07ML1 7 | 80.64 | 92.00 | 14.80 | 14.90 | * | * |
| HH14ML1 14 | 83.28 | 92.88 | 15.50 | 13.50 | * | * |
| HH28ML1 28 | 80.56 | 89.60 | 15.70 | 14.60 | * | * |
| HH99ML1 28 | * | * | * | * | * | * |
| HH56ML1 57 | 80.80 | 91.44 | 16.20 | 14.50 | * | * |
| HH99ML2 120 | * | * | * | * | * | * |
| HH99ML3 240 | * | * | * | * | * | * |
| HH99ML4 358 | * | * | * | * | * | * |
| HH99ML5 493 | * | * | * | * | * | * |
| HH99ML6 626 | * | * | * | * | * | * |
| HH99ML7 759 | 93.42 | * | 18.83 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | |
| HL01ML1 1 | 82.32 | 92.16 | 14.80 | 13.80 | * | * |
| HL07ML1 7 | 81.68 | 92.16 | 13.80 | 13.40 | * | * |
| HL14ML1 14 | 78.40 | 90.48 | 15.20 | 14.80 | * | * |
| HL28ML1 28 | 83.10 | 91.68 | 15.40 | 14.00 | * | * |
| HL99ML1 28 | * | * | * | * | * | * |
| HL56ML1 57 | 81.68 | 91.84 | 15.50 | 14.20 | * | * |
| HL99ML2 120 | * | * | * | * | * | * |
| HL99ML3 235 | * | * | * | * | * | * |
| HL99ML4 358 | * | * | * | * | * | * |
| HL99ML5 494 | * | * | * | * | * | * |
| HL99ML6 627 | * | * | * | * | * | * |
| HL99ML7 757 | 80.58 | * | 16.70 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | |
| HH01MM1 1 | 81.28 | 88.40 | 15.40 | 14.40 | * | * |
| HH07MM1 7 | 81.20 | 94.24 | 16.50 | 14.80 | * | * |
| HH14MM1 14 | 78.16 | 87.92 | 15.40 | 13.80 | * | * |
| HH99MM1 28 | * | * | * | * | * | * |
| HH28MM1 28 | 79.04 | 90.56 | 16.50 | 14.20 | * | * |
| HH56MM1 57 | 76.40 | 86.32 | 17.10 | 16.50 | * | * |
| HH99MM2 120 | * | * | * | * | * | * |
| HH99MM3 239 | * | * | * | * | * | * |
| HH99MM4 357 | * | * | * | * | * | * |
| HH99MM5 493 | * | * | * | * | * | * |
| HH99MM6 625 | * | * | * | * | * | * |
| HH99MM7 758 | 82.92 | * | 19.83 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | |
| HL01MM1 1 | 74.72 | 84.56 | 15.20 | 14.90 | * | * |
| HL07MM1 7 | 80.24 | 91.60 | 15.10 | 13.40 | * | * |
| HL14MM1 14 | 81.40 | 92.80 | 16.20 | 14.50 | * | * |
| HL28MM1 28 | 78.40 | 90.32 | 15.40 | 14.00 | * | * |
| HL99MM1 28 | * | * | * | * | * | * |
| HL56MM1 57 | 82.40 | 92.08 | 15.70 | 14.30 | * | * |
| HL99MM2 120 | * | * | * | * | * | * |
| HL99MM3 234 | * | * | * | * | * | * |
| HL99MM4 357 | * | * | * | * | * | * |
| HL99MM5 493 | * | * | * | * | * | * |
| HL99MM6 626 | * | * | * | * | * | * |
| HL99MM7 756 | 80.00 | * | 17.00 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | |
| HH01OM1 1 | 84.32 | 93.20 | 15.10 | 14.80 | * | * |
| HH07OM1 7 | 79.36 | 87.60 | 16.30 | 16.80 | * | * |
| HH14OM1 13 | 82.96 | 91.44 | 16.60 | 15.70 | * | * |
| HH28OM1 28 | * | * | * | * | * | * |
| HH99OM1 28 | 77.83 | * | 29.50 | * | * | * |
| HH56OM1 56 | 84.60 | 94.00 | 15.60 | 14.80 | * | * |
| HH99OM2 128 | * | * | * | * | * | * |
| HH99OM3 251 | * | * | * | * | * | * |
| HH99OM4 364 | * | * | * | * | * | * |
| HH99OM5 503 | * | * | * | * | * | * |
| HH99OM6 626 | * | * | * | * | * | * |
| HH99OM7 765 | 77.83 | * | 29.50 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | |
| HL01OM1 1 | 81.00 | 91.52 | 15.60 | 15.10 | * | * |
| HL07OM1 7 | 79.52 | 89.36 | 15.70 | 15.20 | * | * |
| HL14OM1 13 | 79.92 | 89.68 | 16.50 | 15.70 | * | * |
| HL99OM1 28 | * | * | * | * | * | * |
| HL28OM1 28 | * | * | * | * | * | * |
| HL56OM1 56 | 86.56 | 99.60 | 16.00 | 14.60 | * | * |
| HL99OM2 128 | * | * | * | * | * | * |
| HL99OM3 237 | * | * | * | * | * | * |
| HL99OM4 364 | * | * | * | * | * | * |
| HL99OM5 503 | * | * | * | * | * | * |
| HL99OM6 626 | * | * | * | * | * | * |
| HL99OM7 763 | 79.70 | * | 24.40 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 50°C | | | | | | |
| HH010P1 1 | 75.20 | 81.76 | 16.80 | 16.30 | * | * |
| HH070P1 7 | 71.36 | * | 19.70 | * | * | * |
| HH140P1 14 | 70.80 | 77.60 | 19.20 | 19.40 | * | * |
| HH280P1 28 | 73.07 | 80.64 | 21.50 | 20.80 | * | * |
| HH990P1 28 | * | * | * | * | * | * |
| HH560P1 56 | 70.16 | 76.16 | 21.70 | 22.00 | * | * |
| HH990P2 141 | * | * | * | * | * | * |
| HH990P3 257 | * | * | * | * | * | * |
| HH990P4 385 | * | * | * | * | * | * |
| HH990P5 509 | * | * | * | * | * | * |
| HH990P6 627 | * | * | * | * | * | * |
| HH990P7 771 | 82.00 | * | 30.00 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | |
| HL010P1 1 | 75.92 | 82.00 | 15.70 | 15.40 | * | * |
| HL070P1 7 | 76.88 | 86.24 | 16.00 | 14.80 | * | * |
| HL140P1 14 | 78.08 | 84.24 | 16.60 | 15.20 | * | * |
| HL990P1 28 | * | * | * | * | * | * |
| HL280P1 28 | 77.04 | 86.80 | 16.60 | 15.40 | * | * |
| HL560P1 56 | 77.04 | 88.08 | 16.20 | 15.40 | * | * |
| HL990P2 141 | * | * | * | * | * | * |
| HL990P3 244 | * | * | * | * | * | * |
| HL990P4 385 | * | * | * | * | * | * |
| HL990P5 509 | * | * | * | * | * | * |
| HL990P6 627 | * | * | * | * | * | * |
| HL990P7 769 | 82.00 | * | 24.58 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | |
| HH01PH1 1 | 73.46 | 83.88 | 18.80 | 16.00 | * | * |
| HH07PH1 7 | 73.46 | 82.10 | 18.69 | 14.80 | * | * |
| HH14PH1 14 | 72.80 | 81.10 | 18.80 | 17.81 | * | * |
| HH28PH1 28 | 77.14 | 85.72 | 17.77 | 15.50 | * | * |
| HH99PH1 29 | * | * | * | * | * | * |
| HH56PH1 56 | 74.40 | 81.90 | 18.90 | 16.92 | * | * |
| HH99PH2 121 | * | * | * | * | * | * |
| HH99PH3 243 | * | * | * | * | * | * |
| HH99PH4 362 | * | * | * | * | * | * |
| HH99PH5 499 | * | * | * | * | * | * |
| HH99PH6 624 | * | * | * | * | * | * |
| HH99PH7 757 | 87.00 | * | 17.20 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | VIELD STRENGTH M (lb/ inch width) | VIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| | | PHENOL 8.0% 23°C | | | | |
| HL01PH1 1 | 77.98 | 82.72 | 17.58 | 15.10 | * | * |
| HL07PH1 7 | 72.90 | 86.68 | 17.90 | 16.50 | * | * |
| HL14PH1 14 | 75.70 | 85.02 | 17.70 | 17.70 | * | * |
| HL28PH1 28 | 76.62 | 84.60 | 15.67 | 14.30 | * | * |
| HL99PH1 29 | * | * | * | * | * | * |
| HL56PH1 56 | 73.78 | 82.14 | 18.40 | 16.70 | * | * |
| HL99PH2 121 | * | * | * | * | * | * |
| HL99PH3 230 | * | * | * | * | * | * |
| HL99PH4 362 | * | * | * | * | * | * |
| HL99PH5 499 | * | * | * | * | * | * |
| HL99PH6 625 | * | * | * | * | * | * |
| HL99PH7 755 | 87.08 | * | 17.16 | * | * | * |
| | | PHENOL 1.0% 50°C | | | | |
| HH99PL4 1 | * | * | * | * | * | * |
| HH01PL1 1 | 75.44 | 88.50 | 18.60 | 19.00 | * | * |
| HH07PL1 7 | 75.02 | 84.46 | 17.84 | 15.40 | * | * |
| HH14PL1 14 | 75.56 | 83.28 | 17.96 | 16.20 | * | * |
| HH28PL1 28 | 76.28 | 85.20 | 16.70 | 15.70 | * | * |
| HH99PL1 28 | * | * | * | * | * | * |
| HH56PL1 56 | 77.80 | 86.58 | 18.90 | 15.30 | * | * |
| HH99PL2 122 | * | * | * | * | * | * |
| HH99PL3 245 | * | * | * | * | * | * |
| HH99PL5 499 | * | * | * | * | * | * |
| HH99PL6 625 | * | * | * | * | * | * |
| HH99PL7 758 | 82.42 | * | 17.92 | * | * | * |
| | | PHENOL 1.0% 23°C | | | | |
| HL01PL1 1 | 77.98 | 87.10 | 16.73 | 15.30 | * | * |
| HL07PL1 7 | 78.92 | 86.68 | 15.77 | 15.60 | * | * |
| HL14PL1 14 | 74.88 | 83.08 | 18.46 | 16.50 | * | * |
| HL28PL1 28 | 77.20 | 88.34 | 15.96 | 15.38 | * | * |
| HL99PL1 28 | * | * | * | * | * | * |
| HL56PL1 56 | 75.82 | 85.40 | 14.60 | 16.50 | * | * |
| HL99PL2 122 | * | * | * | * | * | * |
| HL99PL3 233 | * | * | * | * | * | * |
| HL99PL4 363 | * | * | * | * | * | * |
| HL99PL5 499 | * | * | * | * | * | * |
| HL99PL6 626 | * | * | * | * | * | * |
| HL99PL7 756 | 79.92 | * | 15.58 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| PHENOL 4.0% 50°C | | | | | | |
| HH01PM1 1 | 80.20 | 72.56 | 16.40 | 18.00 | * | * |
| HH07PM1 7 | 78.88 | 87.22 | 18.20 | 16.23 | * | * |
| HH14PM1 14 | 77.36 | 80.70 | 17.19 | 16.23 | * | * |
| HH28PM1 28 | 77.60 | 84.46 | 17.34 | 15.00 | * | * |
| HH99PM1 29 | * | * | * | * | * | * |
| HH56PM1 56 | 76.44 | 85.46 | 18.35 | 18.23 | * | * |
| HH99PM2 121 | * | * | * | * | * | * |
| HH99PM3 244 | * | * | * | * | * | * |
| HH99PM4 362 | * | * | * | * | * | * |
| HH99PM5 499 | * | * | * | * | * | * |
| HH99PM6 624 | * | * | * | * | * | * |
| HH99PM7 757 | 89.58 | * | 19.83 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | |
| HL01PM1 1 | 75.16 | 83.16 | 16.70 | 15.00 | * | * |
| HL07PM1 7 | 75.56 | 82.00 | 17.27 | 14.80 | * | * |
| HL14PM1 14 | 75.22 | 86.70 | 17.90 | 16.23 | * | * |
| HL28PM1 28 | 77.65 | 85.55 | 17.08 | 15.60 | * | * |
| HL99PM1 29 | * | * | * | * | * | * |
| HL56PM1 56 | 75.06 | 84.84 | 17.77 | 15.65 | * | * |
| HL99PM2 121 | * | * | * | * | * | * |
| HL99PM3 231 | * | * | * | * | * | * |
| HL99PM4 362 | * | * | * | * | * | * |
| HL99PM5 499 | * | * | * | * | * | * |
| HL99PM6 625 | * | * | * | * | * | * |
| HL99PM7 755 | 85.25 | * | 16.33 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | |
| HH01SH1 1 | * | * | * | * | * | * |
| HH07SH1 7 | * | * | * | * | * | * |
| HH14SH1 14 | 79.48 | 96.40 | 16.30 | 13.80 | * | * |
| HH99SH1 28 | * | * | * | * | * | * |
| HH28SH1 28 | 94.72 | * | 14.90 | * | * | * |
| HH56SH1 56 | 84.80 | 95.92 | 16.90 | 15.50 | * | * |
| HH99SH2 131 | * | * | * | * | * | * |
| HH99SH3 253 | * | * | * | * | * | * |
| HH99SH4 379 | * | * | * | * | * | * |
| HH99SH5 510 | * | * | * | * | * | * |
| HH99SH6 630 | * | * | * | * | * | * |
| HH99SH7 771 | 88.33 | * | 18.00 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | |
| HL01SH1 1 | * | * | * | * | * | * |
| HL07SH1 7 | * | * | * | * | * | * |
| HL14SH1 14 | 79.60 | 90.32 | 15.20 | 13.20 | * | * |
| HL28SH1 28 | * | * | * | * | * | * |
| HL99SH1 28 | * | * | * | * | * | * |
| HL56SH1 56 | 79.04 | 91.36 | 16.50 | 15.20 | * | * |
| HL99SH2 131 | * | * | * | * | * | * |
| HL99SH3 246 | * | * | * | * | * | * |
| HL99SH4 379 | * | * | * | * | * | * |
| HL99SH5 510 | * | * | * | * | * | * |
| HL99SH6 630 | * | * | * | * | * | * |
| HL99SH7 769 | 89.00 | * | 14.75 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | |
| HH01SM2 1 | 86.32 | 96.24 | 16.50 | 14.90 | * | * |
| HH01SM1 1 | * | * | * | * | * | * |
| HH07SM1 7 | * | * | * | 15.37 | * | * |
| HH07SM2 7 | 81.07 | 98.00 | 16.70 | 16.00 | * | * |
| HH14SM1 14 | * | * | * | * | * | * |
| HH14SM2 15 | 87.68 | 100.56 | 16.20 | 14.00 | * | * |
| HH28SM2 28 | 84.88 | 100.64 | 15.80 | 14.20 | * | * |
| HH99SM1 28 | * | * | * | * | * | * |
| HH28SM1 28 | * | * | * | * | * | * |
| HH56SM2 56 | 81.60 | 104.88 | 15.70 | 14.20 | * | * |
| HH56SM1 61 | * | * | * | * | * | * |
| HH99SM2 132 | * | * | * | * | * | * |
| HH99SM3 254 | * | * | * | * | * | * |
| HH99SM4 370 | * | * | * | * | * | * |
| HH99SM5 511 | * | * | * | * | * | * |
| HH99SM6 624 | * | * | * | * | * | * |
| HH99SM7 772 | 92.00 | * | 17.00 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | |
| HL01SM1 1 | * | * | * | * | * | * |
| HL01SM2 1 | 90.88 | 99.68 | 17.10 | 15.40 | * | * |
| HL07SM1 7 | * | * | * | * | * | * |
| HL07SM2 7 | 77.44 | 92.56 | 16.60 | 14.80 | * | * |
| HL14SM1 14 | * | * | * | * | * | * |
| HL14SM2 15 | 96.00 | 100.88 | 14.60 | 14.90 | * | * |
| HL28SM2 28 | 100.88 | 97.12 | 15.20 | 13.60 | * | * |
| HL99SM1 28 | * | * | * | * | * | * |
| HL28SM1 28 | * | * | * | * | * | * |
| HL56SM2 56 | 94.96 | 101.60 | 14.50 | 13.70 | * | * |
| HL56SM1 61 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 23°C | | | | | | |
| HL99SM2 132 | * | * | * | * | * | * |
| HL99SM3 246 | * | * | * | * | * | * |
| HL99SM4 370 | * | * | * | * | * | * |
| HL99SM5 511 | * | * | * | * | * | * |
| HL99SM6 624 | * | * | * | * | * | * |
| HL99SM7 770 | 85.00 | * | 16.00 | * | * | * |
| WATER 100.0% 50°C | | | | | | |
| HH01WP2 1 | 90.50 | 91.36 | 16.00 | 15.20 | * | * |
| HH01WP1 1 | * | * | * | * | * | * |
| HH07WP1 7 | * | * | * | * | * | * |
| HH07WP2 7 | 89.52 | 97.84 | 16.60 | 13.80 | * | * |
| HH14WP1 14 | 87.60 | 99.10 | * | * | * | * |
| HH14WP2 14 | 93.68 | 104.32 | 15.20 | 14.20 | * | * |
| HH99WP1 28 | * | * | * | * | * | * |
| HH28WP2 28 | * | * | * | * | * | * |
| HH28WP1 28 | * | * | * | * | * | * |
| HH56WP2 56 | 93.76 | 99.84 | 15.50 | 13.40 | * | * |
| HH56WP1 56 | * | * | * | * | * | * |
| HH99WP2 133 | * | * | * | * | * | * |
| HH99WP3 254 | * | * | * | * | * | * |
| HH99WP4 370 | * | * | * | * | * | * |
| HH99WP5 503 | * | * | * | * | * | * |
| HH99WP6 622 | * | * | * | * | * | * |
| HH99WP7 772 | 93.00 | * | 17.50 | * | * | * |
| WATER 100.0% 23°C | | | | | | |
| HL01WP2 1 | 84.72 | 89.92 | 15.70 | 13.80 | * | * |
| HL01WP1 1 | * | * | * | * | * | * |
| HL07WP1 7 | * | * | * | * | * | * |
| HL07WP2 7 | 93.20 | 102.00 | 15.70 | 14.30 | * | * |
| HL14WP2 14 | 95.36 | 100.48 | 15.10 | 13.70 | * | * |
| HL14WP1 14 | 79.30 | 98.20 | * | * | * | * |
| HL28WP2 28 | * | * | * | * | * | * |
| HL99WP1 28 | * | * | * | * | * | * |
| HL28WP1 28 | * | * | * | * | * | * |
| HL56WP1 56 | * | * | * | * | * | * |
| HL56WP2 56 | 83.84 | 93.36 | 13.40 | 13.10 | * | * |
| HL99WP2 132 | * | * | * | * | * | * |
| HL99WP3 246 | * | * | * | * | * | * |
| HL99WP4 370 | * | * | * | * | * | * |
| HL99WP5 503 | * | * | * | * | * | * |
| HL99WP6 622 | * | * | * | * | * | * |
| HL99WP7 770 | 86.25 | * | 15.58 | * | * | * |

HIGH DENSITY POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | YIELD STRENGTH M (lb/ inch width) | YIELD STRENGTH T (lb/ inch width) | ELONGATION AT YIELD M (inch) | ELONGATION AT YIELD T (inch) | MODULUS OF ELASTICITY M (PSI) | MODULUS OF ELASTICITY T (PSI) |
|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | |
| HH01XM1 1 | 92.00 | 94.64 | 16.80 | 15.60 | * | * |
| HH07XM1 7 | 90.64 | 95.60 | 15.40 | 14.10 | * | * |
| HH14XM1 14 | 83.44 | 93.36 | 16.20 | 14.00 | * | * |
| HH28XM1 28 | 92.00 | 95.36 | 16.70 | 14.50 | * | * |
| HH99XM1 28 | * | * | * | * | * | * |
| HH56XM1 55 | 94.72 | 99.20 | 16.60 | 16.10 | * | * |
| HH99XM2 118 | * | * | * | * | * | * |
| HH99XM3 231 | * | * | * | * | * | * |
| HH99XM4 363 | * | * | * | * | * | * |
| HH99XM5 489 | * | * | * | * | * | * |
| HH99XM6 609 | * | * | * | * | * | * |
| HH99XM7 749 | 85.25 | * | 17.75 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | |
| HL01XM1 1 | 83.20 | 92.00 | 16.20 | 13.20 | * | * |
| HL07XM1 7 | 80.64 | 89.68 | 15.70 | 13.70 | * | * |
| HL14XM1 14 | 97.60 | 93.28 | 15.20 | 13.50 | * | * |
| HL28XM1 28 | 89.40 | 98.64 | 14.60 | 14.20 | * | * |
| HL99XM1 28 | * | * | * | * | * | * |
| HL56XM1 55 | 80.48 | 89.20 | 15.50 | 15.20 | * | * |
| HL99XM2 118 | * | * | * | * | * | * |
| HL99XM3 223 | * | * | * | * | * | * |
| HL99XM4 363 | * | * | * | * | * | * |
| HL99XM5 489 | * | * | * | * | * | * |
| HL99XM6 640 | * | * | * | * | * | * |
| HL99XM7 747 | 81.75 | * | 14.42 | * | * | * |

# HDPE : STATISTICS

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| HH01AM1 1 | 5 | 9.170 | 05 | 2.160 | 5 | 31.070 | 5 | 9.600 | 07 | 0.530 | 7 | 0.870 |
| HH01AM2 1 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH07AM2 7 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH07AM1 7 | 5 | 13.740 | 05 | 14.060 | 5 | 50.670 | 5 | 49.360 | 05 | 1.290 | 5 | 1.010 |
| HH14AM1 14 | 5 | 16.600 | 05 | 3.030 | 5 | 64.570 | 5 | 8.860 | 05 | 0.680 | 5 | 0.480 |
| HH14AM2 14 | 5 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH28AM1 29 | 5 | 12.620 | 05 | 11.100 | 5 | 57.550 | 5 | 47.200 | 10 | 0.702 | 10 | 2.100 |
| HH28AM2 29 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| HH56AM1 56 | 5 | 11.100 | 05 | 9.310 | 5 | 47.200 | 5 | 36.670 | 05 | 0.920 | 5 | 0.680 |
| HH56AM2 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| HL01AM2 1 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| HL01AM1 1 | 5 | 11.240 | 05 | 1.660 | 5 | 42.410 | 5 | 4.170 | 07 | 0.380 | 6 | 0.330 |
| HL07AM2 7 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| HL07AM1 7 | 5 | 11.090 | 05 | 11.390 | 5 | 8.060 | 5 | 40.690 | 05 | 0.650 | 5 | 1.060 |
| HL14AM1 14 | 5 | 12.100 | 05 | 16.940 | 5 | 45.650 | 5 | 55.980 | 05 | 1.350 | 5 | 0.330 |
| HL14AM2 14 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| HL28AM1 29 | 5 | 6.780 | 05 | 4.660 | 5 | 41.630 | 5 | 12.650 | 10 | 1.540 | 10 | 2.190 |
| HL28AM2 29 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| HL56AM1 56 | 5 | 5.440 | 05 | 6.060 | 5 | 13.680 | 5 | 20.350 | 05 | 0.880 | 5 | 0.560 |
| HL56AM2 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | * | 5 | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| HH01BM1 1 | 5 | 3.480 | 05 | 4.340 | 5 | 11.600 | 5 | 9.490 | 10 | 0.380 | 10 | 0.460 |
| HH07BM1 7 | 5 | 12.970 | 05 | 8.740 | 5 | 56.970 | 5 | 32.030 | 10 | 0.590 | 10 | 0.680 |
| HH14BM1 13 | 5 | 24.000 | 05 | 14.570 | 5 | 78.180 | 5 | 46.770 | 09 | 1.190 | 10 | 0.840 |
| HH28BM1 28 | 5 | 8.710 | 05 | 11.540 | 5 | 33.260 | 5 | 42.520 | 08 | 0.300 | 10 | 0.220 |
| HH56BM1 56 | 5 | 6.330 | 05 | 3.860 | 5 | 28.000 | 5 | 14.540 | 10 | 0.730 | 10 | 1.720 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| HL01BM1 1 | 5 | 30.970 | 05 | 3.610 | 5 | ****** | 5 | 14.000 | 10 | 0.510 | 10 | 0.490 |
| HL07BM1 7 | 5 | 26.100 | 05 | 3.570 | 5 | ****** | 5 | 11.280 | 10 | 0.940 | 10 | 0.540 |
| HL14BM1 14 | 5 | 15.960 | 05 | 16.540 | 5 | 57.940 | 5 | 48.900 | 09 | 0.880 | 9 | 1.360 |
| HL28BM1 28 | 5 | 5.340 | 05 | 12.040 | 5 | 15.930 | 5 | 40.830 | 10 | 0.360 | 10 | 0.470 |
| HL56BM1 56 | 5 | 11.150 | 05 | 4.740 | 5 | 43.880 | 5 | 17.030 | 10 | 1.750 | 10 | 1.190 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| HH01DH1 1 | 5 | 6.320 | 05 | 10.320 | 5 | 23.100 | 5 | 33.200 | 05 | 0.350 | 5 | 0.110 |
| HH07DH1 7 | 4 | 8.093 | 05 | 6.500 | 4 | 33.239 | 5 | 27.500 | 05 | 0.200 | 5 | 0.600 |
| HH14DH1 14 | 5 | 12.200 | 05 | 4.900 | 5 | 42.000 | 5 | 2* | 05 | 0.500 | 4 | 0.600 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| HH28DH1 28 | 5 | 9.900 | 05 | 7.400 | 5 | 40.500 | 5 | 23.000 | 05 | 1.200 | 5 | 1.300 |
| HH56DH1 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.360 | 5 | 0.400 |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| HL01DH1 1 | 5 | 7.900 | 05 | 5.800 | 5 | 33.800 | 5 | 21.000 | 05 | 0.400 | 5 | 0.520 |
| HL07DH1 7 | 5 | 3.700 | 05 | 1.500 | 5 | 13.000 | 5 | 23.500 | 05 | 0.500 | 5 | 0.300 |
| HL14DH1 14 | 5 | 2.500 | 05 | 7.100 | 5 | 9.300 | 5 | 26.000 | 05 | 0.600 | 5 | 1.900 |
| HL28DH1 28 | 5 | 5.000 | 05 | 4.300 | 5 | 17.000 | 5 | 17.000 | 05 | 0.500 | 5 | 0.900 |
| HL56DH1 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.400 | 5 | 0.300 |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| HH01DL1 1 | 5 | 4.270 | 05 | 15.200 | 5 | 12.600 | 5 | 52.700 | 05 | 0.660 | 5 | 0.260 |
| HH07DL1 7 | 5 | 6.700 | 05 | 7.100 | 5 | 28.700 | 5 | 24.000 | 05 | 0.630 | 5 | 0.600 |
| HH14DL1 14 | 5 | 8.600 | 05 | 3.900 | 5 | 37.000 | 5 | 11.000 | 05 | 0.700 | 5 | 0.500 |
| HH28DL1 28 | 5 | 8.800 | 05 | 2.600 | 5 | 33.700 | 5 | 9.700 | 05 | 1.300 | 5 | 2.300 |
| HH56DL1 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.300 | 5 | 0.200 |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| HL01DL1 1 | 5 | 8.850 | 05 | 5.500 | 5 | 30.400 | 5 | 21.000 | 05 | 0.630 | 5 | 0.700 |
| HL07DL1 7 | 5 | 4.000 | 05 | 4.200 | 5 | 2* | 5 | 29.000 | 05 | 0.500 | 5 | 0.300 |
| HL14DL1 14 | 5 | 4.500 | 05 | 6.200 | 5 | 16.900 | 5 | 26.300 | 05 | 0.500 | 5 | 0.300 |
| HL28DL1 28 | 5 | 3.400 | 05 | 9.400 | 5 | 18.000 | 5 | 37.000 | 05 | 1.500 | 5 | 1.800 |
| HL56DL1 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.400 | 5 | 0.300 |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| HH01DM1 1 | 5 | 4.140 | 05 | 13.300 | 5 | 17.000 | 5 | 16.600 | 05 | 0.710 | 5 | 0.840 |
| HH07DM1 7 | 5 | 11.800 | 05 | 4.500 | 5 | 51.000 | 5 | 14.000 | 05 | 0.400 | 5 | 0.400 |
| HH14DM1 14 | 5 | 5.800 | 05 | 10.100 | 5 | 22.100 | 5 | 32.500 | 05 | 0.800 | 5 | 0.200 |
| HH28DM1 28 | 5 | 3.100 | 05 | 5.400 | 5 | 13.000 | 5 | 19.400 | 05 | 0.600 | 5 | 1.000 |
| HH56DM1 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.800 | 5 | 0.700 |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| HL01DM1 1 | 5 | 9.040 | 05 | 11.870 | 5 | 43.920 | 5 | 43.100 | 05 | 0.620 | 5 | 0.700 |
| HL07DM1 7 | 4 | 8.000 | 02 | * | 4 | 29.200 | 2 | * | 05 | 0.400 | 5 | 2.400 |
| HL14DM1 14 | 5 | 3.300 | 05 | 5.900 | 5 | 14.300 | 5 | 21.200 | 05 | 1.800 | 5 | 0.900 |
| HL28DM1 28 | 5 | 13.500 | 05 | 1.400 | 5 | 56.000 | 5 | 6.000 | 05 | 0.600 | 5 | 2.500 |
| HL56DM1 56 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.300 | 5 | 0.400 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| HH01FH1 1 | 5 | 3.489 | 05 | 6.372 | 5 | 14.137 | 5 | 19.326 | 05 | 0.740 | 5 | 1.501 |
| HH07FH1 7 | 5 | 5.740 | 05 | 6.480 | 5 | 25.400 | 5 | 24.500 | 05 | 0.563 | 5 | 0.740 |
| HH14FH1 14 | 5 | 6.020 | 05 | 4.240 | 5 | 22.300 | 5 | 15.800 | 05 | 0.784 | 5 | 1.000 |
| HH28FH1 28 | 5 | 1.620 | 05 | 1.410 | 5 | 7.600 | 5 | 5.000 | 05 | 0.427 | 5 | 1.240 |
| HH56FH1 56 | 5 | 20.400 | 05 | 9.380 | 5 | 72.700 | 5 | 28.100 | 05 | 0.374 | 5 | 1.934 |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| HL01FH1 1 | 5 | 4.819 | 05 | 0.502 | 5 | 17.972 | 5 | 3.500 | 05 | 0.493 | 5 | 1.200 |
| HL07FH1 7 | 5 | 3.530 | 05 | 2.170 | 5 | 11.000 | 5 | 10.900 | 05 | 0.570 | 5 | 0.803 |
| HL14FH1 14 | 5 | 2.050 | 05 | 5.230 | 5 | 4.000 | 5 | 17.600 | 05 | 0.900 | 5 | 1.510 |
| HL28FH1 28 | 5 | 6.870 | 05 | 11.310 | 5 | 51.100 | 5 | 40.200 | 05 | 0.300 | 5 | 1.134 |
| HL56FH1 56 | 5 | 11.710 | 05 | 15.750 | 5 | 56.900 | 5 | 55.700 | 05 | 0.488 | 5 | 0.167 |
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| HH01FL1 1 | 5 | 59.900 | 05 | 3.094 | 5 | 59.330 | 5 | 10.950 | 05 | 0.670 | 5 | 1.910 |
| HH07FL1 7 | 5 | 5.030 | 05 | 5.260 | 5 | 14.000 | 5 | 12.000 | 05 | 0.594 | 5 | 0.224 |
| HH14FL1 14 | 5 | 13.010 | 05 | 10.640 | 5 | 46.700 | 5 | 36.400 | 05 | 0.360 | 5 | 0.410 |
| HH28FL1 28 | 5 | 13.510 | 05 | 10.790 | 5 | 50.700 | 5 | 33.800 | 05 | 1.790 | 5 | 1.605 |
| HH56FL1 56 | 5 | * | 05 | 4.960 | 5 | 11.300 | 5 | 18.800 | 05 | 0.439 | 5 | 0.205 |
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| HL01FL1 1 | 5 | 2.740 | 05 | 1.840 | 5 | 15.990 | 5 | 8.290 | 05 | 1.250 | 5 | 3.100 |
| HL07FL1 7 | 5 | 5.080 | 05 | 4.940 | 5 | 18.100 | 5 | 18.100 | 05 | 0.270 | 5 | 0.885 |
| HL14FL1 14 | 5 | 4.430 | 05 | 6.390 | 5 | 13.100 | 5 | 24.500 | 05 | 0.703 | 5 | 2.160 |
| HL28FL1 28 | 0 | * | 00 | * | 0 | * | 0 | * | 05 | 0.760 | 5 | 0.677 |
| HL28FL2 28 | 5 | 10.470 | 05 | 2.720 | 5 | 14.100 | 5 | 18.900 | 05 | 0.570 | 5 | 0.952 |
| HL56FL1 56 | 5 | 5.090 | 05 | 9.250 | 5 | 9.900 | 5 | 47.800 | 05 | 0.321 | 5 | 1.286 |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| HH01FM1 1 | 5 | 4.580 | 05 | 6.930 | 5 | 18.160 | 5 | 11.300 | 05 | 1.740 | 5 | 1.800 |
| HH07FM1 7 | 5 | 6.550 | 05 | 2.470 | 5 | 27.200 | 5 | 7.000 | 05 | 0.594 | 5 | 0.370 |
| HH14FM1 14 | 5 | 3.420 | 05 | 6.050 | 5 | 13.300 | 5 | 22.300 | 05 | 0.288 | 5 | 0.394 |
| HH28FM1 28 | 5 | 8.700 | 05 | 1.440 | 5 | 58.600 | 5 | 23.400 | 05 | 0.396 | 5 | 0.404 |
| HH56FM1 56 | 5 | 8.720 | 05 | 5.100 | 5 | 29.500 | 5 | 29.800 | 05 | 0.570 | 5 | 0.292 |
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| HL01FM1 1 | 5 | 6.421 | 05 | 3.240 | 5 | 22.410 | 5 | 10.327 | 05 | 1.382 | 5 | 0.817 |
| HL07FM1 7 | 5 | 3.240 | 05 | 4.320 | 5 | 15.100 | 5 | 59.500 | 05 | 0.493 | 5 | 0.900 |
| HL14FM1 14 | 5 | 6.110 | 05 | 1.150 | 5 | 20.500 | 5 | 25.800 | 05 | 0.819 | 5 | 0.709 |
| HL28FM1 28 | 5 | 13.200 | 05 | 3.090 | 5 | 60.400 | 5 | 51.800 | 05 | 1.187 | 5 | 0.502 |
| HL56FM1 56 | 5 | 3.480 | 05 | 7.800 | 5 | 12.900 | 5 | 44.100 | 05 | 0.526 | 5 | 0.522 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| HH01MH1 1 | 5 | 8.170 | 05 | 7.214 | 5 | 29.200 | 5 | 24.610 | 05 | 0.910 | 5 | 1.840 |
| HH07MH1 7 | 5 | 2.760 | 05 | 14.727 | 5 | 15.496 | 5 | 51.313 | 05 | 0.184 | 5 | 1.347 |
| HH14MH1 14 | 5 | 17.356 | 05 | 8.248 | 5 | ****** | 5 | 28.539 | 05 | 0.197 | 5 | 0.165 |
| HH28MH1 28 | 4 | 8.820 | 05 | 9.836 | 4 | 31.895 | 5 | 34.117 | 05 | 0.597 | 5 | 0.357 |
| HH56MH1 57 | 5 | 8.753 | 05 | 3.280 | 5 | 37.940 | 5 | 15.450 | 05 | 0.370 | 5 | 0.123 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| HL01MH1 1 | 5 | 14.340 | 05 | 5.630 | 5 | 50.250 | 5 | 17.930 | 05 | 0.410 | 5 | 0.330 |
| HL07MH1 7 | 5 | 11.743 | 05 | 10.241 | 5 | 45.280 | 5 | 30.439 | 05 | 0.200 | 5 | 0.319 |
| HL14MH1 14 | 5 | 10.786 | 05 | 10.919 | 5 | 41.800 | 5 | 32.158 | 05 | 2.385 | 5 | 0.491 |
| HL28MH1 28 | 5 | 6.537 | 05 | 14.798 | 5 | 22.149 | 5 | 50.851 | 05 | 0.865 | 5 | 0.418 |
| HL56MH1 57 | 5 | 78.000 | 05 | 16.624 | 5 | ****** | 5 | 57.054 | 05 | 0.318 | 5 | 0.567 |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| HH01ML1 1 | 5 | 6.610 | 05 | 9.910 | 5 | 29.080 | 5 | 41.380 | 05 | 0.400 | 5 | 0.540 |
| HH07ML1 7 | 5 | 10.278 | 05 | 0.781 | 5 | 27.952 | 5 | 30.809 | 05 | 0.279 | 5 | 0.444 |
| HH14ML1 14 | 5 | 9.745 | 05 | 3.960 | 5 | 40.831 | 5 | 13.517 | 05 | 0.281 | 5 | 0.222 |
| HH28ML1 28 | 5 | 9.331 | 05 | 13.371 | 5 | 26.953 | 5 | 49.745 | 05 | 0.744 | 5 | 0.628 |
| HH56ML1 57 | 4 | 22.384 | 05 | 10.165 | 4 | 92.472 | 5 | 35.596 | 05 | 0.370 | 5 | 0.226 |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| HL01ML1 1 | 5 | 11.502 | 05 | 4.790 | 5 | 47.828 | 5 | 22.246 | 05 | 1.566 | 5 | 0.460 |
| HL07ML1 7 | 5 | 13.435 | 05 | 2.621 | 5 | 41.940 | 5 | 3.776 | 05 | 0.575 | 5 | 2.145 |
| HL14ML1 14 | 5 | 7.526 | 05 | 15.776 | 5 | 27.027 | 5 | 53.028 | 05 | 0.347 | 5 | 0.892 |
| HL28ML1 28 | 5 | 3.630 | 05 | 6.709 | 4 | 37.609 | 5 | 16.800 | 05 | 1.513 | 5 | 1.621 |
| HL56ML1 57 | 5 | 12.020 | 05 | 16.514 | 5 | 47.470 | 5 | 52.502 | 05 | 0.526 | 5 | 0.534 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| HH01MM1 1 | 5 | 25.336 | 05 | 10.872 | 5 | 99.713 | 5 | 36.182 | 05 | 0.410 | 5 | 0.374 |
| HH07MM1 7 | 5 | 4.665 | 05 | 23.293 | 5 | 24.149 | 5 | 77.691 | 05 | 0.268 | 5 | 0.393 |
| HH14MM1 14 | 5 | 21.535 | 05 | 16.141 | 5 | 87.355 | 5 | 58.191 | 05 | 0.836 | 5 | 0.559 |
| HH28MM1 28 | 5 | 16.127 | 05 | 5.543 | 5 | 62.220 | 5 | 23.058 | 05 | 0.983 | 5 | 1.945 |
| HH56MM1 57 | 5 | 10.157 | 05 | 9.690 | 5 | 45.350 | 5 | 34.184 | 05 | 0.366 | 5 | 0.268 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| HL01MM1 1 | 5 | 4.433 | 05 | 3.795 | 5 | 16.063 | 5 | 13.367 | 05 | 0.358 | 5 | 0.400 |
| HL07MM1 7 | 5 | 15.539 | 05 | 16.279 | 5 | 60.684 | 5 | 57.195 | 05 | 0.272 | 5 | 0.273 |
| HL14MM1 14 | 4 | 8.400 | 05 | 6.680 | 4 | 32.566 | 5 | 25.950 | 05 | 0.415 | 5 | 0.410 |
| HL28MM1 28 | 4 | 13.964 | 05 | 12.818 | 4 | 51.976 | 5 | 44.760 | 05 | 1.420 | 5 | 1.204 |
| HL56MM1 57 | 5 | 8.361 | 05 | 3.459 | 5 | 31.490 | 5 | 7.240 | 05 | 0.442 | 5 | 0.090 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| HH010M1 1 | 5 | 11.149 | 05 | 8.256 | 5 | 35.796 | 5 | 24.946 | 05 | 2.741 | 5 | 2.741 |
| HH070M1 7 | 5 | 5.325 | 05 | 6.390 | 5 | 27.181 | 5 | 20.825 | 05 | 0.825 | 5 | 0.825 |
| HH140M1 13 | 5 | 9.285 | 05 | 7.034 | 5 | 43.057 | 5 | 26.042 | 05 | 1.460 | 5 | 1.613 |
| HH280M1 28 | 5 | 8.090 | 05 | 12.140 | 5 | 27.918 | 5 | 49.900 | 05 | 0.700 | 5 | 0.700 |
| HH560M1 56 | 5 | 1.078 | 05 | 20.377 | 5 | 37.317 | 5 | 67.188 | 05 | 1.230 | 5 | 0.800 |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| HL010M1 1 | 5 | 4.419 | 05 | 3.279 | 5 | 30.479 | 5 | 13.176 | 05 | 0.746 | 5 | 0.835 |
| HL070M1 7 | 5 | 5.589 | 05 | 11.885 | 5 | 19.001 | 5 | 42.486 | 05 | 2.620 | 5 | 1.262 |
| HL140M1 13 | 5 | 5.835 | 05 | 60.729 | 5 | 23.848 | 5 | ****** | 05 | 1.370 | 5 | 0.850 |
| HL280M1 28 | 5 | 11.692 | 05 | 12.939 | 5 | 46.905 | 5 | 27.026 | 05 | 1.000 | 5 | 0.600 |
| HL560M1 56 | 5 | 12.172 | 05 | 14.160 | 5 | 34.738 | 5 | 43.142 | 05 | 0.646 | 5 | 0.969 |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| HH010P1 1 | 5 | 9.722 | 05 | 3.394 | 5 | 41.716 | 5 | 14.332 | 05 | 0.867 | 5 | 0.129 |
| HH070P1 7 | 5 | 7.029 | 00 | * | 5 | 25.612 | 0 | * | 05 | 1.100 | 5 | 0.400 |
| HH140P1 14 | 4 | 16.093 | 05 | 6.529 | 4 | 72.129 | 5 | 31.927 | 05 | 0.200 | 5 | 0.100 |
| HH280P1 28 | 3 | 9.100 | 05 | 8.698 | 3 | 30.300 | 5 | 28.321 | 05 | 0.168 | 5 | 0.501 |
| HH560P1 56 | 5 | 5.408 | 05 | 6.509 | 5 | 33.572 | 5 | 17.936 | 05 | 0.268 | 5 | 0.740 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| HL010P1 1 | 5 | 9.181 | 05 | 8.198 | 5 | 42.621 | 5 | 27.571 | 05 | 1.692 | 5 | 1.973 |
| HL070P1 7 | 5 | 5.032 | 05 | 9.226 | 5 | 16.616 | 5 | 31.620 | 05 | 0.600 | 5 | 0.500 |
| HL140P1 14 | 5 | 11.637 | 05 | 14.545 | 5 | 47.970 | 5 | 5.486 | 05 | 0.500 | 5 | 0.700 |
| HL280P1 28 | 5 | 2.907 | 05 | 4.286 | 5 | 11.263 | 5 | 10.343 | 00 | * | 5 | 2.008 |
| HL560P1 56 | 5 | 3.885 | 05 | 13.499 | 5 | 10.772 | 5 | 49.505 | 05 | 0.860 | 5 | 1.205 |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| HH01PH1 1 | 5 | 6.298 | 05 | 12.800 | 5 | 20.700 | 5 | 43.300 | 05 | 0.300 | 5 | 0.360 |
| HH07PH1 7 | 5 | 4.600 | 05 | 15.300 | 5 | 22.200 | 5 | 55.100 | 05 | 0.220 | 5 | 1.000 |
| HH14PH1 14 | 5 | 5.540 | 05 | 14.260 | 5 | 26.700 | 5 | 43.400 | 05 | 0.414 | 5 | 0.250 |
| HH28PH1 28 | 5 | 4.817 | 05 | 4.240 | 5 | 18.500 | 5 | 21.870 | 05 | 0.820 | 5 | 0.460 |
| HH56PH1 56 | 5 | 8.500 | 05 | 5.820 | 5 | 34.400 | 5 | 32.800 | 05 | 0.250 | 5 | 0.370 |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| HL01PH1 1 | 5 | 4.200 | 05 | 8.800 | 5 | 29.100 | 5 | 18.600 | 05 | 0.900 | 5 | 0.400 |
| HL07PH1 7 | 5 | 4.030 | 05 | 10.500 | 5 | 18.500 | 5 | 54.000 | 05 | 0.500 | 5 | 0.800 |
| HL14PH1 14 | 5 | 3.700 | 05 | 8.500 | 5 | 16.300 | 5 | 29.600 | 05 | 1.040 | 5 | 2.300 |
| HL28PH1 28 | 5 | 10.500 | 05 | 3.700 | 5 | 38.300 | 5 | 16.800 | 05 | 0.750 | 5 | 0.380 |
| HL56PH1 56 | 5 | 3.610 | 05 | 5.480 | 5 | 17.000 | 5 | 17.400 | 05 | 0.660 | 5 | 0.400 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| HH01PL1 1 | 5 | 7.300 | 05 | 7.800 | 5 | 33.500 | 5 | 28.000 | 05 | 0.740 | 5 | 0.100 |
| HH07PL1 7 | 5 | 0.320 | 05 | 5.100 | 5 | 18.000 | 5 | 8.000 | 05 | 0.350 | 5 | 2.500 |
| HH14PL1 14 | 5 | 5.700 | 05 | 7.300 | 5 | 24.900 | 5 | 12.400 | 05 | 0.540 | 5 | 1.200 |
| HH28PL1 28 | 5 | 8.300 | 05 | 7.300 | 5 | 31.000 | 5 | 26.100 | 05 | 0.740 | 5 | 0.460 |
| HH56PL1 56 | 5 | 12.400 | 05 | 7.600 | 5 | 48.100 | 5 | 24.600 | 05 | 0.300 | 5 | 0.200 |
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| HL01PL1 1 | 5 | 3.800 | 05 | 12.400 | 5 | 23.400 | 5 | 36.600 | 05 | 0.450 | 5 | 0.540 |
| HL07PL1 7 | 5 | 11.100 | 05 | 10.400 | 5 | 47.700 | 5 | 33.000 | 05 | 0.500 | 5 | 0.700 |
| HL14PL1 14 | 5 | 5.410 | 05 | 1.480 | 5 | 19.900 | 5 | 8.790 | 05 | 0.525 | 5 | 0.800 |
| HL28PL1 28 | 5 | 4.680 | 05 | 7.680 | 5 | 18.600 | 5 | 27.900 | 05 | 0.643 | 5 | 1.000 |
| HL56PL1 56 | 5 | 5.100 | 05 | 4.940 | 5 | 25.000 | 5 | 16.300 | 05 | 1.200 | 5 | 0.700 |
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| HH01PM1 1 | 5 | 8.300 | 05 | 6.100 | 5 | 48.800 | 5 | 18.700 | 05 | 0.340 | 5 | 0.340 |
| HH07PM1 7 | 5 | 12.400 | 05 | 3.320 | 5 | 44.800 | 5 | 15.700 | 05 | 0.490 | 5 | 0.700 |
| HH14PM1 14 | 5 | 9.700 | 05 | 2.600 | 5 | 25.600 | 5 | 12.400 | 05 | 1.070 | 0 | * |
| HH28PM1 28 | 5 | 5.940 | 05 | 10.400 | 5 | 23.600 | 5 | 35.000 | 05 | 0.450 | 5 | 0.500 |
| HH56PM1 56 | 5 | 11.900 | 05 | 2.860 | 5 | 39.800 | 5 | 8.680 | 05 | 0.370 | 5 | 1.250 |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| HL01PM1 1 | 5 | 4.760 | 05 | 6.900 | 5 | 14.700 | 5 | 29.290 | 05 | 0.340 | 5 | 1.300 |
| HL07PM1 7 | 5 | 14.500 | 05 | 4.690 | 5 | 56.500 | 5 | 17.600 | 05 | 0.800 | 5 | 0.700 |
| HL14PM1 14 | 5 | 3.700 | 05 | 4.900 | 5 | 19.000 | 5 | 14.800 | 05 | 0.770 | 5 | 0.470 |
| HL28PM1 28 | 5 | 14.720 | 05 | 8.000 | 5 | 65.000 | 5 | 27.000 | 05 | 0.500 | 5 | 0.500 |
| HL56PM1 56 | 5 | 2.490 | 05 | 5.670 | 5 | 20.600 | 5 | 17.100 | 05 | 1.540 | 5 | 1.370 |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| HH01SH1 1 | 5 | 26.950 | 05 | 25.640 | 5 | 97.020 | 5 | 99.300 | 05 | 0.420 | 5 | 0.460 |
| HH07SH1 7 | 5 | 20.490 | 05 | 7.130 | 5 | ****** | 5 | 23.300 | 05 | 0.500 | 5 | 0.630 |
| HH14SH1 14 | 5 | 9.600 | 05 | 4.590 | 5 | 34.400 | 5 | 15.560 | 05 | 1.660 | 5 | 0.970 |
| HH28SH1 28 | 5 | 12.500 | 05 | 30.100 | 5 | 49.080 | 5 | 96.930 | 05 | 0.430 | 5 | 0.830 |
| HH56SH1 56 | 5 | 5.150 | 05 | 11.850 | 5 | 27.200 | 5 | 46.050 | 05 | 0.410 | 5 | 0.250 |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| HL01SH1 1 | 5 | 17.170 | 05 | 8.930 | 5 | 68.880 | 5 | 31.150 | 05 | 0.520 | 5 | 0.630 |
| HL07SH1 7 | 5 | 13.180 | 05 | 9.640 | 5 | 45.400 | 5 | 33.120 | 05 | 0.370 | 5 | 0.310 |
| HL14SH1 14 | 5 | 8.090 | 05 | 17.580 | 5 | 29.400 | 5 | 66.890 | 05 | 0.850 | 5 | 1.220 |
| HL28SH1 28 | 5 | 13.440 | 05 | 5.130 | 5 | 51.040 | 5 | 13.170 | 05 | 0.620 | 5 | 0.700 |
| HL56SH1 56 | 5 | 16.650 | 05 | 16.500 | 5 | 71.330 | 5 | 72.880 | 05 | 0.210 | 5 | 0.670 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| HH01SM2 1 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH01SM1 1 | 5 | 4.640 | 05 | 7.170 | 5 | 23.750 | 5 | 22.470 | 05 | 0.692 | 5 | 1.157 |
| HH07SM1 7 | 5 | 7.170 | 05 | 15.370 | 5 | 31.750 | 5 | 55.940 | 05 | 0.550 | 5 | 0.660 |
| HH07SM2 7 | 0 | * | 05 | 2.960 | 0 | * | 0 | * | 00 | * | 0 | * |
| HH14SM1 14 | 5 | 6.730 | 05 | 4.710 | 5 | 27.930 | 5 | 15.800 | 05 | 0.264 | 5 | 0.555 |
| HH14SM2 15 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH28SM2 28 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH28SM1 28 | 5 | 23.000 | 05 | 5.320 | 5 | 81.830 | 5 | 19.630 | 05 | 1.800 | 5 | 1.130 |
| HH56SM2 56 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH56SM1 61 | 5 | 15.790 | 05 | 14.680 | 5 | 65.250 | 5 | 54.320 | 05 | 0.610 | 5 | 1.130 |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| HL01SM1 1 | 5 | 10.030 | 05 | 1.730 | 5 | 85.370 | 5 | 6.840 | 05 | 0.740 | 5 | 1.300 |
| HL01SM2 1 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL07SM2 7 | 5 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL07SM1 7 | 5 | 14.860 | 05 | 2.960 | 5 | 65.570 | 5 | 13.090 | 05 | 0.690 | 5 | 0.670 |
| HL14SM1 14 | 5 | 10.380 | 05 | 11.120 | 5 | 37.710 | 5 | 21.770 | 05 | 0.640 | 5 | 0.710 |
| HL14SM2 15 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL28SM2 28 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL28SM1 28 | 5 | 21.000 | 05 | 3.770 | 5 | 77.030 | 5 | 15.110 | 05 | 0.730 | 5 | 0.860 |
| HL56SM2 56 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL56SM1 61 | 5 | 7.350 | 05 | 7.300 | 5 | 33.290 | 5 | 27.990 | 05 | 0.590 | 5 | 1.190 |
| WATER 100.0% 50°C | | | | | | | | | | | | |
| HH01WP2 1 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH01WP1 1 | 5 | 17.420 | 05 | 5.640 | 5 | 66.240 | 4 | 27.700 | 05 | 0.760 | 5 | 0.870 |
| HH07WP1 7 | 5 | 15.120 | 05 | 4.630 | 5 | 49.540 | 5 | 19.240 | 05 | 0.820 | 5 | 1.620 |
| HH07WP2 7 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH14WP2 14 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH14WP1 14 | 7 | 11.700 | 07 | 12.400 | 7 | 34.600 | 7 | 73.700 | 05 | 0.450 | 5 | 0.460 |
| HH28WP1 28 | 5 | 5.350 | 05 | 4.220 | 5 | 23.650 | 5 | 15.230 | 05 | 0.990 | 5 | 1.910 |
| HH28WP2 28 | 5 | 8.910 | 05 | 17.770 | 5 | 50.590 | 5 | 68.810 | 05 | 0.410 | 5 | 0.700 |
| HH56WP2 56 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HH56WP1 56 | 5 | 13.200 | 07 | 17.780 | 5 | 51.900 | 7 | 48.530 | 05 | 0.710 | 5 | 0.950 |
| WATER 100.0% 23°C | | | | | | | | | | | | |
| HL01WP1 1 | 5 | 8.030 | 05 | 12.940 | 5 | 38.450 | 5 | 46.950 | 05 | 1.570 | 5 | 0.700 |
| HL01WP2 1 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL07WP2 7 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL07WP1 7 | 5 | 9.840 | 05 | 2.990 | 5 | 39.550 | 5 | 9.610 | 05 | 0.780 | 5 | 0.730 |
| HL14WP1 14 | 7 | 21.000 | 07 | 21.300 | 7 | 81.000 | 7 | 7* | 05 | 1.100 | 5 | 0.300 |
| HL14WP2 14 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL28WP1 28 | 5 | 10.250 | 05 | 3.980 | 5 | 44.760 | 5 | 9.570 | 05 | 0.610 | 5 | 0.780 |
| HL28WP2 28 | 5 | 2.990 | 05 | 10.600 | 5 | 9.610 | 5 | 41.100 | 05 | 1.060 | 5 | 0.710 |
| HL56WP2 56 | 0 | * | 00 | * | 0 | * | 0 | * | 00 | * | 0 | * |
| HL56WP1 56 | 5 | 5.540 | 05 | 11.870 | 5 | 26.030 | 5 | 46.470 | 05 | 1.340 | 5 | 1.220 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| HH01XM1 1 | 5 | 28.480 | 05 | 12.350 | 5 | * | 5 | 44.320 | 05 | 0.390 | 5 | 0.500 |
| HH07XM1 7 | 5 | 8.960 | 05 | 10.440 | 5 | 31.200 | 5 | 31.810 | 05 | 0.840 | 5 | 1.100 |
| HH14XM1 14 | 5 | 11.160 | 05 | 15.250 | 5 | 36.840 | 5 | 51.410 | 05 | 1.650 | 5 | 1.280 |
| HH28XM1 28 | 5 | 10.200 | 05 | 5.250 | 5 | 44.800 | 5 | 21.680 | 05 | 0.190 | 5 | 0.480 |
| HH56XM1 55 | 5 | 15.230 | 05 | 9.780 | 5 | 58.540 | 5 | 38.210 | 05 | 0.590 | 5 | 0.440 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| HL01XM1 1 | 5 | 10.450 | 05 | 8.680 | 5 | 42.490 | 5 | 32.820 | 05 | 0.390 | 5 | 0.380 |
| HL07XM1 7 | 5 | 7.340 | 05 | 13.250 | 5 | 30.050 | 5 | 47.000 | 05 | 0.470 | 5 | 0.980 |
| HL14XM1 14 | 5 | 9.800 | 05 | 6.890 | 5 | 34.910 | 5 | 23.360 | 05 | 1.790 | 5 | 1.720 |
| HL28XM1 28 | 5 | 17.390 | 05 | 2.890 | 5 | 94.290 | 5 | 12.050 | 05 | 0.440 | 5 | 0.490 |
| HL56XM1 55 | 5 | 9.980 | 05 | 5.050 | 5 | 39.160 | 5 | 19.470 | 05 | 1.060 | 5 | 0.970 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | |
| HH01AM1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH01AM2 1 | 5 | 1.800 | 5 | 1.190 | 5 | 0.800 | 5 | 0.700 |
| HH07AM2 7 | 5 | 0.850 | 5 | 1.700 | 5 | 0.300 | 5 | 0.500 |
| HH07AM1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH14AM1 14 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH14AM2 14 | 5 | 2.790 | 5 | 1.150 | 5 | 1.400 | 5 | 0.700 |
| HH28AM1 29 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH28AM2 29 | 5 | 2.640 | 5 | 2.500 | 5 | 1.000 | 5 | 0.800 |
| HH56AM1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH56AM2 56 | 5 | 2.220 | 5 | 3.390 | 5 | 1.100 | 5 | 0.700 |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | |
| HL01AM2 1 | 5 | 1.600 | 5 | 1.430 | 5 | 0.400 | 5 | 0.400 |
| HL01AM1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL07AM2 7 | 5 | 0.330 | 5 | 3.000 | 5 | 0.300 | 5 | 0.400 |
| HL07AM1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL14AM2 14 | 5 | 2.310 | 5 | 1.850 | 5 | 1.000 | 5 | 0.900 |
| HL14AM1 14 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL28AM1 29 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL28AM2 29 | 5 | 7.110 | 5 | 0.870 | 5 | 0.500 | 5 | 0.300 |
| HL56AM1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL56AM2 56 | 5 | 2.590 | 5 | 2.070 | 5 | 0.800 | 5 | 0.300 |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | |
| HH01BM1 1 | 5 | 2.380 | 5 | 2.390 | 5 | 1.000 | 5 | 0.600 |
| HH07BM1 7 | 5 | 1.480 | 5 | 3.700 | 5 | 0.300 | 5 | 0.500 |
| HH14BM1 13 | 5 | 1.480 | 5 | 1.390 | 5 | 1.100 | 5 | 0.800 |
| HH28BM1 28 | 5 | 2.150 | 5 | 2.280 | 5 | 0.300 | 5 | 0.500 |
| HH56BM1 56 | 5 | 1.150 | 5 | 2.330 | 5 | 0.800 | 5 | 0.400 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | |
| HL01BM1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL07BM1 7 | 5 | 0.830 | 5 | 2.260 | 5 | 0.700 | 5 | 0.900 |
| HL14BM1 14 | 5 | * | 5 | 1.990 | 5 | * | 5 | 1.600 |
| HL28BM1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL56BM1 56 | 5 | 1.080 | 5 | 0.690 | 5 | 0.300 | 5 | 0.400 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | |
| HH01DH1 1 | 5 | 0.750 | 5 | 1.720 | 5 | 2.100 | 5 | 1.670 |
| HH07DH1 7 | 5 | 0.804 | 5 | 1.500 | 5 | 0.550 | 5 | 1.400 |
| HH14DH1 14 | 5 | 1.812 | 5 | 2.300 | 5 | 2.100 | 5 | 2.400 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER VS M | STD DEV YIELD M | NUMBER VS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| | | | 1 2 DICHLOROETHANE .8% 50°C | | | | | |
| HH28DH1 28 | 5 | 1.120 | 5 | 0.730 | 5 | 0.930 | 5 | 0.800 |
| HH56DH1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | 1 2 DICHLOROETHANE .8% 23°C | | | | | |
| HL01DH1 1 | 5 | 2.120 | 5 | 0.390 | 5 | 0.900 | 5 | 0.010 |
| HL07DH1 7 | 5 | 1.720 | 5 | 3.600 | 5 | 0.400 | 5 | 1.500 |
| HL14DH1 14 | 5 | 1.560 | 5 | 1.780 | 5 | 1.500 | 5 | 1.700 |
| HL28DH1 28 | 5 | 1.820 | 5 | 2.750 | 5 | 1.500 | 5 | 1.400 |
| HL56DH1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | 1 2 DICHLOROETHANE .1% 50°C | | | | | |
| HH01DL1 1 | 5 | 3.230 | 5 | 1.720 | 5 | 1.380 | 5 | 1.550 |
| HH07DL1 7 | 5 | 3.990 | 5 | 1.010 | 5 | 2.100 | 5 | 0.500 |
| HH14DL1 14 | 5 | 1.450 | 5 | 3.250 | 5 | 0.500 | 5 | 0.600 |
| HH28DL1 28 | 5 | 1.660 | 5 | 2.330 | 5 | 1.400 | 5 | 0.970 |
| HH56DL1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | 1 2 DICHLOROETHANE .1% 23°C | | | | | |
| HL01DL1 1 | 5 | 0.740 | 5 | 1.350 | 5 | 1.360 | 5 | 0.690 |
| HL07DL1 7 | 5 | 2.500 | 5 | 1.100 | 5 | 4.600 | 5 | 3.400 |
| HL14DL1 14 | 5 | 2.340 | 5 | 1.570 | 5 | 1.400 | 5 | 0.600 |
| HL28DL1 28 | 5 | 1.068 | 5 | 2.060 | 5 | 0.700 | 5 | 0.600 |
| HL56DL1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | 1 2 DICHLOROETHANE .5% 50°C | | | | | |
| HH01DM1 1 | 5 | 0.750 | 5 | 3.030 | 5 | 1.300 | 5 | 1.400 |
| HH07DM1 7 | 5 | 1.600 | 5 | 1.900 | 5 | 2.400 | 5 | 2.300 |
| HH14DM1 14 | 5 | 1.600 | 5 | 1.240 | 5 | 2.500 | 5 | 2.000 |
| HH28DM1 28 | 5 | 1.400 | 5 | 0.930 | 5 | 1.400 | 5 | 1.100 |
| HH56DM1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | 1 2 DICHLOROETHANE .5% 23°C | | | | | |
| HL01DM1 1 | 5 | 1.700 | 5 | 1.400 | 5 | 1.600 | 5 | 0.800 |
| HL07DM1 7 | 5 | 2.311 | 5 | 2.333 | 5 | 1.200 | 5 | * |
| HL14DM1 14 | 5 | 0.700 | 5 | 0.800 | 5 | 1.800 | 5 | 0.800 |
| HL28DM1 28 | 5 | 1.900 | 5 | 1.300 | 5 | 0.900 | 5 | 1.000 |
| HL56DM1 56 | 5 | * | 5 | * | 5 | * | 5 | * |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| | | | FURFURAL 8.0% 50°C | | | | | |
| HH01FH1 1 | 5 | 2.630 | 5 | 2.450 | 5 | 0.004 | 5 | 0.300 |
| HH07FH1 7 | 5 | 1.860 | 5 | 2.290 | 5 | 0.400 | 5 | 0.400 |
| HH14FH1 14 | 5 | 0.690 | 5 | 2.880 | 5 | 0.400 | 5 | 0.700 |
| HH28FH1 28 | 5 | 0.920 | 5 | 0.800 | 5 | 1.300 | 5 | 0.400 |
| HH56FH1 56 | 5 | 3.490 | 5 | 2.440 | 5 | 1.100 | 5 | 0.900 |
| | | | FURFURAL 8.0% 23°C | | | | | |
| HL01FH1 1 | 5 | 3.350 | 5 | 1.340 | 5 | 0.400 | 5 | 0.600 |
| HL07FH1 7 | 5 | 0.280 | 5 | 1.000 | 5 | 0.500 | 5 | 0.400 |
| HL14FH1 14 | 5 | 0.462 | 5 | 1.690 | 5 | 0.400 | 5 | 0.400 |
| HL28FH1 28 | 5 | 2.230 | 5 | 0.570 | 5 | 0.570 | 5 | 1.000 |
| HL56FH1 56 | 5 | 1.440 | 5 | 1.010 | 5 | 0.900 | 5 | 0.200 |
| | | | FURFURAL 1.0% 50°C | | | | | |
| HH01FL1 1 | 5 | 2.582 | 5 | 0.780 | 5 | 0.600 | 5 | 0.400 |
| HH07FL1 7 | 5 | 1.730 | 5 | 1.880 | 5 | 0.100 | 5 | 0.400 |
| HH14FL1 14 | 5 | 3.180 | 5 | 2.200 | 5 | 0.140 | 5 | 0.140 |
| HH28FL1 28 | 5 | 1.400 | 5 | 1.670 | 5 | 0.500 | 5 | 1.500 |
| HH56FL1 56 | 5 | 1.410 | 5 | 2.440 | 5 | 0.400 | 5 | 0.400 |
| | | | FURFURAL 1.0% 23°C | | | | | |
| HL01FL1 1 | 5 | 2.580 | 5 | 0.780 | 5 | 1.000 | 5 | 0.500 |
| HL07FL1 7 | 5 | 2.000 | 5 | 0.980 | 5 | 0.090 | 5 | 0.040 |
| HL14FL1 14 | 5 | 4.210 | 5 | 2.160 | 5 | 0.022 | 5 | 0.090 |
| HL28FL2 28 | 5 | 3.170 | 5 | 4.230 | 5 | 0.090 | 5 | * |
| HL28FL1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL56FL1 56 | 5 | 1.150 | 5 | 3.010 | 5 | * | 5 | 0.800 |
| | | | FURFURAL 4.0% 50°C | | | | | |
| HH01FM1 1 | 5 | 0.660 | 5 | 4.870 | 5 | 0.400 | 5 | 0.100 |
| HH07FM1 7 | 5 | 0.570 | 5 | 1.620 | 5 | 0.090 | 5 | 4.000 |
| HH14FM1 14 | 5 | 0.690 | 5 | 1.010 | 5 | 0.400 | 5 | 0.400 |
| HH28FM1 28 | 5 | * | 5 | 0.680 | 5 | 0.400 | 5 | 1.200 |
| HH56FM1 56 | 5 | 1.440 | 5 | 1.620 | 5 | 0.040 | 5 | 0.400 |
| | | | FURFURAL 4.0% 23°C | | | | | |
| HL01FM1 1 | 5 | 2.270 | 5 | 1.480 | 5 | 0.400 | 5 | 0.900 |
| HL07FM1 7 | 5 | 1.150 | 5 | 1.410 | 5 | 0.400 | 5 | * |
| HL14FM1 14 | 5 | 1.410 | 5 | 1.410 | 5 | 1.600 | 5 | * |
| HL28FM1 28 | 5 | 0.610 | 5 | 2.390 | 5 | 0.001 | 5 | 1.000 |
| HL56FM1 56 | 5 | 1.670 | 5 | 2.000 | 5 | 0.400 | 5 | 0.800 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | |
| HH01MH1 1 | 5 | 2.160 | 5 | 0.800 | 5 | * | 5 | 1.700 |
| HH07MH1 7 | 5 | 2.580 | 5 | 2.340 | 5 | 0.600 | 5 | 0.600 |
| HH14MH1 14 | 5 | 2.570 | 5 | 1.110 | 5 | 1.000 | 5 | 0.800 |
| HH28MH1 28 | 5 | 3.090 | 5 | 2.150 | 5 | 0.700 | 5 | 0.400 |
| HH56MH1 57 | 5 | 5.580 | 5 | 2.090 | 5 | 0.400 | 5 | 0.700 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | |
| HL01MH1 1 | 5 | 2.620 | 5 | 0.590 | 5 | 0.400 | 5 | 0.400 |
| HL07MH1 7 | 5 | 2.050 | 5 | 1.000 | 5 | 1.600 | 5 | 0.400 |
| HL14MH1 14 | 5 | 3.590 | 5 | 2.150 | 5 | 0.400 | 5 | 0.600 |
| HL28MH1 28 | 5 | 1.730 | 5 | 2.420 | 5 | 0.300 | 5 | 0.400 |
| HL56MH1 57 | 5 | 1.890 | 5 | 1.040 | 5 | 0.400 | 5 | 0.600 |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | |
| HH01ML1 1 | 5 | 0.780 | 5 | 3.730 | 5 | 0.600 | 5 | 0.600 |
| HH07ML1 7 | 5 | 3.160 | 5 | 3.430 | 5 | 0.060 | 5 | 0.040 |
| HH14ML1 14 | 5 | 1.730 | 5 | 1.660 | 5 | 0.600 | 5 | 0.400 |
| HH28ML1 28 | 5 | 0.960 | 5 | 1.720 | 5 | 0.700 | 5 | 2.590 |
| HH56ML1 57 | 5 | 3.630 | 5 | 3.630 | 5 | 0.600 | 5 | 1.000 |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | |
| HL01ML1 1 | 5 | 1.480 | 5 | 2.030 | 5 | 0.300 | 5 | 0.800 |
| HL07ML1 7 | 5 | 2.860 | 5 | 3.680 | 5 | 0.500 | 5 | 0.400 |
| HL14ML1 14 | 5 | 3.240 | 5 | 1.480 | 5 | 0.300 | 5 | 0.600 |
| HL28ML1 28 | 5 | 1.440 | 5 | 3.630 | 5 | 0.600 | 5 | 0.300 |
| HL56ML1 57 | 5 | 2.830 | 5 | 4.510 | 5 | 0.800 | 5 | 0.900 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | |
| HH01MM1 1 | 5 | 4.360 | 5 | 2.590 | 5 | 1.400 | 5 | 0.400 |
| HH07MM1 7 | 5 | 1.650 | 5 | 0.610 | 5 | 0.700 | 5 | 0.300 |
| HH14MM1 14 | 5 | 1.220 | 5 | 3.330 | 5 | 0.500 | 5 | 0.900 |
| HH28MM1 28 | 5 | 1.560 | 5 | 0.780 | 5 | 0.900 | 5 | 0.400 |
| HH56MM1 57 | 5 | 1.060 | 5 | 2.880 | 5 | 0.300 | 5 | 0.700 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | |
| HL01MM1 1 | 5 | 2.390 | 5 | 1.930 | 5 | 0.300 | 5 | 0.900 |
| HL07MM1 7 | 5 | 1.520 | 5 | 2.340 | 5 | 0.400 | 5 | 0.700 |
| HL14MM1 14 | 5 | 1.480 | 5 | 1.600 | 5 | 1.100 | 5 | 0.600 |
| HL28MM1 28 | 5 | * | 5 | 6.730 | 5 | 0.600 | 5 | 0.600 |
| HL56MM1 57 | 5 | 2.350 | 5 | 4.160 | 5 | 0.400 | 5 | 0.700 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| | | | ASTM #2 OIL SATURATED 50°C | | | | | |
| HH010M1 1 | 5 | 0.440 | 5 | 1.440 | 5 | 0.700 | 5 | 0.600 |
| HH070M1 7 | 5 | 1.430 | 5 | 2.350 | 5 | 0.600 | 5 | 0.300 |
| HH140M1 13 | 5 | 1.490 | 5 | 1.890 | 5 | 0.400 | 5 | 0.900 |
| HH280M1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH560M1 56 | 5 | 0.770 | 5 | 1.630 | 5 | 0.400 | 5 | 0.400 |
| | | | ASTM #2 OIL SATURATED 23°C | | | | | |
| HL010M1 1 | 5 | 1.150 | 5 | 1.660 | 5 | 0.900 | 5 | 0.400 |
| HL070M1 7 | 5 | 0.720 | 5 | 0.830 | 5 | 0.900 | 5 | 0.600 |
| HL140M1 13 | 5 | 1.150 | 5 | 1.480 | 5 | 0.700 | 5 | 0.400 |
| HL280M1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL560M1 56 | 5 | 5.020 | 5 | 4.770 | 5 | 1.000 | 5 | 0.800 |
| | | | ASTM #2 OIL 100.0% 50°C | | | | | |
| HH010P1 1 | 5 | 1.790 | 5 | 1.760 | 5 | 1.000 | 5 | 0.800 |
| HH070P1 7 | 5 | 1.000 | 5 | * | 5 | 0.400 | 5 | * |
| HH140P1 14 | 5 | 2.880 | 5 | 1.670 | 5 | 0.800 | 5 | 0.600 |
| HH280P1 28 | 5 | 1.010 | 5 | 0.610 | 5 | 0.800 | 5 | 0.500 |
| HH560P1 56 | 5 | 3.210 | 5 | 2.070 | 5 | 0.300 | 5 | 1.000 |
| | | | ASTM #2 OIL 100.0% 23°C | | | | | |
| HL010P1 1 | 5 | 2.500 | 5 | 2.620 | 5 | 0.400 | 5 | * |
| HL070P1 7 | 5 | 1.210 | 5 | 1.150 | 5 | 0.600 | 5 | 0.300 |
| HL140P1 14 | 5 | 0.870 | 5 | 0.780 | 5 | 1.200 | 5 | 0.300 |
| HL280P1 28 | 5 | 1.310 | 5 | 0.570 | 5 | 1.000 | 5 | * |
| HL560P1 56 | 5 | 2.240 | 5 | 2.850 | 5 | 0.500 | 5 | * |
| | | | PHENOL 8.0% 50°C | | | | | |
| HH01PH1 1 | 5 | 3.820 | 5 | 2.800 | 5 | 0.400 | 5 | 1.100 |
| HH07PH1 7 | 5 | 1.190 | 5 | 2.210 | 5 | 1.900 | 5 | 0.890 |
| HH14PH1 14 | 5 | 2.110 | 5 | 3.810 | 5 | 0.480 | 5 | 2.060 |
| HH28PH1 28 | 5 | 1.010 | 5 | 3.010 | 5 | 1.640 | 5 | 0.840 |
| HH56PH1 56 | 5 | 1.350 | 5 | 1.070 | 5 | 0.900 | 5 | 0.980 |
| | | | PHENOL 8.0% 23°C | | | | | |
| HL01PH1 1 | 5 | 1.660 | 5 | 2.180 | 5 | 0.700 | 5 | 1.000 |
| HL07PH1 7 | 5 | 1.560 | 5 | 3.840 | 5 | 1.100 | 5 | 1.500 |
| HL14PH1 14 | 5 | 0.840 | 5 | 1.850 | 5 | 0.085 | 5 | 0.086 |
| HL28PH1 28 | 5 | 0.400 | 5 | 2.500 | 5 | 0.900 | 5 | 0.500 |
| HL56PH1 56 | 5 | 2.310 | 5 | 1.980 | 5 | 0.500 | 5 | 1.100 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 1.0% 50°C | | | | | |
| HH01PL1 1 | 5 | 3.400 | 5 | 1.760 | 5 | 1.700 | 5 | 3.600 |
| HH07PL1 7 | 5 | 1.730 | 5 | 1.780 | 5 | 1.000 | 5 | 0.900 |
| HH14PL1 14 | 5 | 1.350 | 5 | 2.830 | 5 | 0.500 | 5 | 1.800 |
| HH28PL1 28 | 5 | 1.940 | 5 | 2.930 | 5 | 1.800 | 5 | 0.900 |
| HH56PL1 56 | 5 | 2.240 | 5 | 2.270 | 5 | 1.000 | 5 | 0.500 |
| | | | PHENOL 1.0% 23°C | | | | | |
| HL01PL1 1 | 5 | 1.338 | 5 | 3.690 | 5 | 1.460 | 5 | 0.700 |
| HL07PL1 7 | 5 | 1.210 | 5 | 1.541 | 5 | 0.510 | 5 | 0.130 |
| HL14PL1 14 | 5 | 0.950 | 5 | 0.730 | 5 | 1.820 | 5 | 1.500 |
| HL28PL1 28 | 5 | 1.940 | 5 | 2.720 | 5 | 0.620 | 5 | 1.760 |
| HL56PL1 56 | 5 | 2.370 | 5 | 1.540 | 5 | 0.800 | 5 | 1.000 |
| | | | PHENOL 4.0% 50°C | | | | | |
| HH01PM1 1 | 5 | 0.950 | 5 | 1.560 | 5 | 1.000 | 5 | 0.970 |
| HH07PM1 7 | 5 | 1.310 | 5 | 1.960 | 5 | 0.700 | 5 | 0.870 |
| HH14PM1 14 | 5 | 4.700 | 5 | 2.030 | 5 | 2.100 | 5 | 1.200 |
| HH28PM1 28 | 5 | 0.810 | 5 | 2.320 | 5 | 1.300 | 5 | 0.480 |
| HH56PM1 56 | 5 | 1.720 | 5 | 0.770 | 5 | 0.930 | 5 | 0.620 |
| | | | PHENOL 4.0% 23°C | | | | | |
| HL01PM1 1 | 5 | 1.790 | 5 | 2.350 | 5 | 1.500 | 5 | 0.380 |
| HL07PM1 7 | 5 | 2.340 | 5 | 3.375 | 5 | 1.390 | 5 | 1.230 |
| HL14PM1 14 | 5 | 1.800 | 5 | 1.420 | 5 | 1.500 | 5 | 1.600 |
| HL28PM1 28 | 5 | 2.210 | 5 | 1.080 | 5 | 1.240 | 5 | 0.600 |
| HL56PM1 56 | 5 | 1.840 | 5 | 1.890 | 5 | 1.700 | 5 | 0.920 |
| | | | SODIUM CHLORIDE 35.0% 50°C | | | | | |
| HH01SH1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH07SH1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH14SH1 14 | 5 | 1.980 | 5 | 2.150 | 5 | 1.000 | 5 | 0.500 |
| HH28SH1 28 | 5 | 0.820 | 5 | * | 5 | 1.300 | 5 | * |
| HH56SH1 56 | 5 | 3.580 | 5 | 3.640 | 5 | 0.700 | 5 | 0.900 |
| | | | SODIUM CHLORIDE 35.0% 23°C | | | | | |
| HL01SH1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL07SH1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL14SH1 14 | 5 | 1.720 | 5 | 3.340 | 5 | 1.100 | 5 | 0.800 |
| HL28SH1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL56SH1 56 | 5 | 2.890 | 5 | 0.960 | 5 | 0.700 | 5 | 0.030 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| | | | SODIUM CHLORIDE 10.0% 50°C | | | | | |
| HH01SM2 1 | 5 | 2.410 | 5 | 1.690 | 5 | 0.700 | 5 | 1.200 |
| HH01SM1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH07SM1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH07SM2 7 | 5 | 2.310 | 5 | 1.850 | 5 | 0.400 | 5 | 0.600 |
| HH14SM1 14 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH14SM2 15 | 5 | 1.930 | 5 | 1.250 | 5 | 0.800 | 5 | 0.300 |
| HH28SM2 28 | 5 | 0.800 | 5 | 3.280 | 5 | 7.000 | 5 | 0.700 |
| HH28SM1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH56SM2 56 | 5 | 3.290 | 5 | 1.560 | 5 | 1.200 | 5 | 0.400 |
| HH56SM1 61 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | SODIUM CHLORIDE 10.0% 23°C | | | | | |
| HL01SM1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL01SM2 1 | 5 | 1.340 | 5 | 1.780 | 5 | 0.600 | 5 | 0.800 |
| HL07SM1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL07SM2 7 | 5 | 0.360 | 5 | 0.360 | 5 | 0.900 | 5 | 0.600 |
| HL14SM1 14 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL14SM2 15 | 5 | 2.790 | 5 | 2.880 | 5 | 0.800 | 5 | 0.700 |
| HL28SM2 28 | 5 | 1.150 | 5 | 1.680 | 5 | 0.600 | 5 | 0.600 |
| HL28SM1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL56SM2 56 | 5 | 2.050 | 5 | 2.940 | 5 | 0.300 | 5 | 0.600 |
| HL56SM1 61 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | WATER 100.0% 50°C | | | | | |
| HH01WP2 1 | 5 | 2.430 | 5 | 2.410 | 5 | 0.400 | 5 | 0.600 |
| HH01WP1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH07WP1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH07WP2 7 | 5 | 0.910 | 5 | 1.280 | 5 | 1.000 | 5 | 0.700 |
| HH14WP1 14 | 5 | 3.000 | 5 | 1.950 | 5 | * | 5 | * |
| HH14WP2 14 | 5 | 3.710 | 5 | 1.430 | 5 | 0.300 | 5 | 0.700 |
| HH28WP2 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH28WP1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HH56WP2 56 | 5 | 2.380 | 5 | 1.710 | 5 | 0.800 | 5 | 0.700 |
| HH56WP1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| | | | WATER 100.0% 23°C | | | | | |
| HL01WP1 1 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL01WP2 1 | 5 | 1.780 | 5 | 3.500 | 5 | 0.700 | 5 | 0.500 |
| HL07WP2 7 | 5 | 0.750 | 5 | 1.100 | 5 | 0.500 | 5 | 1.000 |
| HL07WP1 7 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL14WP1 14 | 5 | 3.500 | 5 | 4.800 | 5 | * | 5 | * |
| HL14WP2 14 | 5 | 2.170 | 5 | 2.010 | 5 | 0.700 | 5 | 0.030 |

HIGH DENSITY POLYETHYLENE: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER YS M | STD DEV YIELD M | NUMBER YS T | STD DEV YIELD T | NUMBER EY M | STD DEV ELYLD M | NUMBER EY T | STD DEV ELYLD T |
|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 23°C | | | | | | | | |
| HL28WP2 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL28WP1 28 | 5 | * | 5 | * | 5 | * | 5 | * |
| HL56WP2 56 | 5 | 1.760 | 5 | 2.480 | 5 | 0.900 | 5 | * |
| HL56WP1 56 | 5 | * | 5 | * | 5 | * | 5 | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | |
| HH01XM1 1 | 5 | 1.410 | 5 | 3.260 | 5 | 0.300 | 5 | 1.000 |
| HH07XM1 7 | 5 | 1.610 | 5 | 3.250 | 5 | 0.600 | 5 | 0.400 |
| HH14XM1 14 | 5 | 2.030 | 5 | 0.830 | 5 | 1.000 | 5 | 0.600 |
| HH28XM1 28 | 5 | 0.860 | 5 | 1.850 | 5 | 0.700 | 5 | 0.600 |
| HH56XM1 55 | 5 | 1.370 | 5 | 2.120 | 5 | 1.500 | 5 | 0.100 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | |
| HL01XM1 1 | 5 | 1.020 | 5 | 3.480 | 5 | 0.500 | 5 | 1.000 |
| HL07XM1 7 | 5 | 3.400 | 5 | 2.860 | 5 | 0.700 | 5 | 0.800 |
| HL14XM1 14 | 5 | 0.400 | 5 | 2.960 | 5 | 1.600 | 5 | 0.900 |
| HL28XM1 28 | 5 | 0.690 | 5 | 1.250 | 5 | 0.600 | 5 | 0.900 |
| HL56XM1 55 | 5 | 2.410 | 5 | 1.060 | 5 | 0.900 | 5 | 0.900 |

# HDPE : RETENTION OF PROPERTIES

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | HYDROCHLORIC ACID 10.0% 50°C | | | | | | |
| HH01AM1 1 | .8 | .6 | .9 | * | * | * | * | * | * |
| HH01AM2 1 | .3 | .3 | .3 | 95 | 100 | 103 | 95 | 101 | 108 |
| HH07AM2 7 | 2.7 | .3 | .4 | 101 | 107 | 96 | 92 | 93 | 87 |
| HH07AM1 7 | .2 | * | .1 | * | * | * | * | * | * |
| HH14AM1 14 | 1.1 | 1.7 | 1.7 | * | * | * | * | * | * |
| HH14AM2 14 | 1.3 | * | * | 94 | 97 | 103 | 89 | 98 | 93 |
| HH99AM1 28 | .4 | 1.6 | 1.5 | * | * | * | * | * | * |
| HH28AM1 29 | * | * | .1 | * | * | * | * | * | * |
| HH28AM2 29 | 100.0 | 100.0 | 100.0 | 109 | 108 | 96 | 92 | 109 | 110 |
| HH56AM1 56 | .1 | 2.9 | 2.9 | * | * | * | * | * | * |
| HH56AM2 56 | .3 | 1.7 | 2.1 | 118 | 112 | 98 | 90 | 102 | 101 |
| HH99AM2 144 | .3 | 1.9 | 2.0 | * | * | * | * | * | * |
| HH99AM3 252 | .1 | 1.3 | 1.3 | * | * | * | * | * | * |
| HH99AM4 368 | .4 | 3.8 | 4.1 | * | * | * | * | * | * |
| HH99AM5 511 | .4 | 1.0 | 1.1 | * | * | * | * | * | * |
| HH99AM6 621 | .4 | * | 10.8 | * | * | * | * | * | * |
| HH99AM7 770 | .3 | 2.2 | 2.4 | 110 | * | 112 | * | * | * |
| | | | HYDROCHLORIC ACID 10.0% 23°C | | | | | | |
| HL01AM2 1 | * | .3 | .2 | 100 | 110 | 105 | 84 | 102 | 91 |
| HL01AM1 1 | .1 | .6 | .4 | * | * | * | * | * | * |
| HL07AM2 7 | .3 | 1.0 | .9 | 113 | 102 | 92 | 74 | 93 | 97 |
| HL07AM1 7 | .2 | * | .1 | * | * | * | * | * | * |
| HL14AM2 14 | .1 | 1.3 | 1.5 | 99 | 107 | 94 | 87 | 112 | 91 |
| HL14AM1 14 | * | 1.0 | 1.0 | * | * | * | * | * | * |
| HL99AM1 28 | * | 1.0 | 1.1 | * | * | * | * | * | * |
| HL28AM1 29 | .1 | * | .1 | * | * | * | * | * | * |
| HL28AM2 29 | 100.0 | 100.0 | 100.0 | 108 | 109 | 97 | 91 | 104 | 107 |
| HL56AM2 56 | .2 | 1.4 | 1.5 | 104 | 110 | 94 | 83 | 96 | 98 |
| HL56AM1 56 | .1 | 4.2 | 4.5 | * | * | * | * | * | * |
| HL99AM2 144 | .4 | 2.0 | 1.8 | * | * | * | * | * | * |
| HL99AM3 238 | .1 | .3 | .8 | * | * | * | * | * | * |
| HL99AM4 368 | .9 | 1.6 | 2.1 | * | * | * | * | * | * |
| HL99AM5 511 | .1 | 2.6 | 2.5 | * | * | * | * | * | * |
| HL99AM6 621 | .1 | .3 | 1.0 | * | * | * | * | * | * |
| HL99AM7 768 | .2 | .3 | * | 99 | * | 97 | * | * | * |
| | | | SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| HH01BM1 1 | * | .3 | .4 | 123 | 118 | 89 | 88 | 114 | 103 |
| HH07BM1 7 | * | 4.5 | 4.4 | 108 | 109 | 96 | 98 | 88 | 87 |
| HH14BM1 13 | * | .6 | .8 | 101 | 98 | 94 | 89 | 98 | 101 |
| HH28BM1 28 | .3 | .3 | .2 | 108 | 107 | 103 | 94 | 87 | 89 |
| HH99BM1 29 | * | 1.3 | 1.0 | * | * | * | * | * | * |
| HH56BM1 56 | .1 | * | * | 100 | 107 | 106 | 95 | 89 | 98 |
| HH99BM2 144 | .9 | * | .3 | * | * | * | * | * | * |
| HH99BM3 252 | .6 | 1.7 | 1.5 | * | * | * | * | * | * |
| HH99BM4 368 | .5 | 1.7 | 100.0 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| HH99BM5 510 | .4 | * | .5 | * | * | * | * | * | * |
| HH99BM6 622 | .2 | 25.1 | 25.3 | * | * | * | * | * | * |
| HH99BM7 770 | .2 | 1.7 | 2.0 | 107 | * | 109 | * | * | * |
| | | | SODIUM HYDROXIDE 10.0% 23°C | | | | | | |
| HL01BM1 1 | * | .3 | .4 | * | * | * | * | * | * |
| HL07BM1 7 | * | * | .1 | 104 | 108 | 94 | 79 | 102 | 111 |
| HL14BM1 14 | * | .3 | .4 | * | 108 | * | 85 | * | 116 |
| HL28BM1 28 | .1 | * | .1 | * | * | * | * | * | * |
| HL99BM1 28 | .8 | * | .1 | * | * | * | * | * | * |
| HL56BM1 56 | .1 | 1.2 | 1.2 | 108 | 97 | 103 | 93 | 95 | 104 |
| HL99BM2 144 | .4 | .7 | .3 | * | * | * | * | * | * |
| HL99BM3 238 | .4 | 2.0 | 2.3 | * | * | * | * | * | * |
| HL99BM4 368 | 1.0 | 2.9 | 3.5 | * | * | * | * | * | * |
| HL99BM5 510 | .2 | .7 | .6 | * | * | * | * | * | * |
| HL99BM6 622 | .2 | 6.2 | 6.9 | * | * | * | * | * | * |
| HL99BM7 768 | .4 | 2.9 | 2.9 | 105 | * | 110 | * | * | * |
| | | | 1 2 DICHLOROETHANE .8% 50°C | | | | | | |
| HH01DH1 1 | 3.4 | * | 1.2 | 89 | 91 | 123 | 103 | 88 | 88 |
| HH07DH1 7 | 2.7 | .3 | .8 | 89 | 91 | 106 | 96 | 102 | 101 |
| HH14DH1 14 | 4.2 | 3.5 | 4.6 | 92 | 91 | 116 | 132 | 92 | 86 |
| HH28DH1 28 | 2.9 | * | 1.1 | 90 | 92 | 130 | 108 | 90 | 91 |
| HH99DH1 28 | 1.1 | .7 | 1.5 | * | * | * | * | * | * |
| HH56DH1 56 | 1.0 | 100.0 | 100.0 | * | * | * | * | * | * |
| HH99DH2 133 | .5 | * | .3 | * | * | * | * | * | * |
| HH99DH3 244 | 2.4 | 1.0 | 1.7 | * | * | * | * | * | * |
| HH99DH4 364 | .8 | 2.0 | 2.7 | * | * | * | * | * | * |
| HH99DH5 495 | .5 | 2.9 | 3.0 | * | * | * | * | * | * |
| HH99DH6 629 | .5 | 5.9 | 6.3 | * | * | * | * | * | * |
| HH99DH7 763 | 1.0 | 4.6 | 5.1 | 107 | * | 103 | * | * | * |
| | | | 1 2 DICHLOROETHANE .8% 23°C | | | | | | |
| HL01DH1 1 | 2.8 | .3 | .8 | 86 | 91 | 115 | 105 | 90 | 94 |
| HL07DH1 7 | 1.8 | .6 | .3 | 91 | 90 | 119 | 108 | 93 | 97 |
| HL14DH1 14 | 3.7 | .3 | 1.1 | 89 | 89 | 119 | 112 | 97 | 93 |
| HL99DH1 28 | 1.0 | 1.3 | .8 | * | * | * | * | * | * |
| HL28DH1 28 | 2.0 | 1.4 | 2.4 | 87 | 90 | 115 | 99 | 95 | 90 |
| HL56DH1 56 | 2.4 | .3 | .7 | * | * | * | * | * | * |
| HL99DH2 134 | 1.6 | 1.3 | .5 | * | * | * | * | * | * |
| HL99DH3 231 | 1.3 | * | 1.6 | * | * | * | * | * | * |
| HL99DH4 364 | .8 | .3 | .8 | * | * | * | * | * | * |
| HL99DH5 495 | .9 | 1.3 | .9 | * | * | * | * | * | * |
| HL99DH6 630 | 1.1 | 2.6 | 2.4 | * | * | * | * | * | * |
| HL99DH7 761 | 1.4 | 6.4 | 5.9 | 105 | * | 112 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 2 DICHLOROETHANE .1% 50°C | | | | | | |
| HH01DL1 1 | .7 | .7 | .6 | 89 | 89 | 112 | 106 | 90 | 92 |
| HH07DL1 7 | .5 | .6 | .8 | 89 | 93 | 115 | 102 | 97 | 104 |
| HH14DL1 14 | 1.7 | .7 | .5 | 88 | 92 | 118 | 108 | 92 | 88 |
| HH99DL1 28 | .3 | * | .3 | * | * | * | * | * | * |
| HH28DL1 28 | .3 | * | * | 87 | 93 | 123 | 107 | 87 | 102 |
| HH56DL1 56 | .3 | .6 | .7 | * | * | * | * | * | * |
| HH99DL2 139 | .4 | 1.3 | 1.6 | * | * | * | * | * | * |
| HH99DL3 246 | .9 | 1.0 | 1.2 | * | * | * | * | * | * |
| HH99DL4 370 | .2 | 1.0 | 1.5 | * | * | * | * | * | * |
| HH99DL5 496 | .1 | 1.6 | 2.4 | * | * | * | * | * | * |
| HH99DL6 631 | .1 | 2.9 | 2.1 | * | * | * | * | * | * |
| HH99DL7 765 | .1 | 4.5 | 3.6 | 105 | * | 111 | * | * | * |
| | | | 1 2 DICHLOROETHANE .1% 23°C | | | | | | |
| HL01DL1 1 | .3 | .7 | .5 | 92 | 94 | 106 | 104 | 92 | 96 |
| HL07DL1 7 | .5 | .6 | .6 | 94 | 97 | 147 | 94 | 94 | 93 |
| HL14DL1 14 | 5.8 | * | .1 | 92 | 95 | 118 | 105 | 95 | 101 |
| HL99DL1 28 | .3 | 2.5 | 2.5 | * | * | * | * | * | * |
| HL28DL1 28 | .5 | .3 | .4 | 86 | 92 | 115 | 99 | 93 | 100 |
| HL56DL1 56 | .4 | .3 | .4 | * | * | * | * | * | * |
| HL99DL2 136 | .9 | 5.3 | 5.3 | * | * | * | * | * | * |
| HL99DL3 233 | .3 | 2.8 | 2.4 | * | * | * | * | * | * |
| HL99DL4 366 | .2 | 4.7 | 5.2 | * | * | * | * | * | * |
| HL99DL5 496 | .2 | 5.0 | 5.3 | * | * | * | * | * | * |
| HL99DL6 632 | .3 | 1.6 | 2.1 | * | * | * | * | * | * |
| HL99DL7 763 | .4 | .3 | .3 | 103 | * | 99 | * | * | * |
| | | | 1 2 DICHLOROETHANE .5% 50°C | | | | | | |
| HH01DM1 1 | 2.0 | .6 | 1.0 | 86 | 92 | 120 | 107 | 90 | 90 |
| HH07DM1 7 | 1.6 | .3 | * | 84 | 85 | 94 | 106 | 84 | 80 |
| HH14DM1 14 | 2.1 | 2.0 | 3.2 | 91 | 90 | 117 | 106 | 97 | 85 |
| HH28DM1 28 | 1.6 | .3 | .9 | 87 | 91 | 122 | 106 | 89 | 93 |
| HH99DM1 28 | .3 | .3 | .4 | * | * | * | * | * | * |
| HH56DM1 56 | 1.3 | 1.0 | .6 | * | * | * | * | * | * |
| HH99DM3 245 | 4.4 | .6 | 1.1 | * | * | * | * | * | * |
| HH99DM4 365 | .2 | .3 | .5 | * | * | * | * | * | * |
| HH99DM5 496 | .2 | .3 | .2 | * | * | * | * | * | * |
| HH99DM6 630 | .2 | 7.2 | 6.8 | * | * | * | * | * | * |
| HH99DM7 764 | .1 | 5.6 | 5.4 | 112 | * | 108 | * | * | * |
| | | | 1 2 DICHLOROETHANE .5% 23°C | | | | | | |
| HL01DM1 1 | 1.7 | .6 | 1.1 | 91 | 93 | 115 | 102 | 99 | 95 |
| HL07DM1 7 | 2.0 | .6 | .7 | 88 | 91 | 101 | 96 | 86 | 96 |
| HL14DM1 14 | 2.9 | .6 | .4 | 92 | 91 | 109 | 113 | 89 | 96 |
| HL28DM1 28 | 1.5 | * | .6 | 89 | 90 | 113 | 108 | 95 | 90 |
| HL99DM1 28 | .7 | .3 | .5 | * | * | * | * | * | * |
| HL56DM1 56 | 1.0 | * | .4 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 2 DICHLOROETHANE .5% 23°C | | | | | | |
| HL99DM2 135 | 1.4 | .3 | 1.0 | * | * | * | * | * | * |
| HL99DM3 233 | .7 | 1.9 | 3.2 | * | * | * | * | * | * |
| HL99DM4 365 | .3 | 2.6 | 3.5 | * | * | * | * | * | * |
| HL99DM5 496 | .6 | 1.0 | 1.4 | * | * | * | * | * | * |
| HL99DM6 631 | .8 | 4.8 | 5.4 | * | * | * | * | * | * |
| HL99DM7 762 | .6 | 3.2 | 3.6 | 109 | * | 112 | * | * | * |
| | | | FURFURAL 8.0% 50°C | | | | | | |
| HH01FH1 1 | .3 | .3 | .4 | 96 | 96 | 100 | 97 | 92 | 91 |
| HH07FH1 7 | 1.1 | .6 | .1 | 89 | 93 | 110 | 100 | 102 | 106 |
| HH14FH1 14 | 1.0 | .3 | .1 | 91 | 95 | 110 | 103 | 109 | 111 |
| HH28FH1 28 | 1.1 | .3 | .3 | 89 | 90 | 109 | 100 | 93 | 89 |
| HH99FH1 28 | 2.2 | .3 | .6 | * | * | * | * | * | * |
| HH56FH1 56 | 5.1 | .7 | .7 | 99 | 97 | 103 | 100 | 95 | 92 |
| HH99FH2 117 | 1.7 | .9 | 1.2 | * | * | * | * | * | * |
| HH99FH3 236 | 1.6 | .9 | 1.5 | * | * | * | * | * | * |
| HH99FH4 350 | 1.9 | 1.2 | 1.6 | * | * | * | * | * | * |
| HH99FH5 485 | 1.5 | 4.0 | 4.7 | * | * | * | * | * | * |
| HH99FH6 616 | 6.5 | 9.9 | 10.9 | * | * | * | * | * | * |
| HH99FH7 750 | 1.5 | 7.8 | 8.0 | 111 | * | 126 | * | * | * |
| | | | FURFURAL 8.0% 23°C | | | | | | |
| HL01FH1 1 | .7 | .3 | .2 | 100 | 98 | 105 | 97 | 110 | 100 |
| HL07FH1 7 | .8 | 1.0 | .6 | 93 | 93 | 104 | 98 | 112 | 109 |
| HL14FH1 14 | .8 | .6 | 1.1 | 93 | 96 | 110 | 99 | 98 | 121 |
| HL99FH1 28 | 1.3 | .3 | .6 | * | * | * | * | * | * |
| HL28FH1 28 | .7 | 3.2 | 3.5 | 90 | 90 | 107 | 101 | 93 | 94 |
| HL56FH1 56 | .9 | * | * | 92 | 96 | 106 | 101 | 91 | 95 |
| HL99FH2 117 | 1.0 | 1.0 | 1.5 | * | * | * | * | * | * |
| HL99FH3 219 | 1.1 | 3.5 | 5.3 | * | * | * | * | * | * |
| HL99FH4 350 | 1.4 | 2.9 | 3.3 | * | * | * | * | * | * |
| HL99FH5 485 | 3.9 | 4.5 | 6.3 | * | * | * | * | * | * |
| HL99FH6 617 | 2.4 | 7.1 | 8.8 | * | * | * | * | * | * |
| HL99FH7 748 | 1.5 | 17.1 | 17.5 | 105 | * | 105 | * | * | * |
| | | | FURFURAL 1.0% 50°C | | | | | | |
| HH01FL1 1 | .2 | 4.2 | 4.3 | 99 | 97 | 106 | 99 | 98 | 90 |
| HH07FL1 7 | .2 | .3 | .2 | 94 | 96 | 107 | 100 | 98 | 110 |
| HH14FL1 14 | .3 | .3 | .3 | 91 | 93 | 110 | 108 | * | * |
| HH28FL1 28 | .2 | .3 | .3 | 95 | 98 | 100 | 99 | 95 | 78 |
| HH99FL1 29 | .2 | 1.9 | 1.9 | * | * | * | * | * | * |
| HH56FL1 56 | .4 | .9 | .6 | 94 | 98 | 106 | 105 | 105 | 112 |
| HH99FL2 124 | .2 | 1.6 | 1.6 | * | * | * | * | * | * |
| HH99FL3 242 | 1.3 | 1.6 | 1.7 | * | * | * | * | * | * |
| HH99FL4 356 | .2 | 1.6 | 1.6 | * | * | * | * | * | * |
| HH99FL5 489 | .6 | 1.6 | 1.1 | * | * | * | * | * | * |
| HH99FL6 622 | 1.5 | 5.6 | 6.4 | * | * | * | * | * | * |
| HH99FL7 756 | .5 | 1.2 | 1.0 | 118 | * | 118 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | FURFURAL 1.0% 23°C | | | | | | |
| HL01FL1 1 | .2 | 4.1 | 4.5 | 99 | 101 | 101 | 87 | 103 | 109 |
| HL07FL1 7 | .2 | .9 | 1.1 | 93 | 96 | 106 | 98 | 116 | 105 |
| HL14FL1 14 | .2 | .3 | * | 93 | 92 | 104 | 106 | * | * |
| HL28FL1 28 | .2 | .3 | .3 | * | * | * | * | * | * |
| HL28FL2 28 | .2 | .3 | .3 | 91 | 92 | 104 | 97 | * | * |
| HL99FL1 29 | .7 | .6 | .7 | * | * | * | * | * | * |
| HL56FL1 56 | .3 | * | .2 | 93 | 101 | 97 | 87 | 105 | 101 |
| HL99FL2 124 | .3 | 2.4 | 2.2 | * | * | * | * | * | * |
| HL99FL3 225 | .4 | 1.8 | 2.7 | * | * | * | * | * | * |
| HL99FL4 356 | .8 | 1.2 | 1.1 | * | * | * | * | * | * |
| HL99FL5 489 | .6 | 1.8 | 2.0 | * | * | * | * | * | * |
| HL99FL6 623 | .6 | .3 | .5 | * | * | * | * | * | * |
| HL99FL7 754 | .8 | 3.0 | 3.3 | 109 | * | 102 | * | * | * |
| | | | FURFURAL 4.0% 50°C | | | | | | |
| HH01FM1 1 | .4 | .6 | .5 | 98 | 98 | 104 | 93 | 99 | 101 |
| HH07FM1 7 | .8 | .3 | .1 | 92 | 95 | 104 | 98 | 97 | 104 |
| HH14FM1 14 | .7 | 1.3 | 1.1 | 91 | 94 | 106 | 98 | 101 | 93 |
| HH28FM1 28 | .8 | .6 | .4 | 90 | 93 | 110 | 105 | 107 | 91 |
| HH99FM1 29 | 1.5 | .7 | 1.1 | * | * | * | * | * | * |
| HH56FM1 56 | .6 | .3 | .4 | 99 | 98 | 109 | 100 | 94 | 95 |
| HH99FM2 124 | 2.0 | 1.0 | 1.1 | * | * | * | * | * | * |
| HH99FM3 242 | 1.4 | 2.0 | 2.3 | * | * | * | * | * | * |
| HH99FM4 356 | .9 | 1.3 | 1.4 | * | * | * | * | * | * |
| HH99FM5 490 | 2.1 | 2.9 | 3.6 | * | * | * | * | * | * |
| HH99FM6 622 | 4.6 | 8.8 | 9.9 | * | * | * | * | * | * |
| HH99FM7 756 | 1.3 | 7 | 1.2 | 108 | * | 127 | * | * | * |
| | | | FURFURAL 4.0% 23°C | | | | | | |
| HL01FM1 1 | .3 | * | .4 | 95 | 101 | 99 | 92 | 120 | 107 |
| HL07FM1 7 | .7 | 2.7 | 2.2 | 92 | 94 | 113 | 97 | 106 | 121 |
| HL14FM1 14 | .7 | 1.7 | 1.6 | 92 | 94 | 104 | 97 | 108 | 102 |
| HL28FM1 28 | 1.3 | .3 | .1 | 89 | 93 | 107 | 98 | 78 | 108 |
| HL99FM1 29 | .8 | 1.9 | 2.5 | * | * | * | * | * | * |
| HL56FM1 56 | .6 | * | .1 | 93 | 93 | 106 | 92 | 108 | 108 |
| HL99FM2 124 | .8 | * | .4 | * | * | * | * | * | * |
| HL99FM3 228 | 1.1 | 3.4 | 5.0 | * | * | * | * | * | * |
| HL99FM4 356 | 1.0 | .6 | 1.3 | * | * | * | * | * | * |
| HL99FM5 490 | 1.0 | 2.5 | 3.4 | * | * | * | * | * | * |
| HL99FM6 623 | 1.7 | 4.0 | 13.1 | * | * | * | * | * | * |
| HL99FM7 754 | 1.6 | 9.0 | 9.6 | 109 | * | 105 | * | * | * |
| | | | METHYL ETHYL KETONE 26.0% 50°C | | | | | | |
| HH01MH1 1 | 1.8 | 2.7 | 4.2 | 93 | 97 | 97 | 97 | 96 | 94 |
| HH07MH1 7 | 1.9 | .3 | .9 | 96 | 96 | 101 | 86 | 87 | 95 |
| HH14MH1 14 | 1.7 | 2.3 | 3.7 | 96 | 98 | 98 | 87 | 91 | 96 |
| HH28MH1 28 | 1.4 | * | .7 | 94 | 97 | 101 | 94 | 115 | 103 |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | METHYL ETHYL KETONE 26.0% 50°C | | | | | | |
| HH99MH1 29 | 2.1 | 1.0 | 2.5 | * | * | * | * | * | * |
| HH56MH1 57 | 1.6 | .3 | .2 | 86 | 91 | 114 | 108 | 70 | 79 |
| HH99MH2 122 | 2.1 | * | 1.3 | * | * | * | * | * | * |
| HH99MH3 240 | 2.1 | 1.6 | 2.9 | * | * | * | * | * | * |
| HH99MH4 358 | 2.2 | .3 | 1.8 | * | * | * | * | * | * |
| HH99MH5 493 | 1.5 | 1.0 | 1.5 | * | * | * | * | * | * |
| HH99MH6 626 | 1.1 | 4.2 | 4.2 | * | * | * | * | * | * |
| HH99MH7 759 | .8 | 6.2 | 6.7 | 105 | * | 113 | * | * | * |
| | | | METHYL ETHYL KETONE 26.0% 23°C | | | | | | |
| HL01MH1 1 | .9 | .6 | 1.2 | 98 | 100 | 95 | 90 | 98 | 112 |
| HL07MH1 7 | 1.3 | 1.2 | .1 | 95 | 97 | 91 | 84 | 90 | 99 |
| HL14MH1 14 | 1.5 | 1.0 | 2.4 | 96 | 98 | 91 | 86 | 93 | 92 |
| HL28MH1 28 | 1.3 | .3 | .2 | 96 | 95 | 92 | 85 | 99 | 93 |
| HL99MH1 29 | 1.8 | 1.0 | 2.4 | * | * | * | * | * | * |
| HL56MH1 57 | 1.7 | .9 | 1.0 | 96 | 96 | 96 | 93 | 88 | 98 |
| HL99MH2 122 | 2.0 | .3 | 1.2 | * | * | * | * | * | * |
| HL99MH3 235 | 1.5 | 1.7 | 3.3 | * | * | * | * | * | * |
| HL99MH4 358 | 1.9 | .3 | 1.6 | * | * | * | * | * | * |
| HL99MH5 493 | 1.7 | .3 | 1.4 | * | * | * | * | * | * |
| HL99MH6 627 | 1.9 | .7 | 1.2 | * | * | * | * | * | * |
| HL99MH7 757 | 1.8 | 1.7 | 2.5 | 101 | * | 118 | * | * | * |
| | | | METHYL ETHYL KETONE 3.0% 50°C | | | | | | |
| HH01ML1 1 | .4 | .3 | .4 | 90 | 88 | 103 | 101 | 87 | 82 |
| HH07ML1 7 | .7 | .6 | .5 | 96 | 100 | 94 | 94 | 86 | 109 |
| HH14ML1 14 | .3 | 1.1 | 1.1 | 99 | 101 | 98 | 85 | 96 | 104 |
| HH28ML1 28 | * | 3.0 | 3.0 | 96 | 97 | 99 | 92 | 111 | 119 |
| HH99ML1 28 | .9 | .9 | 1.0 | * | * | * | * | * | * |
| HH56ML1 57 | .2 | .7 | 1.2 | 96 | 99 | 103 | 91 | 93 | 94 |
| HH99ML2 120 | 1.6 | 1.2 | 1.3 | * | * | * | * | * | * |
| HH99ML3 240 | 1.2 | 3.3 | 3.3 | * | * | * | * | * | * |
| HH99ML4 358 | 1.0 | 1.2 | 1.6 | * | * | * | * | * | * |
| HH99ML5 493 | 1.6 | .6 | .6 | * | * | * | * | * | * |
| HH99ML6 626 | .4 | 1.8 | 1.4 | * | * | * | * | * | * |
| HH99ML7 759 | .2 | 3.6 | 3.2 | 117 | * | 121 | * | * | * |
| | | | METHYL ETHYL KETONE 3.0% 23°C | | | | | | |
| HL01ML1 1 | .1 | .6 | .5 | 98 | 100 | 94 | 87 | 103 | 117 |
| HL07ML1 7 | .4 | * | * | 97 | 100 | 87 | 84 | 87 | 85 |
| HL14ML1 14 | .5 | * | .1 | 93 | 98 | 96 | 93 | 93 | 108 |
| HL28ML1 28 | .2 | 1.0 | 1.2 | 99 | 100 | 97 | 88 | 124 | 118 |
| HL99ML1 28 | .3 | .7 | .8 | * | * | * | * | * | * |
| HL56ML1 57 | .3 | 1.2 | 1.2 | 97 | 100 | 98 | 89 | 97 | 104 |
| HL99ML2 120 | .8 | .3 | .1 | * | * | * | * | * | * |
| HL99ML3 235 | .3 | 1.6 | 1.9 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | METHYL ETHYL KETONE 3.0% 23°C | | | | | | |
| HL99ML4 358 | 1.0 | * | .1 | * | * | * | * | * | * |
| HL99ML5 494 | 1.1 | 1.0 | 1.2 | * | * | * | * | * | * |
| HL99ML6 627 | .7 | .3 | .3 | * | * | * | * | * | * |
| HL99ML7 757 | .3 | 1.3 | 1.3 | 101 | * | 108 | * | * | * |
| | | | METHYL ETHYL KETONE 13.0% 50°C | | | | | | |
| HH01MM1 1 | 1.6 | .3 | 1.9 | 97 | 96 | 97 | 91 | 101 | 108 |
| HH07MM1 7 | 1.6 | .9 | 2.0 | 97 | 102 | 104 | 93 | 99 | 111 |
| HH14MM1 14 | .4 | 1.5 | .8 | 93 | 96 | 97 | 87 | 83 | 104 |
| HH99MM1 28 | 11.2 | 10.3 | 10.6 | * | * | * | * | * | * |
| HH28MM1 28 | .8 | .3 | .5 | 94 | 98 | 104 | 89 | 90 | 80 |
| HH56MM1 57 | 1.0 | * | .4 | 91 | 94 | 108 | 104 | 82 | 76 |
| HH99MM2 120 | 2.6 | * | 1.0 | * | * | * | * | * | * |
| HH99MM3 239 | 1.6 | 1.7 | 2.7 | * | * | * | * | * | * |
| HH99MM4 357 | 1.6 | .3 | .5 | * | * | * | * | * | * |
| HH99MM5 493 | 1.2 | .3 | .7 | * | * | * | * | * | * |
| HH99MM6 625 | .7 | 4.7 | 4.4 | * | * | * | * | * | * |
| HH99MM7 758 | .6 | 3.0 | 3.3 | 104 | * | 128 | * | * | * |
| | | | METHYL ETHYL KETONE 13.0% 23°C | | | | | | |
| HL01MM1 1 | .7 | * | * | 89 | 92 | 96 | 94 | 100 | 95 |
| HL07MM1 7 | 1.2 | 4.2 | 4.8 | 96 | 100 | 96 | 84 | 93 | 93 |
| HL14MM1 14 | 1.2 | .3 | .7 | 97 | 101 | 103 | 91 | 102 | 113 |
| HL28MM1 28 | 1.0 | 1.0 | 1.5 | 93 | 98 | 97 | 88 | 111 | 128 |
| HL99MM1 28 | 1.2 | 2.0 | .9 | * | * | * | * | * | * |
| HL56MM1 57 | .4 | 1.0 | 1.2 | 98 | 100 | 99 | 90 | 91 | 91 |
| HL99MM2 120 | 1.8 | .7 | .5 | * | * | * | * | * | * |
| HL99MM3 234 | .8 | 2.0 | 3.4 | * | * | * | * | * | * |
| HL99MM4 357 | 1.0 | .7 | .1 | * | * | * | * | * | * |
| HL99MM5 493 | 1.2 | 1.0 | .3 | * | * | * | * | * | * |
| HL99MM6 626 | 1.2 | .3 | 68.0 | * | * | * | * | * | * |
| HL99MM7 756 | .9 | .3 | 1.1 | 100 | * | 110 | * | * | * |
| | | | ASTM #2 OIL SATURATED 50°C | | | | | | |
| HH01OM1 1 | .1 | .6 | .3 | 100 | 101 | 96 | 93 | 112 | 98 |
| HH07OM1 7 | .2 | .3 | .8 | 94 | 95 | 103 | 106 | 90 | 92 |
| HH14OM1 13 | 1.1 | 2.9 | 3.3 | 99 | 99 | 105 | 99 | 100 | 86 |
| HH28OM1 28 | 1.0 | 1.9 | 1.7 | * | * | * | * | * | * |
| HH99OM1 28 | 3.6 | 1.3 | 3.4 | * | * | * | * | * | * |
| HH56OM1 56 | .3 | 2.0 | 1.4 | 101 | 102 | 99 | 93 | 100 | 99 |
| HH99OM2 128 | 4.7 | 100.0 | 100.0 | * | * | * | * | * | * |
| HH99OM3 251 | 5.6 | .7 | 3.7 | * | * | * | * | * | * |
| HH99OM4 364 | 5.2 | .3 | 3.1 | * | * | * | * | * | * |
| HH99OM5 503 | 5.9 | .7 | 4.1 | * | * | * | * | * | * |
| HH99OM6 626 | 5.3 | 3.6 | 8.2 | * | * | * | * | * | * |
| HH99OM7 765 | 6.1 | 1.3 | 4.8 | 98 | * | 190 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | ASTM #2 OIL SATURATED 23°C | | | | | | |
| HL010M1 1 | .1 | .6 | .4 | 96 | 99 | 99 | 95 | 96 | 102 |
| HL070M1 7 | .2 | .3 | .1 | 95 | 97 | 99 | 96 | 106 | 112 |
| HL140M1 13 | .2 | 2.4 | 2.4 | 95 | 97 | 104 | 99 | 92 | 94 |
| HL990M1 28 | .8 | 2.6 | 3.4 | * | * | * | * | * | * |
| HL280M1 28 | .3 | 1.5 | .9 | * | * | * | * | * | * |
| HL560M1 56 | .2 | * | .2 | 103 | 108 | 101 | 92 | 96 | 111 |
| HL990M2 128 | 1.3 | 2.0 | 3.4 | * | * | * | * | * | * |
| HL990M3 237 | 1.0 | 3.3 | 5.1 | * | * | * | * | * | * |
| HL990M4 364 | 1.6 | 2.3 | 3.8 | * | * | * | * | * | * |
| HL990M5 503 | 2.4 | 1.6 | 2.6 | * | * | * | * | * | * |
| HL990M6 626 | 2.1 | 3.6 | 6.3 | * | * | * | * | * | * |
| HL990M7 763 | 3.0 | 11.1 | 13.1 | 100 | * | 157 | * | * | * |
| | | | ASTM #2 OIL 100.0% 50°C | | | | | | |
| HH010P1 1 | .8 | 1.2 | .6 | 90 | 89 | 106 | 103 | 85 | 81 |
| HH070P1 7 | 2.8 | 1.0 | 3.1 | 85 | * | 125 | * | 72 | * |
| HH140P1 14 | 4.1 | .3 | 2.1 | 84 | 84 | 122 | 122 | 71 | 78 |
| HH280P1 28 | 4.8 | .3 | 3.0 | 87 | 88 | 136 | 131 | 56 | 66 |
| HH990P1 28 | 5.4 | 1.6 | 5.9 | * | * | * | * | * | * |
| HH560P1 56 | 5.5 | * | 3.6 | 84 | 83 | 137 | 138 | 55 | 58 |
| HH990P2 141 | 5.9 | 1.6 | 6.2 | * | * | * | * | * | * |
| HH990P3 257 | 7.0 | 1.9 | 6.6 | * | * | * | * | * | * |
| HH990P4 385 | 5.9 | 1.9 | 7.4 | * | * | * | * | * | * |
| HH990P5 509 | 6.7 | 3.1 | 7.3 | * | * | * | * | * | * |
| HH990P6 627 | 6.5 | 4.7 | 13.5 | * | * | * | * | * | * |
| HH990P7 771 | 6.1 | 2.5 | 7.0 | 103 | * | 194 | * | * | * |
| | | | ASTM #2 OIL 100.0% 23°C | | | | | | |
| HL010P1 1 | .2 | 1.0 | .9 | 90 | 89 | 99 | 97 | 95 | 88 |
| HL070P1 7 | .4 | 1.0 | .8 | 92 | 94 | 101 | 93 | 104 | 107 |
| HL140P1 14 | .7 | .3 | .5 | 93 | 92 | 105 | 96 | 124 | 111 |
| HL990P1 28 | .5 | .9 | 1.2 | * | * | * | * | * | * |
| HL280P1 28 | .5 | * | .4 | 92 | 94 | 105 | 97 | 87 | 97 |
| HL560P1 56 | 1.1 | .3 | .4 | 92 | 96 | 103 | 97 | 82 | 90 |
| HL990P2 141 | 1.9 | .3 | 1.7 | * | * | * | * | * | * |
| HL990P3 244 | 2.1 | 5.6 | 7.8 | * | * | * | * | * | * |
| HL990P4 385 | 2.8 | .6 | 2.4 | * | * | * | * | * | * |
| HL990P5 509 | 3.9 | 1.9 | 3.6 | * | * | * | * | * | * |
| HL990P6 627 | 3.9 | 3.1 | 6.3 | * | * | * | * | * | * |
| HL990P7 769 | 4.2 | 6.5 | 9.4 | 103 | * | 159 | * | * | * |
| | | | PHENOL 8.0% 50°C | | | | | | |
| HH01PH1 1 | .4 | .3 | .2 | 87 | 91 | 119 | 101 | 90 | 93 |
| HH07PH1 7 | 1.0 | .3 | .2 | 87 | 89 | 118 | 93 | 86 | 85 |
| HH14PH1 14 | .1 | .3 | .3 | 87 | 88 | 119 | 112 | 89 | 89 |
| HH28PH1 28 | .9 | .7 | .4 | 92 | 93 | 112 | 97 | 92 | 92 |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 8.0% 50°C | | | | | | |
| HH99PH1 29 | 1.3 | * | .6 | * | * | * | * | * | * |
| HH56PH1 56 | .4 | .6 | .8 | 89 | 89 | 120 | 106 | 92 | 90 |
| HH99PH2 121 | 2.0 | .6 | .2 | * | * | * | * | * | * |
| HH99PH3 243 | 1.2 | * | .9 | * | * | * | * | * | * |
| HH99PH4 362 | 1.3 | * | .6 | * | * | * | * | * | * |
| HH99PH5 499 | 1.1 | * | .5 | * | * | * | * | * | * |
| HH99PH6 624 | .8 | 1.6 | 1.9 | * | * | * | * | * | * |
| HH99PH7 757 | 1.0 | 2.6 | 2.8 | 109 | * | 111 | * | * | * |
| | | | PHENOL 8.0% 23°C | | | | | | |
| HL01PH1 1 | 1.3 | .3 | 100.0 | 93 | 90 | 111 | 95 | 93 | 92 |
| HL07PH1 7 | .1 | * | .2 | 87 | 94 | 113 | 104 | 85 | 86 |
| HL14PH1 14 | 3.7 | .7 | .3 | 90 | 92 | 112 | 111 | 87 | 93 |
| HL28PH1 28 | .7 | 2.3 | 2.0 | 91 | 92 | 99 | 90 | 95 | 92 |
| HL99PH1 29 | .8 | .6 | .7 | * | * | * | * | * | * |
| HL56PH1 56 | .4 | .3 | .3 | 88 | 89 | 116 | 105 | 92 | 92 |
| HL99PH2 121 | .9 | .3 | .8 | * | * | * | * | * | * |
| HL99PH3 230 | .8 | 3.2 | 4.2 | * | * | * | * | * | * |
| HL99PH4 362 | .4 | 1.0 | 1.3 | * | * | * | * | * | * |
| HL99PH5 499 | .8 | * | .5 | * | * | * | * | * | * |
| HL99PH6 625 | .8 | 2.2 | 1.8 | * | * | * | * | * | * |
| HL99PH7 755 | 1.2 | 8.0 | 8.4 | 109 | * | 111 | * | * | * |
| | | | PHENOL 1.0% 50°C | | | | | | |
| HH99PL4 1 | 100.0 | 100.0 | 100.0 | * | * | * | * | * | * |
| HH01PL1 1 | .3 | * | 1 | 90 | 96 | 118 | 119 | 86 | 87 |
| HH07PL1 7 | 1.2 | .3 | .4 | 89 | 92 | 113 | 97 | 91 | 92 |
| HH14PL1 14 | 1.9 | .6 | .7 | 90 | 91 | 114 | 102 | 93 | 98 |
| HH28PL1 28 | .2 | 1.4 | 1.7 | 91 | 93 | 106 | 99 | 97 | 87 |
| HH99PL1 28 | .7 | .7 | .4 | * | * | * | * | * | * |
| HH56PL1 56 | .1 | * | .1 | 93 | 94 | 120 | 96 | 99 | 104 |
| HH99PL2 122 | 1.1 | .3 | .1 | * | * | * | * | * | * |
| HH99PL3 245 | 1.6 | * | .5 | * | * | * | * | * | * |
| HH99PL5 499 | .8 | .3 | * | * | * | * | * | * | * |
| HH99PL6 625 | 1.1 | 4.6 | 5.8 | * | * | * | * | * | * |
| HH99PL7 758 | 1.0 | 6.9 | 6.9 | 103 | * | 116 | * | * | * |
| | | | PHENOL 1.0% 23°C | | | | | | |
| HL01PL1 1 | .4 | * | .2 | 93 | 95 | 106 | 96 | 104 | 106 |
| HL07PL1 7 | .1 | 5.9 | 6.1 | 94 | 94 | 100 | 98 | 99 | 98 |
| HL14PL1 14 | .2 | .3 | .6 | 89 | 90 | 117 | 104 | 89 | 91 |
| HL28PL1 28 | .2 | .6 | .7 | 92 | 96 | 101 | 97 | 99 | 93 |
| HL99PL1 28 | .3 | 2.3 | 1.9 | * | * | * | * | * | * |
| HL56PL1 56 | .1 | * | * | 90 | 93 | 92 | 104 | 94 | 102 |
| HL99PL2 122 | .4 | 1.3 | .8 | * | * | * | * | * | * |
| HL99PL3 233 | .4 | * | 1.1 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | PHENOL 1.0% 23°C | | | | | | |
| HL99PL4 363 | 1.1 | 1.3 | .7 | * | * | * | * | * | * |
| HL99PL5 499 | .5 | 1.9 | 1.3 | * | * | * | * | * | * |
| HL99PL6 626 | .5 | 1.9 | 3.0 | * | * | * | * | * | * |
| HL99PL7 756 | .7 | 1.9 | 2.6 | 100 | * | 101 | * | * | * |
| | | | PHENOL 4.0% 50°C | | | | | | |
| HH01PM1 1 | .3 | .3 | .4 | 95 | 79 | 104 | 113 | 96 | 85 |
| HH07PM1 7 | .4 | .3 | .4 | 94 | 95 | 115 | 102 | 94 | 90 |
| HH14PM1 14 | 2.2 | .3 | .3 | 92 | 88 | 109 | 102 | 95 | 95 |
| HH28PM1 28 | .7 | .3 | .4 | 92 | 92 | 110 | 94 | 89 | 91 |
| HH99PM1 29 | 1.3 | 1.5 | .8 | * | * | * | * | * | * |
| HH56PM1 56 | .3 | .3 | .5 | 91 | 93 | 116 | 115 | 86 | 94 |
| HH99PM2 121 | 2.3 | 1.2 | .5 | * | * | * | * | * | * |
| HH99PM3 244 | .4 | .9 | .1 | * | * | * | * | * | * |
| HH99PM4 362 | 1.6 | .6 | .1 | * | * | * | * | * | * |
| HH99PM5 499 | 2.4 | 1.5 | 2.4 | * | * | * | * | * | * |
| HH99PM6 624 | 1.9 | 3.4 | 4.8 | * | * | * | * | * | * |
| HH99PM7 757 | 2.3 | 7.3 | 8.1 | 112 | * | 128 | * | * | * |
| | | | PHENOL 4.0% 23°C | | | | | | |
| HL01PM1 1 | 1.1 | .3 | .1 | 89 | 90 | 106 | 94 | 95 | 97 |
| HL07PM1 7 | .4 | * | .1 | 90 | 89 | 109 | 93 | 88 | 89 |
| HL14PM1 14 | .5 | .3 | .6 | 90 | 94 | 113 | 102 | 90 | 98 |
| HL28PM1 28 | 2.4 | * | .2 | 92 | 93 | 108 | 98 | 92 | 92 |
| HL99PM1 29 | .7 | .3 | .1 | * | * | * | * | * | * |
| HL56PM1 56 | .3 | .3 | .9 | 89 | 92 | 112 | 98 | 97 | 93 |
| HL99PM2 121 | 1.4 | .3 | .6 | * | * | * | * | * | * |
| HL99PM3 231 | .6 | 2.2 | 3.4 | * | * | * | * | * | * |
| HL99PM4 362 | .9 | 1.0 | 1.3 | * | * | * | * | * | * |
| HL99PM5 499 | 1.1 | .3 | .1 | * | * | * | * | * | * |
| HL99PM6 625 | .8 | 2.9 | 3.8 | * | * | * | * | * | * |
| HL99PM7 755 | 1.2 | 2.9 | 3.4 | 107 | * | 105 | * | * | * |
| | | | SODIUM CHLORIDE 35.0% 50°C | | | | | | |
| HH01SH1 1 | * | 1.2 | 1.2 | * | * | * | * | * | * |
| HH07SH1 7 | * | .6 | .7 | * | * | * | * | * | * |
| HH14SH1 14 | * | .6 | .4 | 95 | 105 | 103 | 87 | 91 | 84 |
| HH99SH1 28 | .7 | 2.8 | 3.1 | * | * | * | * | * | * |
| HH28SH1 28 | * | 1.9 | 2.2 | 113 | * | 94 | * | 94 | * |
| HH56SH1 56 | .1 | 2.0 | 1.8 | 101 | 104 | 107 | 97 | 81 | 90 |
| HH99SH2 131 | .2 | .9 | 1.0 | * | * | * | * | * | * |
| HH99SH3 253 | 1.5 | 1.6 | 1.8 | * | * | * | * | * | * |
| HH99SH4 379 | .1 | 3.7 | 4.4 | * | * | * | * | * | * |
| HH99SH5 510 | .9 | 1.9 | 1.7 | * | * | * | * | * | * |
| HH99SH6 630 | .1 | 9.3 | 10.3 | * | * | * | * | * | * |
| HH99SH7 771 | .1 | 3.1 | 3.1 | 111 | * | 116 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | SODIUM CHLORIDE 35.0% 23°C | | | | | | |
| HL01SH1 1 | .1 | 1.3 | 1.4 | * | * | * | * | * | * |
| HL07SH1 7 | * | 1.2 | 1.2 | * | * | * | * | * | * |
| HL14SH1 14 | * | .3 | .2 | 95 | 98 | 96 | 83 | 77 | 109 |
| HL28SH1 28 | .1 | 1.0 | .8 | * | * | * | * | * | * |
| HL99SH1 28 | 1.1 | 4.5 | 4.7 | * | * | * | * | * | * |
| HL56SH1 56 | .1 | .3 | .3 | 94 | 99 | 104 | 96 | 84 | 89 |
| HL99SH2 131 | 1.1 | * | .4 | * | * | * | * | * | * |
| HL99SH3 246 | .2 | 1.8 | 2.7 | * | * | * | * | * | * |
| HL99SH4 379 | 1.5 | .3 | .4 | * | * | * | * | * | * |
| HL99SH5 510 | .5 | .3 | .2 | * | * | * | * | * | * |
| HL99SH6 630 | .1 | 2.1 | 2.9 | * | * | * | * | * | * |
| HL99SH7 769 | .6 | 8.1 | 8.3 | 112 | * | 95 | * | * | * |
| | | | SODIUM CHLORIDE 10.0% 50°C | | | | | | |
| HH01SM2 1 | .2 | 2.2 | 2.3 | 103 | 105 | 104 | 94 | 105 | 106 |
| HH01SM1 1 | .3 | .8 | .5 | * | * | * | * | * | * |
| HH07SM1 7 | .4 | 1.2 | 1.0 | * | * | * | 97 | * | * |
| HH07SM2 7 | .6 | .3 | .4 | 97 | 107 | 106 | 101 | 99 | 93 |
| HH14SM1 14 | * | 1.2 | .9 | * | * | * | * | * | * |
| HH14SM2 15 | .4 | .9 | 1.0 | 104 | 109 | 103 | 88 | 104 | 100 |
| HH28SM2 28 | .4 | 1.2 | 1.9 | 101 | 109 | 100 | 89 | 101 | 96 |
| HH99SM1 28 | 1.7 | 2.2 | 2.5 | * | * | * | * | * | * |
| HH28SM1 28 | 6.7 | .3 | .1 | * | * | * | * | * | * |
| HH56SM2 56 | .6 | 2.0 | 2.1 | 97 | 114 | 99 | 89 | 94 | 99 |
| HH56SM1 61 | * | 2.3 | 2.3 | * | * | * | * | * | * |
| HH99SM2 132 | 1.3 | .3 | .7 | * | * | * | * | * | * |
| HH99SM3 254 | .8 | * | .2 | * | * | * | * | * | * |
| HH99SM4 370 | .3 | 1.3 | 2.3 | * | * | * | * | * | * |
| HH99SM5 511 | .3 | 2.5 | 1.8 | * | * | * | * | * | * |
| HH99SM6 624 | * | 6.3 | 7.2 | * | * | * | * | * | * |
| HH99SM7 772 | .7 | 2.2 | 2.3 | 116 | * | 110 | * | * | * |
| | | | SODIUM CHLORIDE 10.0% 23°C | | | | | | |
| HL01SM1 1 | .4 | 1.2 | 1.1 | * | * | * | * | * | * |
| HL01SM2 1 | .2 | 1.1 | 1.0 | 108 | 108 | 108 | 97 | 96 | 101 |
| HL07SM1 7 | .1 | .6 | .6 | * | * | * | * | * | * |
| HL07SM2 7 | .1 | * | * | 92 | 101 | 105 | 93 | 106 | 109 |
| HL14SM1 14 | .1 | * | .1 | * | * | * | * | * | * |
| HL14SM2 15 | .4 | 1.4 | 1.3 | 114 | 110 | 92 | 94 | 108 | 94 |
| HL28SM2 28 | .4 | .9 | 1.2 | 120 | 106 | 96 | 86 | 103 | 115 |
| HL99SM1 28 | .1 | 5.8 | 5.9 | * | * | * | * | * | * |
| HL28SM1 28 | 7.0 | .3 | .2 | * | * | * | * | * | * |
| HL56SM2 56 | .3 | 2.0 | 2.1 | 113 | 110 | 92 | 86 | 89 | 107 |
| HL56SM1 61 | * | 1.8 | 1.7 | * | * | * | * | * | * |
| HL99SM2 132 | .2 | 7.5 | 7.2 | * | * | * | * | * | * |
| HL99SM3 246 | .1 | 6.7 | 5.6 | * | * | * | * | * | * |
| HL99SM4 370 | .5 | 7.2 | 7.1 | * | * | * | * | * | * |
| HL99SM5 511 | .7 | 8.1 | 8.3 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | SODIUM CHLORIDE 10.0% 23°C | | | | | | |
| HL99SM6 624 | * | 4.6 | 4.1 | * | * | * | * | * | * |
| HL99SM7 770 | 1.1 | 7.0 | 6.8 | 107 | * | 103 | * | * | * |
| | | | WATER 100.0% 50°C | | | | | | |
| HH01WP2 1 | * | 100.0 | 100.0 | 108 | 99 | 101 | 96 | 94 | 105 |
| HH01WP1 1 | .1 | .9 | .7 | * | * | * | * | * | * |
| HH07WP1 7 | .1 | 1.8 | 2.3 | * | * | * | * | * | * |
| HH07WP2 7 | .1 | .9 | .8 | 107 | 106 | 105 | 87 | 98 | 90 |
| HH14WP1 14 | * | 1.2 | .8 | 104 | 108 | * | * | * | * |
| HH14WP2 14 | .1 | .3 | .1 | 112 | 113 | 96 | 89 | 113 | 104 |
| HH99WP1 28 | 1.8 | 4.1 | 2.9 | * | * | * | * | * | * |
| HH28WP2 28 | .1 | 1.7 | 2.1 | * | * | * | * | * | * |
| HH28WP1 28 | .5 | .9 | .7 | * | * | * | * | * | * |
| HH56WP2 56 | .2 | 2.7 | 2.7 | 112 | 109 | 98 | 84 | 103 | 105 |
| HH56WP1 56 | .1 | 1.8 | 1.8 | * | * | * | * | * | * |
| HH99WP2 133 | 2.0 | 5.2 | 3.9 | * | * | * | * | * | * |
| HH99WP3 254 | 1.1 | 5.2 | 4.3 | * | * | * | * | * | * |
| HH99WP4 370 | .2 | 1.7 | .8 | * | * | * | * | * | * |
| HH99WP5 503 | .3 | 4.6 | 3.9 | * | * | * | * | * | * |
| HH99WP6 622 | .1 | 1.7 | .2 | * | * | * | * | * | * |
| HH99WP7 772 | .3 | 7.8 | 6.8 | 117 | * | 113 | * | * | * |
| | | | WATER 100.0% 23°C | | | | | | |
| HL01WP2 1 | 100.0 | 100.0 | 100.0 | 101 | 98 | 99 | 87 | 110 | 114 |
| HL01WP1 1 | .1 | .6 | .5 | * | * | * | * | * | * |
| HL07WP1 7 | .1 | 1.2 | 1.2 | * | * | * | * | * | * |
| HL07WP2 7 | .1 | .3 | .3 | 111 | 111 | 99 | 90 | 87 | 108 |
| HL14WP2 14 | .1 | 3.0 | 2.7 | 114 | 109 | 96 | 86 | 94 | 106 |
| HL14WP1 14 | * | .9 | .8 | 94 | 107 | * | * | * | * |
| HL28WP2 28 | * | .6 | .8 | * | * | * | * | * | * |
| HL99WP1 28 | .5 | 12.3 | 11.4 | * | * | * | * | * | * |
| HL28WP1 28 | .3 | * | .1 | * | * | * | * | * | * |
| HL56WP1 56 | .2 | .3 | * | * | * | * | * | * | * |
| HL56WP2 56 | * | 3.5 | 3.7 | 100 | 101 | 85 | 82 | 103 | 100 |
| HL99WP2 132 | .5 | 12.0 | 10.7 | * | * | * | * | * | * |
| HL99WP3 246 | .1 | 11.2 | 6.8 | * | * | * | * | * | * |
| HL99WP4 370 | .4 | 9.8 | 9.1 | * | * | * | * | * | * |
| HL99WP5 503 | .2 | 12.0 | 11.3 | * | * | * | * | * | * |
| HL99WP6 622 | .2 | 11.7 | 10.4 | * | * | * | * | * | * |
| HL99WP7 770 | .5 | * | .6 | 108 | * | 101 | * | * | * |
| | | | POTASSIUM DICHROMATE 10.0% 50°C | | | | | | |
| HH01XM1 1 | * | .8 | .8 | 110 | 103 | 106 | 98 | 106 | 100 |
| HH07XM1 7 | .1 | * | * | 108 | 104 | 97 | 89 | 88 | 82 |
| HH14XM1 14 | * | 2.6 | 3.0 | 99 | 101 | 103 | 88 | 88 | 110 |
| HH28XM1 28 | .1 | 3.9 | 3.8 | 110 | 104 | 106 | 91 | 93 | 94 |
| HH99XM1 28 | 1.4 | .3 | .8 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| IMMERSION DAYS | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT VOLUME CHANGE | PERCENT YIELD M | PERCENT YIELD M | PERCENT ELYLD M | PERCENT ELYLD T | PERCENT MODE M | PERCENT MODE T |
|---|---|---|---|---|---|---|---|---|---|
| | | | POTASSIUM DICHROMATE 10.0% 50°C | | | | | | |
| HH56XM1 55 | * | 1.2 | 1.2 | 113 | 108 | 105 | 101 | 96 | 87 |
| HH99XM2 118 | 1.5 | 1.3 | .9 | * | * | * | * | * | * |
| HH99XM3 231 | 2.2 | 4.0 | 3.8 | * | * | * | * | * | * |
| HH99XM4 363 | 1.3 | 1.3 | .7 | * | * | * | * | * | * |
| HH99XM5 489 | 1.3 | .7 | .2 | * | * | * | * | * | * |
| HH99XM6 609 | 1.3 | 6.6 | 6.8 | * | * | * | * | * | * |
| HH99XM7 749 | 1.5 | * | .5 | 107 | * | 115 | * | * | * |
| | | | POTASSIUM DICHROMATE 10.0% 23°C | | | | | | |
| HL01XM1 1 | * | .6 | .8 | 99 | 100 | 103 | 83 | 91 | 94 |
| HL07XM1 7 | * | .3 | .4 | 96 | 97 | 99 | 86 | 74 | 80 |
| HL14XM1 14 | * | 1.0 | 1.3 | 116 | 101 | 96 | 85 | 120 | 105 |
| HL28XM1 28 | * | 1.5 | 1.5 | 106 | 107 | 92 | 89 | 83 | 90 |
| HL99XM1 28 | .7 | .7 | .1 | * | * | * | * | * | * |
| HL56XM1 55 | * | 1.4 | 1.5 | 96 | 97 | 98 | 96 | 86 | 73 |
| HL99XM2 118 | .8 | 1.3 | .9 | * | * | * | * | * | * |
| HL99XM3 223 | .2 | 4.6 | 4.9 | * | * | * | * | * | * |
| HL99XM4 363 | .1 | 2.0 | 1.4 | * | * | * | * | * | * |
| HL99XM5 489 | 1.3 | .3 | .3 | * | * | * | * | * | * |
| HL99XM6 640 | .1 | 5.3 | 5.5 | * | * | * | * | * | * |
| HL99XM7 747 | .5 | 11.3 | 10.6 | 103 | * | 93 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T. | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | |
| HH01AM1 1 | 105 | 108 | 106 | 95 | 103 | 122 |
| HH01AM2 1 | * | * | * | * | * | * |
| HH07AM2 7 | * | * | * | * | * | * |
| HH07AM1 7 | 104 | 101 | 102 | 94 | 116 | 116 |
| HH14AM1 14 | 87 | 80 | 99 | 86 | 92 | 84 |
| HH14AM2 14 | * | * | * | * | * | * |
| HH99AM1 28 | * | * | * | * | * | * |
| HH28AM1 29 | 85 | 93 | 95 | 88 | 93 | 101 |
| HH28AM2 29 | * | * | * | * | * | * |
| HH56AM1 56 | 100 | 93 | 104 | 91 | 116 | 110 |
| HH56AM2 56 | * | * | * | * | * | * |
| HH99AM2 144 | * | * | * | * | * | * |
| HH99AM3 252 | * | * | * | * | * | * |
| HH99AM4 368 | * | * | * | * | * | * |
| HH99AM5 511 | * | * | * | * | * | * |
| HH99AM6 621 | * | * | * | * | * | * |
| HH99AM7 770 | 86 | * | 91 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | |
| HL01AM2 1 | * | * | * | * | * | * |
| HL01AM1 1 | 96 | 94 | 99 | 92 | 113 | 92 |
| HL07AM2 7 | * | * | * | * | * | * |
| HL07AM1 7 | 90 | 91 | 104 | 91 | 103 | 105 |
| HL14AM2 14 | * | * | * | * | * | * |
| HL14AM1 14 | 115 | 111 | 103 | 95 | 130 | 128 |
| HL99AM1 28 | * | * | * | * | * | * |
| HL28AM1 29 | 91 | 88 | 103 | 88 | 102 | 106 |
| HL28AM2 29 | * | * | * | * | * | * |
| HL56AM2 56 | * | * | * | * | * | * |
| HL56AM1 56 | 106 | 105 | 108 | 99 | 122 | 117 |
| HL99AM2 144 | * | * | * | * | * | * |
| HL99AM3 238 | * | * | * | * | * | * |
| HL99AM4 368 | * | * | * | * | * | * |
| HL99AM5 511 | * | * | * | * | * | * |
| HL99AM6 621 | * | * | * | * | * | * |
| HL99AM7 768 | 104 | * | 104 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| HH01BM1 1 | 105 | 115 | 95 | 97 | 96 | 110 |
| HH07BM1 7 | 93 | 101 | 95 | 96 | 109 | 101 |
| HH14BM1 13 | 94 | 87 | 98 | 88 | 103 | 97 |
| HH28BM1 28 | 105 | 102 | 98 | 92 | 91 | 98 |
| HH99BM1 29 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | |
| HH56BM1 56 | 100 | 99 | 107 | 93 | 111 | 110 |
| HH99BM2 144 | * | * | * | * | * | * |
| HH99BM3 252 | * | * | * | * | * | * |
| HH99BM4 368 | * | * | * | * | * | * |
| HH99BM5 510 | * | * | * | * | * | * |
| HH99BM6 622 | * | * | * | * | * | * |
| HH99BM7 770 | 106 | * | 106 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | |
| HL01BM1 1 | 88 | 104 | 93 | 97 | 96 | 100 |
| HL07BM1 7 | 90 | 101 | 92 | 95 | 115 | 115 |
| HL14BM1 14 | 87 | 96 | 94 | 87 | 105 | 100 |
| HL28BM1 28 | 94 | 95 | 99 | 94 | 102 | 97 |
| HL99BM1 28 | * | * | * | * | * | * |
| HL56BM1 56 | 104 | 83 | 105 | 87 | 104 | 107 |
| HL99BM2 144 | * | * | * | * | * | * |
| HL99BM3 238 | * | * | * | * | * | * |
| HL99BM4 368 | * | * | * | * | * | * |
| HL99BM5 510 | * | * | * | * | * | * |
| HL99BM6 622 | * | * | * | * | * | * |
| HL99BM7 768 | 101 | * | 101 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | |
| HH01DH1 1 | 92 | 89 | 97 | 91 | 98 | 92 |
| HH07DH1 7 | 82 | 86 | 88 | 86 | 88 | 88 |
| HH14DH1 14 | 82 | 88 | 88 | 87 | 92 | 90 |
| HH28DH1 28 | 83 | 87 | 89 | 87 | 99 | 98 |
| HH99DH1 28 | * | * | * | * | * | * |
| HH56DH1 56 | * | * | * | * | 93 | 93 |
| HH99DH2 133 | * | * | * | * | * | * |
| HH99DH3 244 | * | * | * | * | * | * |
| HH99DH4 364 | * | * | * | * | * | * |
| HH99DH5 495 | * | * | * | * | * | * |
| HH99DH6 629 | * | * | * | * | * | * |
| HH99DH7 763 | 85 | * | 91 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | |
| HL01DH1 1 | 89 | 91 | 97 | 90 | 97 | 94 |
| HL07DH1 7 | 87 | 83 | 93 | 83 | 91 | 88 |
| HL14DH1 14 | 89 | 84 | 94 | 84 | 95 | 94 |
| HL99DH1 28 | * | * | * | * | * | * |
| HL28DH1 28 | 89 | 88 | 93 | 86 | 97 | 98 |
| HL56DH1 56 | * | * | * | * | 91 | 93 |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | |
| HL99DH2 134 | * | * | * | * | * | * |
| HL99DH3 231 | * | * | * | * | * | * |
| HL99DH4 364 | * | * | * | * | * | * |
| HL99DH5 495 | * | * | * | * | * | * |
| HL99DH6 630 | * | * | * | * | * | * |
| HL99DH7 761 | 105 | * | 104 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | |
| HH01DL1 1 | 90 | 90 | 99 | 92 | 95 | 93 |
| HH07DL1 7 | 84 | 87 | 91 | 85 | 93 | 91 |
| HH14DL1 14 | 87 | 89 | 93 | 87 | 94 | 92 |
| HH99DL1 28 | * | * | * | * | * | * |
| HH28DL1 28 | 87 | 89 | 93 | 86 | 104 | 103 |
| HH56DL1 56 | * | * | * | * | 94 | 94 |
| HH99DL2 139 | * | * | * | * | * | * |
| HH99DL3 246 | * | * | * | * | * | * |
| HH99DL4 370 | * | * | * | * | * | * |
| HH99DL5 496 | * | * | * | * | * | * |
| HH99DL6 631 | * | * | * | * | * | * |
| HH99DL7 765 | 104 | * | 109 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | |
| HL01DL1 1 | 91 | 91 | 97 | 92 | 95 | 95 |
| HL07DL1 7 | 88 | 86 | 94 | 84 | 90 | 87 |
| HL14DL1 14 | 90 | 87 | 95 | 85 | 94 | 93 |
| HL99DL1 28 | * | * | * | * | * | * |
| HL28DL1 28 | 90 | 87 | 96 | 85 | 104 | 104 |
| HL56DL1 56 | * | * | * | * | 94 | 95 |
| HL99DL2 136 | * | * | * | * | * | * |
| HL99DL3 233 | * | * | * | * | * | * |
| HL99DL4 366 | * | * | * | * | * | * |
| HL99DL5 496 | * | * | * | * | * | * |
| HL99DL6 632 | * | * | * | * | * | * |
| HL99DL7 763 | 110 | * | 108 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | |
| HH01DM1 1 | 88 | 90 | 98 | 91 | 97 | 94 |
| HH07DM1 7 | 81 | 86 | 89 | 88 | 90 | 85 |
| HH14DM1 14 | 87 | 86 | 93 | 86 | 93 | 89 |
| HH28DM1 28 | 89 | 86 | 95 | 86 | 99 | 102 |
| HH99DM1 28 | * | * | * | * | * | * |
| HH56DM1 56 | * | * | * | * | 98 | 92 |
| HH99DM3 245 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | |
| HH99DM4 365 | * | * | * | * | * | * |
| HH99DM5 496 | * | * | * | * | * | * |
| HH99DM6 630 | * | * | * | * | * | * |
| HH99DM7 764 | 89 | * | 96 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | |
| HL01DM1 1 | 96 | 91 | 102 | 90 | 97 | 94 |
| HL07DM1 7 | 87 | 92 | 94 | 85 | 90 | 95 |
| HL14DM1 14 | 91 | 87 | 96 | 85 | 99 | 97 |
| HL28DM1 28 | 85 | 87 | 93 | 87 | 98 | 104 |
| HL99DM1 28 | * | * | * | * | * | * |
| HL56DM1 56 | * | * | * | * | 96 | 95 |
| HL99DM2 135 | * | * | * | * | * | * |
| HL99DM3 233 | * | * | * | * | * | * |
| HL99DM4 365 | * | * | * | * | * | * |
| HL99DM5 496 | * | * | * | * | * | * |
| HL99DM6 631 | * | * | * | * | * | * |
| HL99DM7 762 | 100 | * | 101 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | |
| HH01FH1 1 | 75 | 77 | 81 | 77 | 104 | 123 |
| HH07FH1 7 | 83 | 83 | 91 | 82 | 94 | 95 |
| HH14FH1 14 | 85 | 87 | 89 | 82 | 100 | 98 |
| HH28FH1 28 | 92 | 95 | 89 | 84 | 100 | 99 |
| HH99FH1 28 | * | * | * | * | * | * |
| HH56FH1 56 | 85 | 89 | 77 | 78 | 98 | 95 |
| HH99FH2 117 | * | * | * | * | * | * |
| HH99FH3 236 | * | * | * | * | * | * |
| HH99FH4 350 | * | * | * | * | * | * |
| HH99FH5 485 | * | * | * | * | * | * |
| HH99FH6 616 | * | * | * | * | * | * |
| HH99FH7 750 | 90 | * | 93 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | |
| HL01FH1 1 | 80 | 75 | 85 | 75 | 107 | 117 |
| HL07FH1 7 | 82 | 82 | 85 | 81 | 101 | 100 |
| HL14FH1 14 | 87 | 87 | 91 | 82 | 97 | 96 |
| HL99FH1 28 | * | * | * | * | * | * |
| HL28FH1 28 | 97 | 87 | 98 | 79 | 93 | 95 |
| HL56FH1 56 | 86 | 84 | 81 | 82 | 98 | 96 |
| HL99FH2 117 | * | * | * | * | * | * |
| HL99FH3 219 | * | * | * | * | * | * |
| HL99FH4 350 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| | | FURFURAL 8.0% 23°C | | | | |
| HL99FH5 485 | * | * | * | * | * | * |
| HL99FH6 617 | * | * | * | * | * | * |
| HL99FH7 748 | 75 | * | 76 | * | * | * |
| | | FURFURAL 1.0% 50°C | | | | |
| HH01FL1 1 | 93 | 74 | 80 | 74 | 106 | 125 |
| HH07FL1 7 | 82 | 81 | 87 | 83 | 97 | 93 |
| HH14FL1 14 | 81 | 78 | 89 | 81 | 109 | 104 |
| HH28FL1 28 | 80 | 88 | 76 | 77 | 105 | 100 |
| HH99FL1 29 | * | * | * | * | * | * |
| HH56FL1 56 | 92 | 92 | 83 | 80 | 101 | 94 |
| HH99FL2 124 | * | * | * | * | * | * |
| HH99FL3 242 | * | * | * | * | * | * |
| HH99FL4 356 | * | * | * | * | * | * |
| HH99FL5 489 | * | * | * | * | * | * |
| HH99FL6 622 | * | * | * | * | * | * |
| HH99FL7 756 | 89 | * | 91 | * | * | * |
| | | FURFURAL 1.0% 23°C | | | | |
| HL01FL1 1 | 72 | 73 | 75 | 73 | 124 | 123 |
| HL07FL1 7 | 82 | 84 | 86 | 81 | 97 | 98 |
| HL14FL1 14 | 77 | 79 | 85 | 81 | 104 | 109 |
| HL28FL1 28 | * | * | * | * | 100 | 94 |
| HL28FL2 28 | 89 | 89 | 91 | 84 | 101 | 100 |
| HL99FL1 29 | * | * | * | * | * | * |
| HL56FL1 56 | 89 | 86 | 92 | 77 | 102 | 106 |
| HL99FL2 124 | * | * | * | * | * | * |
| HL99FL3 225 | * | * | * | * | * | * |
| HL99FL4 356 | * | * | * | * | * | * |
| HL99FL5 489 | * | * | * | * | * | * |
| HL99FL6 623 | * | * | * | * | * | * |
| HL99FL7 754 | 102 | * | 99 | * | * | * |
| | | FURFURAL 4.0% 50°C | | | | |
| HH01FM1 1 | 77 | 75 | 80 | 74 | 125 | 119 |
| HH07FM1 7 | 82 | 84 | 86 | 80 | 97 | 94 |
| HH14FM1 14 | 81 | 85 | 89 | 84 | 97 | 92 |
| HH28FM1 28 | 86 | 88 | 108 | 99 | 95 | 92 |
| HH99FM1 29 | * | * | * | * | * | * |
| HH56FM1 56 | 84 | 89 | 88 | 88 | 98 | 96 |
| HH99FM2 124 | * | * | * | * | * | * |
| HH99FM3 242 | * | * | * | * | * | * |
| HH99FM4 356 | * | * | * | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| FURFURAL 4.0% 50°C | | | | | | |
| HH99FM5 490 | * | * | * | * | * | * |
| HH99FM6 622 | * | * | * | * | * | * |
| HH99FM7 756 | 77 | * | 83 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | |
| HL01FM1 1 | 74 | 78 | 79 | 76 | 123 | 123 |
| HL07FM1 7 | 82 | 84 | 97 | 83 | 97 | 97 |
| HL14FM1 14 | 88 | 89 | 94 | 78 | 100 | 97 |
| HL28FM1 28 | 82 | 88 | 103 | 94 | 93 | 89 |
| HL99FM1 29 | * | * | * | * | * | * |
| HL56FM1 56 | 87 | 91 | 102 | 94 | 95 | 96 |
| HL99FM2 124 | * | * | * | * | * | * |
| HL99FM3 228 | * | * | * | * | * | * |
| HL99FM4 356 | * | * | * | * | * | * |
| HL99FM5 490 | * | * | * | * | * | * |
| HL99FM6 623 | * | * | * | * | * | * |
| HL99FM7 754 | 77 | * | 78 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | |
| HH01MH1 1 | 93 | 95 | 98 | 92 | 101 | 100 |
| HH07MH1 7 | 102 | 94 | 105 | 91 | 99 | 100 |
| HH14MH1 14 | 87 | 99 | 89 | 94 | 96 | 95 |
| HH28MH1 28 | 92 | 94 | 98 | 91 | 100 | 98 |
| HH99MH1 29 | * | * | * | * | * | * |
| HH56MH1 57 | 93 | 99 | 100 | 99 | 99 | 94 |
| HH99MH2 122 | * | * | * | * | * | * |
| HH99MH3 240 | * | * | * | * | * | * |
| HH99MH4 358 | * | * | * | * | * | * |
| HH99MH5 493 | * | * | * | * | * | * |
| HH99MH6 626 | * | * | * | * | * | * |
| HH99MH7 759 | 75 | * | 72 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | |
| HL01MH1 1 | 92 | 96 | 96 | 92 | 99 | 100 |
| HL07MH1 7 | 99 | 92 | 102 | 88 | 98 | 97 |
| HL14MH1 14 | 94 | 94 | 97 | 90 | 109 | 102 |
| HL28MH1 28 | 99 | 94 | 102 | 91 | 100 | 101 |
| HL99MH1 29 | * | * | * | * | * | * |
| HL56MH1 57 | 120 | 92 | 90 | 88 | 99 | 96 |
| HL99MH2 122 | * | * | * | * | * | * |
| HL99MH3 235 | * | * | * | * | * | * |
| HL99MH4 358 | * | * | * | * | * | * |
| HL99MH5 493 | * | * | * | * | * | * |
| HL99MH6 627 | * | * | * | * | * | * |
| HL99MH7 757 | 82 | * | 89 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | |
| HH01ML1 1 | 96 | 87 | 101 | 89 | 98 | 96 |
| HH07ML1 7 | 97 | 89 | 101 | 87 | 99 | 98 |
| HH14ML1 14 | 94 | 99 | 98 | 94 | 99 | 94 |
| HH28ML1 28 | 98 | 96 | 101 | 92 | 99 | 99 |
| HH99ML1 28 | * | * | * | * | * | * |
| HH56ML1 57 | 89 | 95 | 95 | 93 | 98 | 96 |
| HH99ML2 120 | * | * | * | * | * | * |
| HH99ML3 240 | * | * | * | * | * | * |
| HH99ML4 358 | * | * | * | * | * | * |
| HH99ML5 493 | * | * | * | * | * | * |
| HH99ML6 626 | * | * | * | * | * | * |
| HH99ML7 759 | 90 | * | 89 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | |
| HL01ML1 1 | 92 | 94 | 95 | 89 | 105 | 104 |
| HL07ML1 7 | 97 | 102 | 98 | 97 | 100 | 98 |
| HL14ML1 14 | 95 | 96 | 99 | 91 | 99 | 100 |
| HL28ML1 28 | 98 | 101 | 99 | 94 | 109 | 109 |
| HL99ML1 28 | * | * | * | * | * | * |
| HL56ML1 57 | 99 | 97 | 103 | 92 | 102 | 97 |
| HL99ML2 120 | * | * | * | * | * | * |
| HL99ML3 235 | * | * | * | * | * | * |
| HL99ML4 358 | * | * | * | * | * | * |
| HL99ML5 494 | * | * | * | * | * | * |
| HL99ML6 627 | * | * | * | * | * | * |
| HL99ML7 757 | 112 | * | 107 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | |
| HH01MM1 1 | 91 | 90 | 94 | 87 | 97 | 95 |
| HH07MM1 7 | 100 | 88 | 104 | 85 | 102 | 99 |
| HH14MM1 14 | 97 | 89 | 102 | 89 | 102 | 100 |
| HH99MM1 28 | * | * | * | * | * | * |
| HH28MM1 28 | 91 | 96 | 95 | 92 | 103 | 107 |
| HH56MM1 57 | 92 | 96 | 100 | 94 | 100 | 98 |
| HH99MM2 120 | * | * | * | * | * | * |
| HH99MM3 239 | * | * | * | * | * | * |
| HH99MM4 357 | * | * | * | * | * | * |
| HH99MM5 493 | * | * | * | * | * | * |
| HH99MM6 625 | * | * | * | * | * | * |
| HH99MM7 758 | 79 | * | 88 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | |
| HL01MM1 1 | 95 | 92 | 101 | 91 | 98 | 96 |
| HL07MM1 7 | 91 | 91 | 95 | 88 | 102 | 96 |
| HL14MM1 14 | 95 | 97 | 100 | 94 | 100 | 93 |
| HL28MM1 28 | 89 | 87 | 93 | 85 | 102 | 105 |
| HL99MM1 28 | * | * | * | * | * | * |
| HL56MM1 57 | 96 | 102 | 99 | 96 | 99 | 94 |
| HL99MM2 120 | * | * | * | * | * | * |
| HL99MM3 234 | * | * | * | * | * | * |
| HL99MM4 357 | * | * | * | * | * | * |
| HL99MM5 493 | * | * | * | * | * | * |
| HL99MM6 626 | * | * | * | * | * | * |
| HL99MM7 756 | 82 | * | 87 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | |
| HH010M1 1 | 95 | 91 | 96 | 86 | 100 | 97 |
| HH070M1 7 | 93 | 94 | 98 | 92 | 98 | 98 |
| HH140M1 13 | 86 | 88 | 91 | 86 | 101 | 102 |
| HH280M1 28 | 100 | 99 | 99 | 94 | 103 | 102 |
| HH990M1 28 | * | * | * | * | * | * |
| HH560M1 56 | 98 | 95 | 100 | 90 | 101 | 98 |
| HH990M2 128 | * | * | * | * | * | * |
| HH990M3 251 | * | * | * | * | * | * |
| HH990M4 364 | * | * | * | * | * | * |
| HH990M5 503 | * | * | * | * | * | * |
| HH990M6 626 | * | * | * | * | * | * |
| HH990M7 765 | 96 | * | 96 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | |
| HL010M1 1 | 96 | 92 | 100 | 89 | 99 | 98 |
| HL070M1 7 | 94 | 92 | 101 | 91 | 102 | 97 |
| HL140M1 13 | 90 | 74 | 97 | 73 | 101 | 95 |
| HL990M1 28 | * | * | * | * | * | * |
| HL280M1 28 | 99 | 103 | 105 | 103 | 100 | 99 |
| HL560M1 56 | 102 | 100 | 106 | 94 | 106 | 91 |
| HL990M2 128 | * | * | * | * | * | * |
| HL990M3 237 | * | * | * | * | * | * |
| HL990M4 364 | * | * | * | * | * | * |
| HL990M5 503 | * | * | * | * | * | * |
| HL990M6 626 | * | * | * | * | * | * |
| HL990M7 763 | 100 | * | 103 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 50°C | | | | | | |
| HH010P1 1 | 89 | 89 | 95 | 90 | 101 | 97 |
| HH070P1 7 | 96 | * | 103 | * | 93 | 86 |
| HH140P1 14 | 93 | 96 | 97 | 95 | 91 | 87 |
| HH280P1 28 | 93 | 93 | 97 | 91 | 91 | 90 |
| HH990P1 28 | * | * | * | * | * | * |
| HH560P1 56 | 95 | 92 | 95 | 92 | 97 | 98 |
| HH990P2 141 | * | * | * | * | * | * |
| HH990P3 257 | * | * | * | * | * | * |
| HH990P4 385 | * | * | * | * | * | * |
| HH990P5 509 | * | * | * | * | * | * |
| HH990P6 627 | * | * | * | * | * | * |
| HH990P7 771 | 101 | * | 99 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | |
| HL010P1 1 | 87 | 95 | 92 | 93 | 100 | 101 |
| HL070P1 7 | 99 | 104 | 104 | 99 | 100 | 100 |
| HL140P1 14 | 93 | 90 | 98 | 88 | 94 | 91 |
| HL990P1 28 | * | * | * | * | * | * |
| HL280P1 28 | 97 | 101 | 103 | 95 | | 96 |
| HL560P1 56 | 96 | 89 | 100 | 87 | 99 | 99 |
| HL990P2 141 | * | * | * | * | * | * |
| HL990P3 244 | * | * | * | * | * | * |
| HL990P4 385 | * | * | * | * | * | * |
| HL990P5 509 | * | * | * | * | * | * |
| HL990P6 627 | * | * | * | * | * | * |
| HL990P7 769 | 93 | * | 97 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | |
| HH01PH1 1 | 93 | 90 | 98 | 88 | 96 | 95 |
| HH07PH1 7 | 90 | 80 | 96 | 81 | 98 | 93 |
| HH14PH1 14 | 89 | 84 | 95 | 85 | 99 | 98 |
| HH28PH1 28 | 91 | 90 | 94 | 88 | 100 | 97 |
| HH99PH1 29 | * | * | * | * | * | * |
| HH56PH1 56 | 94 | 85 | 98 | 85 | 93 | 92 |
| HH99PH2 121 | * | * | * | * | * | * |
| HH99PH3 243 | * | * | * | * | * | * |
| HH99PH4 362 | * | * | * | * | * | * |
| HH99PH5 499 | * | * | * | * | * | * |
| HH99PH6 624 | * | * | * | * | * | * |
| HH99PH7 757 | 104 | * | 100 | * | * | * |

HIGH DENSITY POLYETHYLENE; CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| PHENOL 8.0% 23°C | | | | | | |
| HL01PH1 1 | 88 | 86 | 95 | 87 | 98 | 97 |
| HL07PH1 7 | 93 | 86 | 98 | 86 | 100 | 99 |
| HL14PH1 14 | 89 | 90 | 94 | 87 | 102 | 104 |
| HL28PH1 28 | 91 | 90 | 97 | 89 | 99 | 93 |
| HL99PH1 29 | * | * | * | * | * | * |
| HL56PH1 56 | 91 | 89 | 96 | 88 | 94 | 96 |
| HL99PH2 121 | * | * | * | * | * | * |
| HL99PH3 230 | * | * | * | * | * | * |
| HL99PH4 362 | * | * | * | * | * | * |
| HL99PH5 499 | * | * | * | * | * | * |
| HL99PH6 625 | * | * | * | * | * | * |
| HL99PH7 755 | 95 | * | 98 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | |
| HH99PL4 1 | * | * | * | * | * | * |
| HH01PL1 1 | 88 | 90 | 94 | 87 | 100 | 96 |
| HH07PL1 7 | 91 | 91 | 97 | 89 | 98 | 103 |
| HH14PL1 14 | 91 | 91 | 95 | 89 | 101 | 100 |
| HH28PL1 28 | 91 | 91 | 94 | 88 | 100 | 101 |
| HH99PL1 28 | * | * | * | * | * | * |
| HH56PL1 56 | 83 | 87 | 90 | 88 | 94 | 90 |
| HH99PL2 122 | * | * | * | * | * | * |
| HH99PL3 245 | * | * | * | * | * | * |
| HH99PL5 499 | * | * | * | * | * | * |
| HH99PL6 625 | * | * | * | * | * | * |
| HH99PL7 758 | 87 | * | 85 | * | * | * |
| PHENOL 1.0% 23°C | | | | | | |
| HL01PL1 1 | 89 | 90 | 85 | 78 | 98 | 95 |
| HL07PL1 7 | 83 | 90 | 90 | 87 | 101 | 102 |
| HL14PL1 14 | 88 | 90 | 95 | 88 | 98 | 98 |
| HL28PL1 28 | 90 | 89 | 96 | 85 | 101 | 102 |
| HL99PL1 28 | * | * | * | * | * | * |
| HL56PL1 56 | 92 | 90 | 96 | 87 | 100 | 95 |
| HL99PL2 122 | * | * | * | * | * | * |
| HL99PL3 233 | * | * | * | * | * | * |
| HL99PL4 363 | * | * | * | * | * | * |
| HL99PL5 499 | * | * | * | * | * | * |
| HL99PL6 626 | * | * | * | * | * | * |
| HL99PL7 756 | 87 | * | 91 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| | | PHENOL 4.0% 50°C | | | | |
| HH01PM1 1 | 96 | 83 | 88 | 92 | 98 | 93 |
| HH07PM1 7 | 93 | 90 | 96 | 88 | 100 | 100 |
| HH14PM1 14 | 89 | 90 | 93 | 86 | 100 | |
| HH28PM1 28 | 91 | 86 | 95 | 85 | 98 | 94 |
| HH99PM1 29 | * | * | * | * | * | * |
| HH56PM1 56 | 92 | 91 | 98 | 88 | 95 | 95 |
| HH99PM2 121 | * | * | * | * | * | * |
| HH99PM3 244 | * | * | * | * | * | * |
| HH99PM4 362 | * | * | * | * | * | * |
| HH99PM5 499 | * | * | * | * | * | * |
| HH99PM6 624 | * | * | * | * | * | * |
| HH99PM7 757 | 73 | * | 76 | * | * | * |
| | | PHENOL 4.0% 23°C | | | | |
| HL01PM1 1 | 90 | 83 | 96 | 84 | 94 | 95 |
| HL07PM1 7 | 82 | 89 | 88 | 89 | 99 | 97 |
| HL14PM1 14 | 87 | 91 | 94 | 88 | 103 | 100 |
| HL28PM1 28 | 89 | 87 | 94 | 86 | 100 | 98 |
| HL99PM1 29 | * | * | * | * | * | * |
| HL56PM1 56 | 90 | 91 | 98 | 91 | 100 | 95 |
| HL99PM2 121 | * | * | * | * | * | * |
| HL99PM3 231 | * | * | * | * | * | * |
| HL99PM4 362 | * | * | * | * | * | * |
| HL99PM5 499 | * | * | * | * | * | * |
| HL99PM6 625 | * | * | * | * | * | * |
| HL99PM7 755 | 102 | * | 98 | * | * | * |
| | | SODIUM CHLORIDE 35.0% 50°C | | | | |
| HH01SH1 1 | 97 | 95 | 91 | 101 | 95 | 95 |
| HH07SH1 7 | 95 | 99 | 94 | 97 | 101 | 100 |
| HH14SH1 14 | 92 | 100 | 101 | 95 | 104 | 100 |
| HH99SH1 28 | * | * | * | * | * | * |
| HH28SH1 28 | 97 | 100 | 98 | 92 | 101 | 89 |
| HH56SH1 56 | 101 | 93 | 104 | 90 | 107 | 107 |
| HH99SH2 131 | * | * | * | * | * | * |
| HH99SH3 253 | * | * | * | * | * | * |
| HH99SH4 379 | * | * | * | * | * | * |
| HH99SH5 510 | * | * | * | * | * | * |
| HH99SH6 630 | * | * | * | * | * | * |
| HH99SH7 771 | 87 | * | 93 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | |
| HL01SH1 1 | 96 | 99 | 101 | 96 | 99 | 101 |
| HL07SH1 7 | 94 | 88 | 92 | 93 | 102 | 106 |
| HL14SH1 14 | 97 | 98 | 101 | 95 | 100 | 111 |
| HL28SH1 28 | 102 | 107 | 101 | 93 | 99 | 107 |
| HL99SH1 28 | * | * | * | * | * | * |
| HL56SH1 56 | 98 | 99 | 103 | 93 | 103 | 105 |
| HL99SH2 131 | * | * | * | * | * | * |
| HL99SH3 246 | * | * | * | * | * | * |
| HL99SH4 379 | * | * | * | * | * | * |
| HL99SH5 510 | * | * | * | * | * | * |
| HL99SH6 630 | * | * | * | * | * | * |
| HL99SH7 769 | 97 | * | 90 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | |
| HH01SM2 1 | * | * | * | * | * | * |
| HH01SM1 1 | 88 | 82 | 104 | 90 | 102 | 92 |
| HH07SM1 7 | 90 | 84 | 103 | 89 | 98 | 103 |
| HH07SM2 7 | * | 100 | * | * | * | * |
| HH14SM1 14 | 98 | 85 | 101 | 85 | 106 | 97 |
| HH14SM2 15 | * | * | * | * | * | * |
| HH28SM2 28 | * | * | * | * | * | * |
| HH99SM1 28 | * | * | * | * | * | * |
| HH28SM1 28 | 101 | 106 | 98 | 98 | 114 | 104 |
| HH56SM2 56 | * | * | * | * | * | * |
| HH56SM1 61 | 98 | 99 | 99 | 94 | 109 | 111 |
| HH99SM2 132 | * | * | * | * | * | * |
| HH99SM3 254 | * | * | * | * | * | * |
| HH99SM4 370 | * | * | * | * | * | * |
| HH99SM5 511 | * | * | * | * | * | * |
| HH99SM6 624 | * | * | * | * | * | * |
| HH99SM7 772 | 111 | * | 105 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | |
| HL01SM1 1 | 91 | 86 | 93 | 89 | 111 | 103 |
| HL01SM2 1 | * | * | * | * | * | * |
| HL07SM1 7 | 92 | 2 | 103 | 100 | 99 | 105 |
| HL07SM2 7 | * | * | * | * | * | * |
| HL14SM1 14 | 101 | 78 | 103 | 76 | 105 | 98 |
| HL14SM2 15 | * | * | * | * | * | * |
| HL28SM2 28 | * | * | * | * | * | * |
| HL99SM1 28 | * | * | * | * | * | * |
| HL28SM1 28 | 99 | 68 | 97 | 64 | 109 | 114 |
| HL56SM2 56 | * | * | * | * | * | * |
| HL56SM1 61 | 106 | 95 | 104 | 92 | 113 | 112 |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 10.0% 23°C | | | | | | |
| HL99SM2 132 | * | * | * | * | * | * |
| HL99SM3 246 | * | * | * | * | * | * |
| HL99SM4 370 | * | * | * | * | * | * |
| HL99SM5 511 | * | * | * | * | * | * |
| HL99SM6 624 | * | * | * | * | * | * |
| HL99SM7 770 | 111 | * | 105 | * | * | * |
| WATER 100.0% 50°C | | | | | | |
| HH01WP2 1 | * | * | * | * | * | * |
| HH01WP1 1 | 100 | 100 | 98 | 103 | 116 | 102 |
| HH07WP1 7 | 100 | 94 | 107 | 97 | 94 | 94 |
| HH07WP2 7 | * | * | * | * | * | * |
| HH14WP1 14 | 96 | 94 | 90 | 90 | 103 | 98 |
| HH14WP2 14 | * | * | * | * | * | * |
| HH99WP1 28 | * | * | * | * | * | * |
| HH28WP2 28 | 90 | 89 | 108 | 95 | 93 | 89 |
| HH28WP1 28 | 97 | 97 | 109 | 95 | 97 | 99 |
| HH56WP2 56 | * | * | * | * | * | * |
| HH56WP1 56 | 102 | 97 | 102 | 93 | 108 | 107 |
| HH99WP2 133 | * | * | * | * | * | * |
| HH99WP3 254 | * | * | * | * | * | * |
| HH99WP4 370 | * | * | * | * | * | * |
| HH99WP5 503 | * | * | * | * | * | * |
| HH99WP6 622 | * | * | * | * | * | * |
| HH99WP7 772 | 105 | * | 100 | * | * | * |
| WATER 100.0% 23°C | | | | | | |
| HL01WP2 1 | * | * | * | * | * | * |
| HL01WP1 1 | 87 | 86 | 105 | 97 | 93 | 87 |
| HL07WP1 7 | 95 | 105 | 99 | 98 | 108 | 111 |
| HL07WP2 7 | * | * | * | * | * | * |
| HL14WP2 14 | * | * | * | * | * | * |
| HL14WP1 14 | 80 | 96 | 95 | 96 | 99 | 84 |
| HL28WP2 28 | 99 | 92 | 109 | 96 | 109 | 87 |
| HL99WP1 28 | * | * | * | * | * | * |
| HL28WP1 28 | 93 | 97 | 103 | 92 | 92 | 93 |
| HL56WP1 56 | 101 | 92 | 103 | 95 | 105 | 99 |
| HL56WP2 56 | * | * | * | * | * | * |
| HL99WP2 132 | * | * | * | * | * | * |
| HL99WP3 246 | * | * | * | * | * | * |
| HL99WP4 370 | * | * | * | * | * | * |
| HL99WP5 503 | * | * | * | * | * | * |
| HL99WP6 622 | * | * | * | * | * | * |
| HL99WP7 770 | 113 | * | 105 | * | * | * |

HIGH DENSITY POLYETHYLENE: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT RETENTION TENSILE M | PERCENT RETENTION TENSILE T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR LB/IN M | PERCENT RETENTION TEAR LB/IN T |
|---|---|---|---|---|---|---|
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | |
| HH01XM1 1 | 90 | 94 | 90 | 94 | 94 | 92 |
| HH07XM1 7 | 101 | 99 | 101 | 95 | 112 | 106 |
| HH14XM1 14 | 97 | 86 | 101 | 84 | 105 | 96 |
| HH28XM1 28 | 105 | 102 | 107 | 100 | 98 | 91 |
| HH99XM1 28 | * | * | * | * | * | * |
| HH56XM1 55 | 103 | 96 | 103 | 95 | 102 | 93 |
| HH99XM2 118 | * | * | * | * | * | * |
| HH99XM3 231 | * | * | * | * | * | * |
| HH99XM4 363 | * | * | * | * | * | * |
| HH99XM5 489 | * | * | * | * | * | * |
| HH99XM6 609 | * | * | * | * | * | * |
| HH99XM7 749 | 72 | * | 73 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | |
| HL01XM1 1 | 101 | 104 | 102 | 99 | 96 | 93 |
| HL07XM1 7 | 97 | 88 | 105 | 89 | 99 | 101 |
| HL14XM1 14 | 113 | 85 | 105 | 84 | 96 | 94 |
| HL28XM1 28 | 102 | 68 | 91 | 65 | 95 | 100 |
| HL99XM1 28 | * | * | * | * | * | * |
| HL56XM1 55 | 92 | 95 | 103 | 96 | 107 | 108 |
| HL99XM2 118 | * | * | * | * | * | * |
| HL99XM3 223 | * | * | * | * | * | * |
| HL99XM4 363 | * | * | * | * | * | * |
| HL99XM5 489 | * | * | * | * | * | * |
| HL99XM6 640 | * | * | * | * | * | * |
| HL99XM7 747 | 89 | * | 90 | * | * | * |

## CSPE_LW : FINAL PROPERTIES

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| QH01AM1 1 | 2.17 | 30.30 | 2.96 | 1.01 | 40.64 | 26.92 | 50.60 | 44.44 | 224.86 | 304.16 | 11.70 | 9.13 |
| QH07AM1 7 | 2.30 | 32.00 | 2.92 | 1.01 | 39.62 | 26.44 | 53.18 | 47.74 | 239.62 | 318.60 | 11.71 | 9.31 |
| QH14AM1 14 | 2.25 | 31.80 | 2.91 | 1.02 | 38.16 | 26.54 | 52.64 | 51.62 | 251.90 | 328.16 | 11.22 | 9.26 |
| QH28AM1 28 | 2.43 | 34.50 | 2.92 | 1.02 | 37.82 | 24.40 | 57.02 | 51.88 | 239.18 | 329.44 | 10.49 | 8.60 |
| QH99AM1 46 | 2.44 | 35.40 | 2.90 | 1.04 | * | * | * | * | * | * | * | * |
| QH56AM1 56 | 2.54 | 36.00 | 2.93 | 1.03 | 30.94 | 19.02 | 55.96 | 53.88 | 246.06 | 349.96 | 8.47 | 7.35 |
| QH99AM2 123 | 2.63 | 37.50 | 2.94 | 1.07 | * | * | * | * | * | * | * | * |
| QH99AM3 242 | 2.63 | 38.10 | 2.94 | 1.07 | 16.95 | * | 49.85 | * | 539.67 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| QL01AM1 1 | 2.22 | 30.70 | 3.00 | 1.00 | 45.70 | 30.50 | 52.04 | 44.80 | 196.00 | 280.22 | 13.01 | 10.15 |
| QL07AM1 7 | 2.26 | 32.00 | 3.01 | 1.00 | 43.70 | 27.38 | 49.84 | 41.26 | 204.08 | 299.10 | 12.60 | 9.85 |
| QL14AM1 14 | 2.14 | 29.60 | 3.00 | 1.00 | 44.06 | 27.28 | 52.86 | 40.42 | 218.98 | 328.74 | 12.27 | 9.62 |
| QL28AM1 28 | 2.17 | 30.20 | 3.01 | 1.00 | 44.18 | 28.82 | 50.94 | 45.80 | 208.42 | 310.78 | 12.86 | 10.12 |
| QL99AM1 46 | 2.17 | 30.70 | 2.99 | 0.99 | * | * | * | * | * | * | * | * |
| QL56AM1 56 | 2.10 | 29.10 | 3.00 | 1.00 | 40.96 | 26.22 | 50.82 | 44.64 | 215.84 | 311.02 | 11.98 | 9.82 |
| QL99AM2 123 | 2.18 | 30.70 | 2.99 | 0.99 | * | * | * | * | * | * | * | * |
| QL99AM3 241 | 2.21 | 31.30 | 3.00 | 0.99 | 32.53 | * | 44.06 | * | 457.75 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| QH01BM1 1 | 2.31 | 32.70 | 2.94 | 1.01 | 41.46 | 27.72 | 45.90 | 42.74 | 188.28 | 312.18 | 11.50 | 9.53 |
| QH07BM1 7 | 2.34 | 33.70 | 2.90 | 1.01 | 37.74 | 25.02 | 44.40 | 39.58 | 207.40 | 301.60 | 11.28 | 9.11 |
| QH14BM1 14 | 2.19 | 31.70 | 2.91 | 1.02 | 42.04 | 27.90 | 53.22 | 43.00 | 202.08 | 255.26 | 11.11 | 9.18 |
| QH28BM1 28 | 2.38 | 33.70 | 2.95 | 1.03 | 41.98 | 28.92 | 54.46 | 42.24 | 186.46 | 213.34 | 9.76 | 8.43 |
| QH99BM1 46 | 2.35 | 34.70 | 2.90 | 1.02 | * | * | * | * | * | * | * | * |
| QH56BM1 56 | 2.52 | 35.70 | 2.95 | 1.04 | 47.04 | 32.24 | 63.48 | 49.96 | 183.44 | 208.88 | 10.08 | 8.20 |
| QH99BM2 124 | 2.62 | 37.80 | 2.96 | 1.06 | * | * | * | * | * | * | * | * |
| QH99BM3 242 | 2.68 | 38.20 | 2.98 | 1.08 | 32.95 | * | 65.07 | * | 310.00 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| QL01BM1 1 | 2.25 | 31.40 | 3.00 | 1.00 | 42.74 | 24.90 | 46.84 | 39.02 | 183.08 | 334.28 | 11.83 | 9.99 |
| QL07BM1 7 | 2.30 | 31.80 | 3.01 | 1.00 | 41.26 | 26.20 | 45.02 | 38.70 | 204.22 | 314.80 | 11.43 | 9.29 |
| QL14BM1 14 | 2.13 | 29.60 | 3.00 | 1.00 | 42.54 | 26.80 | 51.12 | 42.66 | 214.78 | 299.66 | 11.97 | 9.18 |
| QL28BM1 28 | 2.35 | 32.50 | 3.01 | 1.01 | 40.26 | 24.34 | 53.72 | 45.06 | 242.34 | 339.22 | 11.56 | 9.39 |
| QL99BM1 46 | 2.35 | 34.00 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| QL56BM1 56 | 2.55 | 36.40 | 3.02 | 1.02 | 44.68 | 27.50 | 64.24 | 53.16 | 222.36 | 301.28 | 10.78 | 8.59 |
| QL99BM2 124 | 2.41 | 37.60 | 3.03 | 1.02 | * | * | * | * | * | * | * | * |
| QL99BM3 241 | 2.57 | 38.00 | 3.06 | 1.04 | 32.70 | * | 62.54 | * | 390.25 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| QH01DH1 1 | 2.32 | 31.60 | 2.91 | 1.05 | 25.72 | 17.48 | 38.28 | 35.12 | 319.96 | 422.94 | 9.38 | 8.00 |
| QH07DH1 7 | 2.45 | 34.10 | 2.94 | 1.02 | 24.88 | 16.14 | 38.90 | 35.68 | 312.32 | 428.94 | 9.18 | 7.86 |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| QH14DH1 14 | 2.48 | 34.80 | 2.94 | 1.04 | 24.25 | 16.08 | 39.33 | 35.46 | 329.85 | 426.34 | 8.98 | 7.73 |
| QH28DH1 28 | 2.59 | 35.70 | 2.89 | 1.06 | 20.42 | 14.14 | 38.44 | 34.16 | 349.18 | 424.80 | * | * |
| QH99DH1 46 | 2.41 | 35.70 | 2.78 | 1.04 | * | * | * | * | * | * | * | * |
| QH56DH1 56 | 2.36 | 33.40 | 2.91 | 1.04 | 33.72 | 22.32 | 47.86 | 44.14 | 251.98 | 323.00 | 10.32 | 9.08 |
| QH99DH2 137 | 2.57 | 38.00 | 2.80 | 1.06 | * | * | * | * | * | * | * | * |
| QH99DH3 242 | 2.69 | 39.60 | 2.81 | 1.08 | 21.43 | * | 49.00 | * | 391.00 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| QL01DH1 1 | 2.29 | 30.90 | 3.03 | 1.02 | 30.12 | 19.34 | 39.40 | 33.64 | 273.90 | 374.42 | 9.88 | 8.31 |
| QL07DH1 7 | 2.41 | 32.60 | 3.03 | 1.03 | 31.22 | 22.30 | 39.88 | 33.60 | 268.24 | 306.40 | 10.20 | 8.18 |
| QL14DH1 14 | 2.29 | 31.50 | 3.04 | 1.02 | 28.16 | 17.70 | 41.24 | 33.68 | 301.16 | 380.22 | 9.27 | 7.53 |
| QL28DH1 28 | 2.29 | 31.50 | 3.02 | 1.01 | 33.78 | 22.14 | 43.46 | 40.36 | 240.80 | 368.22 | 10.10 | 8.61 |
| QL99DH1 46 | 2.35 | 32.80 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| QL56DH1 56 | 2.28 | 31.20 | 3.03 | 1.03 | 31.42 | 20.04 | 43.32 | 38.26 | 275.84 | 325.30 | 9.17 | 7.82 |
| QL99DH2 137 | 2.36 | 33.20 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| QL99DH3 241 | 2.39 | 33.60 | 3.00 | 1.01 | 25.82 | * | 43.68 | * | 533.42 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| QH01DL1 1 | 2.24 | 31.40 | * | 1.01 | 33.44 | 22.50 | 40.96 | 37.96 | 247.24 | 357.36 | 10.79 | 8.72 |
| QH07DL1 7 | 2.25 | 31.30 | 2.97 | 1.02 | 32.06 | 21.00 | 40.50 | 37.06 | 256.58 | 336.02 | 11.20 | 8.93 |
| QH14DL1 14 | 2.27 | 32.30 | 2.95 | 1.00 | 29.26 | 17.64 | 42.50 | 37.64 | 289.78 | 403.48 | 10.68 | 9.12 |
| QH28DL1 28 | 2.26 | 32.30 | 2.93 | 1.01 | 33.02 | 21.42 | 47.78 | 42.46 | 272.42 | 358.36 | 10.29 | 8.87 |
| QH99DL1 46 | 2.25 | 32.80 | 2.88 | 1.02 | * | * | * | * | * | * | * | * |
| QH56DL1 56 | 2.34 | 33.00 | 2.94 | 1.03 | 32.95 | 21.02 | 49.08 | 43.90 | 254.65 | 329.14 | 10.32 | 8.29 |
| QH99DL2 137 | 2.40 | 34.80 | 2.91 | 1.03 | * | * | * | * | * | * | * | * |
| QH99DL3 242 | 2.52 | 36.60 | 2.95 | 1.06 | 22.89 | * | 54.55 | * | 377.92 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| QL01DL1 1 | 2.17 | 29.80 | 3.00 | 1.01 | 34.52 | 22.52 | 39.50 | 36.08 | 224.30 | 352.22 | 10.85 | 8.42 |
| QL07DL1 7 | 2.18 | 30.00 | 3.01 | 1.01 | 37.50 | 23.32 | 43.38 | 38.72 | 246.98 | 360.18 | 11.34 | 9.40 |
| QL14DL1 14 | 2.23 | 30.70 | 3.01 | 1.01 | 29.82 | 19.10 | 40.40 | 35.52 | 281.64 | 378.06 | 10.34 | 8.38 |
| QL28DL1 28 | 2.36 | 32.50 | 3.01 | 1.01 | 34.34 | 22.10 | 43.58 | 38.62 | 247.70 | 356.80 | 11.08 | 9.08 |
| QL99DL1 46 | 2.16 | 30.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| QL56DL1 56 | 2.24 | 30.90 | 3.01 | 1.01 | 35.24 | 21.32 | 46.52 | 39.76 | 257.76 | 374.78 | 11.86 | 9.89 |
| QL99DL2 137 | 2.19 | 31.10 | 3.01 | 0.99 | * | * | * | * | * | * | * | * |
| QL99DL3 241 | 2.19 | 31.30 | 3.01 | 1.00 | 29.52 | * | 47.40 | * | 472.42 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| QH01DM1 1 | 2.28 | 31.50 | 2.94 | 1.03 | 27.90 | 17.94 | 39.48 | 35.36 | 297.54 | 412.70 | 9.56 | 7.72 |
| QH07DM1 7 | 2.25 | 31.10 | 2.96 | 1.02 | 29.10 | 17.28 | 39.86 | 35.46 | 291.06 | 403.78 | 9.36 | 8.65 |
| QH14DM1 14 | 2.43 | 33.80 | 2.94 | 1.04 | 23.42 | 14.80 | 37.62 | 33.70 | 324.28 | 428.40 | 10.54 | 8.79 |
| QH28DM1 28 | 2.43 | 34.60 | 2.92 | 1.02 | 33.86 | 22.28 | 47.40 | 43.12 | 270.28 | 350.40 | 9.80 | 8.36 |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| QH99DM1 46 | 2.30 | 33.60 | 2.84 | 1.03 | * | * | * | * | * | * | * | * |
| QH56DM1 56 | 2.35 | 33.80 | 2.85 | 1.05 | 34.04 | 22.82 | 49.60 | 44.12 | 254.54 | 323.64 | 10.22 | 8.85 |
| QH99DM2 137 | 2.43 | 35.60 | 2.87 | 1.04 | * | * | * | * | * | * | * | * |
| QH99DM3 242 | 2.60 | 37.60 | 2.90 | 1.07 | 22.40 | * | 56.57 | * | 416.08 | * | * | * |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| QL01DM1 1 | 2.21 | 30.00 | 3.02 | 1.02 | 34.06 | 21.20 | 40.90 | 35.28 | 243.92 | 361.62 | 10.25 | 8.58 |
| QL07DM1 7 | 2.24 | 30.40 | 3.02 | 1.01 | 32.98 | 19.88 | 44.64 | 36.34 | 248.40 | 377.34 | 10.16 | 8.38 |
| QL14DM1 14 | 2.24 | 30.50 | 3.02 | 1.01 | 31.70 | 19.02 | 41.00 | 35.86 | 260.98 | 382.00 | 10.11 | 7.96 |
| QL28DM1 28 | 2.39 | 33.50 | 3.00 | 1.00 | 31.78 | 20.42 | 43.00 | 37.46 | 270.58 | 373.60 | 10.37 | 8.47 |
| QL99DM1 46 | 2.25 | 31.20 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| QL56DM1 56 | 2.26 | 31.00 | 3.02 | 1.01 | 33.24 | 20.30 | 44.42 | 39.18 | 258.24 | 368.04 | 10.84 | 9.36 |
| QL99DM2 137 | 2.27 | 31.80 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| QL99DM3 241 | 2.32 | 32.40 | 3.02 | 1.01 | 27.12 | * | 44.80 | * | 504.33 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| QH01FH1 1 | 2.41 | 33.00 | 2.97 | 1.03 | 28.96 | 17.92 | 45.02 | 40.70 | 284.30 | 398.74 | 9.37 | 7.67 |
| QH07FH1 7 | 2.49 | 34.90 | 2.91 | 1.05 | 28.42 | 17.74 | 47.36 | 42.26 | 289.40 | 375.84 | 9.03 | 7.76 |
| QH14FH1 14 | 2.56 | 35.50 | 2.95 | 1.05 | 27.24 | 17.02 | 46.98 | 40.66 | 286.12 | 378.64 | 8.62 | 7.49 |
| QH28FH1 28 | 2.75 | 38.00 | 2.96 | 1.06 | 29.46 | 18.88 | 44.22 | 38.74 | 258.76 | 334.18 | 8.18 | 6.83 |
| QH99FH1 46 | 2.68 | 37.40 | 2.92 | 1.09 | * | * | * | * | * | * | * | * |
| QH56FH1 56 | 2.76 | 38.10 | 2.98 | 1.09 | 27.42 | 17.04 | 50.32 | 44.68 | 260.46 | 336.50 | 6.90 | 6.49 |
| QH99FH2 137 | 2.85 | 40.30 | 2.96 | 1.11 | * | * | * | * | * | * | * | * |
| QH99FH3 242 | 2.91 | 41.40 | 2.99 | 1.13 | 21.98 | * | 33.59 | * | 221.50 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| QL01FH1 1 | 2.49 | 33.60 | 3.04 | 1.02 | 34.68 | 21.42 | 47.14 | 41.52 | 252.22 | 354.06 | 10.56 | 8.63 |
| QL07FH1 7 | 2.55 | 34.10 | 3.06 | 1.03 | 31.32 | 18.72 | 45.50 | 37.82 | 259.80 | 367.50 | 9.11 | 7.86 |
| QL14FH1 14 | 2.27 | 31.70 | 3.01 | 1.00 | 35.42 | 23.06 | 48.00 | 44.94 | 234.46 | 354.46 | 10.81 | 8.76 |
| QL28FH1 28 | 2.68 | 36.20 | 3.05 | 1.04 | 28.90 | 18.58 | 40.36 | 34.82 | 286.54 | 388.18 | 8.99 | 7.49 |
| QL99FH1 46 | 2.37 | 32.20 | 3.06 | 1.03 | * | * | * | * | * | * | * | * |
| QL56FH1 56 | 2.61 | 35.20 | 3.04 | 1.04 | 28.74 | 17.80 | 43.40 | 37.50 | 289.36 | 398.36 | 9.34 | 8.20 |
| QL99FH2 137 | 2.39 | 32.80 | 3.06 | 1.03 | * | * | * | * | * | * | * | * |
| QL99FH3 241 | 2.44 | 33.30 | 3.07 | 1.04 | 22.16 | * | 41.71 | * | 514.33 | * | * | * |
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| QH01FL1 1 | 2.34 | 32.80 | 2.95 | 1.01 | 38.88 | 24.98 | 51.06 | 48.08 | 237.50 | 345.06 | 11.40 | 9.72 |
| QH07FL1 7 | 2.32 | 32.60 | 2.92 | 1.02 | 36.26 | 22.68 | 53.40 | 49.58 | 256.66 | 356.96 | 10.58 | 9.30 |
| QH14FL1 14 | 2.33 | 32.70 | 2.95 | 1.02 | 35.34 | 22.26 | 50.94 | 46.76 | 244.42 | 339.50 | 10.30 | 8.68 |
| QH28FL1 28 | 2.31 | 33.30 | 2.92 | 1.01 | 36.00 | 23.16 | 47.54 | 43.48 | 247.72 | 341.04 | 10.68 | 8.55 |
| QH99FL1 46 | 2.30 | 33.50 | 2.89 | 1.02 | * | * | * | * | * | * | * | * |
| QH56FL1 56 | 2.33 | 33.10 | 2.93 | 1.03 | 36.56 | 23.22 | 55.70 | 49.70 | 242.48 | 321.16 | 10.08 | 8.01 |
| QH99FL2 137 | 2.46 | 35.50 | 2.92 | 1.04 | * | * | * | * | * | * | * | * |
| QH99FL3 242 | 2.59 | 37.00 | 2.95 | 1.06 | 23.46 | * | 54.67 | * | 384.42 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| QL01FL1 1 | 2.29 | 31.60 | 3.01 | 1.00 | 45.12 | 29.22 | 55.12 | 48.68 | 217.62 | 310.30 | 12.67 | 10.53 |
| QL07FL1 9 | 2.38 | 32.70 | 3.02 | 1.01 | 40.72 | 26.92 | 51.28 | 46.24 | 222.36 | 324.58 | 11.91 | 9.43 |
| QL14FL1 14 | 2.24 | 31.10 | 3.00 | 1.01 | 40.56 | 24.32 | 50.88 | 45.06 | 216.46 | 332.96 | 11.71 | 9.64 |
| QL28FL1 28 | 2.31 | 32.10 | 3.00 | 1.01 | 33.00 | 21.06 | 40.86 | 37.16 | 246.98 | 350.78 | 11.02 | 9.10 |
| QL99FL1 46 | 2.24 | 31.40 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| QL56FL1 56 | 2.38 | 32.80 | 3.01 | 1.01 | 34.34 | 20.48 | 47.56 | 41.12 | 263.16 | 372.06 | 10.51 | 9.09 |
| QL99FL2 137 | 2.27 | 31.80 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| QL99FL3 241 | 2.28 | 32.10 | 3.02 | 1.01 | 29.68 | * | 48.91 | * | 513.42 | * | * | * |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| QH01FM1 1 | 2.41 | 33.40 | 2.95 | 1.02 | 31.68 | 20.28 | 46.28 | 42.14 | 275.92 | 364.82 | 9.95 | 8.28 |
| QH07FM1 7 | 2.48 | 34.70 | 2.91 | 1.04 | 31.60 | 20.82 | 48.54 | 45.30 | 275.88 | 372.98 | 10.04 | 8.48 |
| QH14FM1 14 | 2.21 | 30.90 | 2.95 | 1.03 | 31.80 | 20.16 | 50.36 | 44.04 | 268.10 | 348.16 | 9.51 | 8.20 |
| QH28FM1 28 | 2.36 | 32.50 | 3.03 | 1.02 | 34.30 | 20.78 | 43.14 | 37.80 | 245.92 | 364.36 | 10.24 | 8.73 |
| QH99FM1 46 | 2.43 | 35.00 | 2.89 | 1.04 | * | * | * | * | * | * | * | * |
| QH56FM1 56 | 2.50 | 35.00 | 2.93 | 1.05 | 34.42 | 21.94 | 54.14 | 49.16 | 242.82 | 323.46 | 8.56 | 7.33 |
| QH99FM2 137 | 2.67 | 38.00 | 2.93 | 1.08 | * | * | * | * | * | * | * | * |
| QH99FM3 242 | 2.65 | 38.10 | 2.94 | 1.08 | 23.28 | * | 50.53 | * | 369.33 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| QL01FM1 1 | 2.35 | 32.10 | 3.03 | 1.01 | 40.34 | 25.12 | 51.20 | 44.88 | 237.96 | 344.16 | 11.81 | 9.62 |
| QL07FM1 7 | 2.32 | 31.70 | 3.01 | 1.01 | 34.94 | 21.86 | 47.60 | 42.52 | 251.10 | 353.14 | 10.26 | 8.99 |
| QL14FM1 14 | 2.27 | 30.90 | 3.06 | 1.03 | 28.86 | 17.56 | 43.62 | 38.38 | 274.88 | 380.88 | 8.82 | 7.53 |
| QL28FM1 28 | 2.30 | 32.10 | 2.95 | 1.03 | 33.70 | 21.30 | 48.62 | 42.60 | 255.00 | 336.62 | 9.70 | 8.17 |
| QL99FM1 46 | 2.32 | 32.40 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| QL56FM1 56 | 2.34 | 32.20 | 3.04 | 1.02 | 35.96 | 22.18 | 49.74 | 43.34 | 248.10 | 358.42 | 10.52 | 8.84 |
| QL99FM2 137 | 2.34 | 32.90 | 3.01 | 1.01 | * | * | * | * | * | * | * | * |
| QL99FM3 241 | 2.37 | 33.30 | 3.03 | 1.01 | 28.09 | * | 46.73 | * | 499.67 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| QH01MH1 1 | 2.72 | 39.20 | 2.90 | 1.14 | 18.34 | 10.84 | 35.32 | 30.40 | 369.42 | 476.30 | 5.61 | 4.80 |
| QH07MH1 7 | 3.26 | 45.40 | 2.82 | 1.18 | 15.20 | 9.36 | 32.78 | 28.78 | 364.62 | 458.98 | 5.34 | 5.43 |
| QH14MH1 14 | 2.94 | 40.70 | 2.88 | 1.16 | 18.54 | 14.00 | 38.60 | 38.52 | 328.14 | 392.02 | 6.24 | 5.65 |
| QH28MH1 28 | 3.02 | 32.20 | 2.79 | 1.16 | 16.82 | 10.96 | 35.62 | 33.98 | 358.30 | 439.00 | 6.15 | 4.91 |
| QH99MH1 46 | 2.89 | 44.00 | 2.50 | 1.21 | * | * | * | * | * | * | * | * |
| QH56MH1 56 | 2.98 | 42.20 | 2.90 | 1.19 | 15.66 | 9.58 | 36.56 | 32.10 | 309.26 | 377.42 | 4.37 | 4.02 |
| QH99MH2 137 | 3.31 | 47.30 | 2.27 | 1.20 | * | * | * | * | * | * | * | * |
| QH99MH3 242 | 2.97 | 43.40 | 2.41 | 1.17 | 12.98 | * | 15.09 | * | 283.92 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| QL01MH1 1 | 2.64 | 35.40 | 3.08 | 1.06 | 26.60 | 16.86 | 38.70 | 32.44 | 290.64 | 385.82 | 7.19 | 6.59 |
| QL07MH1 7 | 2.50 | 33.80 | 3.07 | 1.06 | 24.22 | 16.90 | 37.04 | 32.50 | 307.34 | 397.56 | 7.86 | 6.57 |
| QL14MH1 14 | 2.61 | 35.50 | 3.05 | 1.06 | 28.42 | 18.48 | 44.92 | 39.82 | 276.74 | 360.62 | 7.88 | 6.61 |
| QL28MH1 28 | 2.70 | 36.70 | 3.04 | 1.07 | 24.32 | 15.06 | 37.34 | 32.54 | 305.28 | 421.10 | 8.19 | 6.99 |
| QL99MH1 46 | 2.56 | 35.30 | 3.04 | 1.05 | * | * | * | * | * | * | * | * |
| QL56MH1 56 | 2.55 | 35.80 | 3.10 | 1.07 | 20.38 | 12.38 | 36.74 | 31.08 | 320.16 | 429.68 | 6.62 | 5.40 |
| QL99MH2 137 | 2.58 | 35.60 | 3.05 | 1.05 | * | * | * | * | * | * | * | * |
| QL99MH3 241 | 2.59 | 35.70 | 3.05 | 1.38 | 17.37 | * | 44.67 | * | 560.17 | * | * | * |
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| QH01ML1 1 | 2.17 | 30.70 | 2.93 | 1.02 | 30.96 | 20.30 | 38.48 | 34.20 | 248.80 | 360.26 | 10.14 | 8.31 |
| QH07ML1 7 | 2.26 | 31.80 | 2.93 | 1.03 | 31.18 | 20.64 | 46.34 | 41.46 | 273.00 | 377.24 | 10.43 | 8.37 |
| QH14ML1 14 | 2.22 | 31.30 | 2.94 | 1.03 | 33.50 | 21.16 | 49.18 | 45.58 | 261.02 | 359.18 | 10.37 | 8.90 |
| QH28ML1 28 | 2.38 | 34.10 | 2.92 | 1.02 | 30.32 | 20.02 | 43.10 | 40.08 | 280.94 | 370.60 | 9.91 | 8.47 |
| QH99ML1 46 | 2.38 | 34.80 | 2.85 | 1.03 | * | * | * | * | * | * | * | * |
| QH56ML1 56 | 2.28 | 32.60 | 2.96 | 1.03 | 34.04 | 19.80 | 54.44 | 43.64 | 244.62 | 332.58 | 8.72 | 7.48 |
| QH99ML2 137 | 2.60 | 37.60 | 2.90 | 1.06 | * | * | * | * | * | * | * | * |
| QH99ML3 242 | 2.62 | 38.20 | 2.90 | 1.07 | 22.14 | * | 50.80 | * | 356.42 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| QL01ML1 1 | 2.39 | 32.80 | 3.01 | 1.01 | 33.14 | 21.84 | 38.92 | 33.08 | 226.88 | 327.98 | 10.08 | 8.64 |
| QL07ML1 7 | 2.16 | 29.80 | 3.02 | 1.01 | 35.44 | 21.90 | 41.08 | 35.78 | 224.94 | 344.64 | 10.81 | 8.61 |
| QL14ML1 14 | 2.27 | 32.00 | 3.00 | 1.00 | 37.16 | 23.58 | 50.78 | 44.36 | 248.52 | 343.02 | 10.89 | 9.23 |
| QL28ML1 28 | 2.28 | 31.90 | 3.01 | 1.00 | 33.02 | 19.98 | 41.30 | 34.60 | 261.02 | 376.62 | 11.07 | 8.71 |
| QL99ML1 46 | 2.21 | 31.10 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| QL56ML1 56 | 2.30 | 32.00 | 3.01 | 1.01 | 34.00 | 20.00 | 48.60 | 40.40 | 273.50 | 373.50 | 10.49 | 8.59 |
| QL99ML2 137 | 2.23 | 31.40 | 3.01 | 1.00 | * | * | * | * | * | * | * | * |
| QL99ML3 241 | 2.24 | 31.70 | 3.01 | 1.00 | 28.45 | * | 47.53 | * | 541.50 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| QH01MM1 1 | 2.49 | 35.90 | 2.90 | 1.07 | 23.30 | 14.98 | 37.52 | 34.70 | 333.60 | 446.70 | 6.63 | 6.36 |
| QH07MM1 7 | 2.54 | 36.00 | 2.84 | 1.10 | 21.14 | 14.12 | 39.34 | 37.20 | 334.36 | 417.22 | 7.98 | 6.55 |
| QH14MM1 14 | 2.58 | 36.20 | 2.93 | 1.10 | 25.76 | 17.34 | 48.60 | 41.72 | 303.50 | 360.66 | 8.29 | 7.42 |
| QH28MM1 28 | 2.62 | 37.00 | 2.94 | 1.10 | 24.16 | 15.18 | 42.88 | 39.18 | 310.68 | 387.40 | 8.00 | 6.92 |
| QH99MM1 46 | 2.81 | 41.60 | 2.76 | 1.14 | * | * | * | * | * | * | * | * |
| QH56MM1 56 | 2.91 | 41.90 | 2.88 | 1.13 | 19.38 | 11.84 | 43.40 | 37.92 | 307.24 | 380.34 | 6.03 | 5.40 |
| QH99MM2 137 | 2.79 | 41.70 | 2.69 | 1.13 | * | * | * | * | * | * | * | * |
| QH99MM3 242 | 2.78 | 42.00 | 2.70 | 1.14 | 17.05 | * | 35.65 | * | 352.42 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| QL01MM1 1 | 2.56 | 35.10 | 3.04 | 1.03 | 30.84 | 20.32 | 40.42 | 32.92 | 265.66 | 359.44 | 9.48 | 8.16 |
| QL07MM1 7 | 2.34 | 31.80 | 3.05 | 1.03 | 25.88 | 16.16 | 35.34 | 30.20 | 294.72 | 410.10 | 8.74 | 7.03 |
| QL14MM1 14 | 2.50 | 34.40 | 3.03 | 1.04 | 35.76 | 23.56 | 49.94 | 45.78 | 243.82 | 344.10 | 10.04 | 8.53 |
| QL28MM1 28 | 2.37 | 32.60 | 3.05 | 1.11 | 28.16 | 17.18 | 39.32 | 32.98 | 287.00 | 390.26 | 9.38 | 7.45 |
| QL99MM1 46 | 2.38 | 33.60 | 3.02 | 1.02 | * | * | * | * | * | * | * | * |
| QL56MM1 56 | 2.33 | 32.10 | 3.06 | 1.04 | 25.70 | 16.00 | 41.80 | 35.10 | 302.42 | 397.06 | 8.38 | 6.73 |
| QL99MM2 137 | 2.40 | 34.30 | 2.99 | 1.02 | * | * | * | * | * | * | * | * |
| QL99MM3 240 | 2.43 | 34.60 | 2.98 | 1.01 | 24.41 | * | 46.73 | * | 577.42 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| QH01OM1 1 | 2.27 | 32.10 | 2.96 | 1.02 | 37.94 | 23.92 | 45.14 | 41.34 | 226.22 | 337.96 | 11.27 | 9.04 |
| QH07OM1 7 | 2.51 | 34.90 | 2.96 | 1.05 | 31.10 | 18.78 | 43.66 | 40.22 | 275.30 | 395.54 | 10.23 | 8.28 |
| QH14OM1 14 | 2.35 | 33.10 | 2.93 | 1.02 | 34.68 | 22.84 | 49.02 | 45.70 | 250.58 | 333.10 | 11.24 | 8.68 |
| QH28OM1 28 | 2.37 | 33.50 | 2.93 | 1.03 | 35.42 | 22.36 | 51.06 | 47.92 | 247.94 | 339.74 | 10.12 | 8.48 |
| QH99OM1 46 | 2.29 | 33.10 | 2.90 | 1.02 | * | * | * | * | * | * | * | * |
| QH56OM1 56 | 2.36 | 32.90 | 2.95 | 1.03 | 34.58 | 21.82 | 56.22 | 51.72 | 249.88 | 324.92 | 9.30 | 7.98 |
| QH99OM2 133 | 2.50 | 35.70 | 2.95 | 1.05 | * | * | * | * | * | * | * | * |
| QH99OM3 242 | 2.73 | 37.70 | 3.00 | 1.08 | 22.74 | * | 56.18 | * | 364.00 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| QL01OM1 1 | 2.15 | 29.70 | 3.01 | 1.00 | 40.28 | 26.24 | 46.20 | 41.04 | 207.00 | 316.12 | 12.24 | 9.77 |
| QL07OM1 7 | 2.33 | 32.10 | 3.01 | 1.00 | 37.82 | 24.22 | 44.22 | 37.78 | 242.36 | 346.90 | 11.46 | 9.05 |
| QL14OM1 14 | 2.25 | 31.10 | 3.01 | 1.01 | 38.14 | 24.14 | 47.48 | 42.38 | 228.08 | 321.28 | 11.20 | 9.77 |
| QL28OM1 28 | 2.33 | 32.10 | 3.01 | 1.01 | 39.96 | 24.92 | 49.64 | 44.60 | 216.90 | 333.18 | 11.55 | 9.35 |
| QL99OM1 46 | 2.17 | 30.80 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| QL56OM1 56 | 2.25 | 31.00 | 3.02 | 1.01 | 38.30 | 23.48 | 50.98 | 45.80 | 230.64 | 341.34 | 11.25 | 9.11 |
| QL99OM2 106 | 2.23 | 31.80 | 3.02 | 1.00 | * | * | * | * | * | * | * | * |
| QL99OM3 241 | 2.27 | 31.90 | 3.03 | 1.01 | 28.60 | * | 43.94 | * | 532.67 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| QH01OP1 1 | 2.45 | 34.50 | 2.99 | 1.04 | 29.16 | 17.04 | 39.36 | 35.78 | 256.94 | 381.48 | 8.29 | 7.13 |
| QH07OP1 7 | 3.39 | 44.30 | 2.97 | 1.23 | 12.72 | 6.40 | 32.62 | 30.98 | 364.28 | 538.98 | 4.69 | 5.09 |
| QH14OP1 14 | 3.64 | 44.60 | 2.81 | 1.39 | 7.50 | 7.73 | 27.40 | 24.75 | 397.46 | 471.18 | 3.48 | 4.07 |
| QH28OP1 28 | 4.10 | 31.80 | 2.78 | 1.42 | 6.06 | 7.28 | 24.52 | 24.65 | 382.04 | 443.80 | 2.92 | 3.17 |
| QH99OP1 46 | 4.40 | 55.70 | 2.54 | 1.48 | * | * | * | * | * | * | * | * |
| QH56OP1 56 | 3.85 | 48.10 | 2.85 | 1.41 | 7.44 | 7.28 | 27.08 | 27.40 | 338.06 | 435.50 | 2.71 | 2.54 |
| QH99OP2 128 | 4.40 | 59.90 | 2.47 | 1.51 | * | * | * | * | * | * | * | * |
| QH99OP3 242 | 4.26 | 59.70 | 2.46 | 1.51 | 2.74 | * | 25.84 | * | 457.75 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| QL010P1 1 | 2.19 | 30.40 | 3.00 | 1.00 | 42.72 | 27.46 | 45.88 | 40.04 | 200.58 | 315.96 | 11.86 | 9.33 |
| QL070P1 7 | 2.21 | 30.60 | 3.01 | * | 42.82 | 27.15 | 49.84 | 42.35 | 225.00 | 311.98 | 11.30 | 9.52 |
| QL140P1 14 | 2.23 | 30.80 | 3.02 | 1.01 | 42.50 | 26.92 | 49.12 | 41.22 | 202.22 | 293.14 | 10.79 | 9.28 |
| QL280P1 28 | 2.34 | 32.40 | 3.03 | 1.02 | 39.22 | 26.24 | 49.32 | 44.26 | 231.46 | 322.02 | 11.02 | 8.09 |
| QL990P1 46 | 2.29 | 31.70 | 3.04 | 1.02 | * | * | * | * | * | * | * | * |
| QL560P1 56 | 2.32 | 31.70 | 3.06 | 1.03 | 37.38 | 23.42 | 48.02 | 42.48 | 229.72 | 320.56 | 10.43 | 8.12 |
| QL990P2 128 | 2.38 | 32.40 | 3.08 | 1.04 | * | * | * | * | * | * | * | * |
| QL990P3 241 | 2.45 | 33.50 | 3.11 | 1.05 | 28.52 | * | 47.68 | * | 457.42 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| QH01PH1 1 | 2.43 | 33.90 | 2.98 | 1.04 | 25.64 | 16.54 | 47.56 | 43.58 | 313.44 | 417.16 | 8.25 | 7.76 |
| QH07PH1 7 | 2.54 | 35.30 | 2.98 | 1.06 | 25.30 | 14.82 | 49.40 | 43.74 | 325.92 | 434.28 | 8.49 | 7.26 |
| QH14PH1 14 | 2.78 | 38.80 | 2.95 | 1.07 | 14.60 | 6.32 | 37.88 | 35.58 | 306.54 | 430.24 | 7.63 | 6.82 |
| QH28PH1 28 | 2.94 | 40.50 | 3.97 | 1.08 | 21.32 | 12.56 | 48.68 | 43.12 | 324.62 | 423.82 | 6.97 | 6.06 |
| QH99PH1 46 | 2.83 | 39.50 | 2.96 | 1.10 | * | * | * | * | * | * | * | * |
| QH56PH1 56 | 2.80 | 37.50 | 3.03 | 1.10 | 21.18 | 12.32 | 46.50 | 42.64 | 302.36 | 398.92 | 6.10 | 5.66 |
| QH99PH2 137 | 3.04 | 41.70 | 3.00 | 1.13 | * | * | * | * | * | * | * | * |
| QH99PH3 242 | 3.15 | 42.90 | 3.03 | 1.15 | 13.11 | * | 33.73 | * | 441.67 | * | * | * |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| QL01PH1 1 | 2.33 | 32.30 | 3.02 | 1.01 | 35.18 | 20.66 | 42.34 | 37.00 | 223.78 | 389.18 | 10.29 | 8.57 |
| QL07PH1 7 | 2.49 | 34.90 | 3.03 | 1.02 | 27.32 | 17.04 | 43.02 | 37.40 | 303.78 | 423.74 | 9.29 | 7.61 |
| QL14PH1 14 | 2.31 | 31.80 | 3.05 | 1.03 | * | * | * | * | 282.78 | 429.66 | 9.79 | 7.59 |
| QL28PH1 28 | 2.40 | 32.70 | 3.05 | 1.03 | 28.36 | 17.00 | 47.24 | 41.00 | 304.26 | 420.94 | 8.77 | 7.43 |
| QL99PH1 46 | 2.47 | 34.20 | 3.05 | 1.03 | * | * | * | * | * | * | * | * |
| QL56PH1 56 | 2.32 | 31.50 | 3.06 | 1.03 | 27.92 | 15.96 | 39.28 | 36.92 | 312.66 | 435.38 | 9.24 | 7.57 |
| QL99PH2 137 | 2.48 | 34.40 | 3.05 | 1.02 | * | * | * | * | * | * | * | * |
| QL99PH3 241 | 2.51 | 34.70 | 3.06 | 1.03 | 21.23 | * | 40.84 | * | 613.08 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| QH01PL1 1 | 2.23 | 31.50 | 2.95 | 1.00 | 38.18 | 21.30 | 52.44 | 37.38 | 231.84 | 359.92 | 10.86 | 9.24 |
| QH07PL1 7 | 2.27 | 32.20 | 2.93 | 1.02 | 38.82 | 24.96 | 55.06 | 51.42 | 248.10 | 346.88 | 11.25 | 10.15 |
| QH14PL1 14 | 2.17 | 30.90 | 2.93 | 1.02 | 27.14 | 14.78 | 44.26 | 40.90 | 263.16 | 351.14 | 10.69 | 9.18 |
| QH28PL1 28 | 2.47 | 34.90 | 2.92 | 1.02 | 37.32 | 23.50 | 57.70 | 50.16 | 257.90 | 337.88 | 9.98 | 8.54 |
| QH99PL1 46 | 2.35 | 34.30 | 2.88 | 1.02 | * | * | * | * | * | * | * | * |
| QH56PL1 56 | 2.25 | 31.60 | 2.95 | 1.02 | 30.70 | 20.12 | 44.96 | 42.58 | 263.18 | 344.32 | 9.19 | 7.52 |
| QH99PL2 137 | 2.57 | 37.10 | 2.91 | 1.04 | * | * | * | * | * | * | * | * |
| QH99PL3 242 | 2.74 | 39.40 | 2.95 | 1.07 | 21.40 | * | 58.12 | * | 386.08 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| QL01PL1 1 | 2.15 | 30.40 | 2.99 | 0.99 | 43.38 | 27.02 | 53.54 | 41.04 | 192.98 | 305.86 | 12.01 | 9.77 |
| QL07PL1 7 | 2.17 | 30.00 | 3.01 | 1.01 | 42.36 | 26.64 | 53.34 | 47.16 | 235.10 | 329.16 | 12.51 | 10.31 |
| QL14PL1 14 | 2.19 | 30.30 | 3.01 | 1.01 | 38.30 | 23.56 | 44.20 | 39.80 | 248.40 | 370.28 | 11.45 | 9.64 |
| QL28PL1 28 | 2.19 | 30.60 | 3.00 | 1.00 | 39.62 | 24.92 | 52.48 | 45.28 | 241.60 | 334.66 | 11.33 | 9.32 |
| QL99PL1 46 | 2.26 | 31.60 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| QL56PL1 56 | 2.14 | 29.60 | 3.01 | 1.01 | 38.20 | 22.74 | 53.44 | 40.84 | 239.96 | 364.06 | 10.65 | 9.03 |
| QL99PL2 137 | 2.27 | 31.70 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| QL99PL3 241 | 2.26 | 31.80 | 3.01 | 1.00 | 30.04 | * | 48.29 | * | 514.58 | * | * | * |
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| QH01PM1 1 | 2.27 | 31.50 | 2.97 | 1.02 | 29.24 | 19.60 | 39.48 | 43.34 | 266.58 | 395.02 | 9.85 | 8.19 |
| QH07PM1 7 | 2.41 | 34.40 | 2.93 | 1.01 | 30.42 | 19.30 | 50.96 | 46.06 | 293.62 | 385.58 | 9.84 | 8.04 |
| QH14PM1 14 | 2.29 | 32.60 | 2.93 | 1.03 | * | * | * | * | 289.42 | 397.22 | 9.41 | 7.85 |
| QH28PM1 28 | 2.34 | 32.90 | 2.93 | 1.04 | 28.94 | 17.28 | 53.22 | 45.52 | 290.86 | 364.56 | 8.13 | 7.17 |
| QH99PM1 46 | 2.51 | 36.00 | 2.89 | 1.05 | * | * | * | * | * | * | * | * |
| QH56PM1 56 | 2.43 | 34.50 | 2.97 | 1.04 | 28.66 | 16.68 | 53.00 | 43.18 | 279.74 | 393.10 | 8.29 | 7.32 |
| QH99PM2 137 | 2.96 | 41.20 | 2.97 | 1.11 | * | * | * | * | * | * | * | * |
| QH99PM3 242 | 3.10 | 43.10 | 3.01 | 1.13 | 16.15 | * | 42.73 | * | 391.00 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| QL01PM1 1 | 2.27 | 31.80 | 3.00 | 1.00 | 37.36 | 25.86 | 48.02 | 43.52 | 225.82 | 296.48 | 11.82 | 8.97 |
| QL07PM1 7 | 2.24 | 30.60 | 3.04 | 1.02 | 33.34 | 20.68 | 46.32 | 40.02 | 277.40 | 373.40 | 10.60 | 8.37 |
| QL14PM1 14 | 2.26 | 31.00 | 3.04 | 1.02 | * | * | * | * | 288.72 | 395.30 | 9.83 | 8.20 |
| QL28PM1 28 | 2.38 | 32.80 | 3.03 | 1.02 | 33.94 | 19.94 | 51.44 | 43.58 | 279.14 | 377.24 | 9.77 | 8.11 |
| QL99PM1 46 | 2.32 | 32.50 | 3.02 | 1.01 | * | * | * | * | * | * | * | * |
| QL56PM1 56 | 2.27 | 30.70 | 3.01 | 1.02 | 29.34 | 18.78 | 46.18 | 43.50 | 274.10 | 380.70 | 9.33 | 7.41 |
| QL99PM2 137 | 2.33 | 32.70 | 3.03 | 1.01 | * | * | * | * | * | * | * | * |
| QL99PM3 241 | 2.34 | 32.90 | 3.03 | 1.01 | 23.77 | * | 40.48 | * | 584.33 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| QH01SH1 1 | 2.18 | 30.60 | 2.95 | 1.01 | 40.26 | 25.54 | 45.54 | 40.80 | 194.48 | 324.48 | 11.40 | 9.33 |
| QH07SH1 7 | 2.23 | 31.80 | 2.91 | 1.01 | 40.30 | 27.56 | 44.44 | 39.06 | 209.82 | 314.46 | 12.09 | 9.77 |
| QH14SH1 14 | 2.24 | 31.50 | 2.91 | 1.01 | 42.28 | 27.36 | 50.58 | 45.72 | 215.56 | 311.86 | 12.24 | 9.63 |
| QH28SH1 28 | 2.22 | 31.40 | 2.91 | 1.01 | 39.68 | 25.76 | 45.54 | 39.64 | 208.20 | 314.08 | 11.60 | 9.10 |
| QH99SH1 46 | 2.14 | 31.00 | 2.88 | 1.01 | * | * | * | * | * | * | * | * |
| QH56SH1 56 | 2.39 | 34.00 | 2.95 | 1.01 | 41.84 | 28.24 | 52.20 | 46.00 | 210.00 | 273.86 | 11.16 | 9.89 |
| QH99SH2 131 | 2.14 | 31.30 | 2.88 | 1.01 | * | * | * | * | * | * | * | * |
| QH99SH3 242 | 2.13 | 31.40 | 2.89 | 1.01 | 37.46 | * | 53.63 | * | 420.50 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| QL01SH1 1 | 2.16 | 30.10 | 3.00 | 1.00 | 39.26 | 24.92 | 42.18 | 37.72 | 181.80 | 320.86 | 12.22 | 10.11 |
| QL07SH1 7 | 2.23 | 31.00 | 3.01 | 1.00 | 43.38 | 27.38 | 45.86 | 37.30 | 206.78 | 297.06 | 12.19 | 9.66 |
| QL14SH1 14 | 2.12 | 29.50 | 3.00 | 1.00 | 41.80 | 27.42 | 46.42 | 41.16 | 196.64 | 313.88 | 12.62 | 10.14 |
| QL28SH1 28 | 2.26 | 31.40 | 3.01 | 1.00 | 41.94 | 26.54 | 48.08 | 42.62 | 197.82 | 312.24 | 11.87 | 9.63 |
| QL99SH1 46 | 2.13 | 30.10 | 2.99 | 0.99 | * | * | * | * | * | * | * | * |
| QL56SH1 56 | 2.20 | 30.70 | 3.00 | 1.00 | 41.34 | 26.58 | 50.40 | 41.82 | 209.16 | 280.86 | 12.30 | 9.51 |
| QL99SH2 131 | 2.13 | 30.20 | 2.99 | 0.99 | * | * | * | * | * | * | * | * |
| QL99SH3 241 | 2.13 | 30.50 | 2.99 | 0.99 | 34.78 | * | 42.92 | * | 436.17 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| QH01SM1 1 | 2.39 | 33.60 | 2.94 | 1.01 | 38.48 | 24.58 | 42.50 | 37.40 | 197.12 | 303.56 | 10.49 | 9.24 |
| QH07SM1 7 | 2.28 | 32.30 | 2.91 | 1.01 | 38.32 | 24.60 | 44.38 | 40.42 | 229.54 | 333.38 | 11.76 | 9.34 |
| QH14SM1 14 | 2.26 | 31.90 | 2.92 | 1.01 | 37.10 | 25.94 | 47.86 | 45.06 | 235.84 | 325.16 | 11.80 | 9.26 |
| QH28SM1 28 | 2.14 | 30.40 | 2.93 | 1.01 | 36.10 | 22.58 | 44.14 | 39.00 | 238.02 | 335.32 | 10.70 | 8.32 |
| QH99SM1 46 | 2.18 | 31.50 | 2.88 | 1.01 | * | * | * | * | * | * | * | * |
| QH56SM1 56 | 2.09 | 29.50 | 2.93 | 1.01 | 39.00 | 26.14 | 50.66 | 46.62 | 228.48 | 305.60 | 11.23 | 8.94 |
| QH99SM2 124 | 2.17 | 31.50 | 2.88 | 1.01 | * | * | * | * | * | * | * | * |
| QH99SM3 242 | 2.16 | 31.70 | 2.88 | 1.00 | 36.64 | * | 55.17 | * | 390.50 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| QL01SM1 1 | 2.06 | 28.60 | 3.00 | 1.00 | 38.90 | 23.78 | 43.58 | 37.16 | 217.68 | 325.72 | 11.67 | 9.42 |
| QL07SM1 7 | 2.22 | 31.00 | 3.01 | 1.00 | 41.30 | 26.20 | 44.30 | 38.82 | 206.40 | 324.28 | 11.99 | 9.44 |
| QL14SM1 14 | 2.22 | 30.90 | 3.00 | 1.00 | 42.78 | 26.50 | 49.34 | 41.18 | 210.20 | 287.44 | 12.07 | 9.58 |
| QL28SM1 28 | 2.18 | 30.30 | 3.00 | 1.01 | 39.82 | 26.22 | 48.64 | 42.50 | 220.26 | 305.12 | 11.57 | 9.28 |
| QL99SM1 46 | 2.16 | 30.60 | 2.99 | 0.99 | * | * | * | * | * | * | * | * |
| QL56SM1 56 | 2.18 | 31.00 | 2.99 | 0.99 | 41.14 | 26.42 | 51.34 | 46.18 | 222.34 | 317.96 | 11.73 | 9.60 |
| QL99SM2 124 | 2.16 | 30.80 | 2.99 | 0.99 | * | * | * | * | * | * | * | * |
| QL99SM3 241 | 2.17 | 30.80 | 2.99 | 0.99 | 33.93 | * | 48.37 | * | 493.83 | * | * | * |
| WATER 100.0% 50°C | | | | | | | | | | | | |
| QH01WP1 1 | 2.27 | 31.90 | 2.94 | 1.01 | 43.00 | 27.44 | 48.98 | 43.24 | 186.54 | 302.68 | 11.74 | 9.66 |
| QH07WP1 7 | 2.34 | 33.50 | 2.92 | 1.02 | 34.36 | 21.94 | 44.90 | 40.44 | 259.58 | 353.26 | 10.81 | 9.07 |
| QH14WP1 14 | 2.33 | 32.80 | 2.93 | 1.02 | 32.04 | 21.70 | 47.12 | 44.90 | 255.82 | 351.00 | 10.41 | 8.43 |
| QH28WP1 28 | 2.38 | 33.50 | 2.93 | 1.02 | 34.35 | 22.34 | 49.30 | 44.18 | 268.15 | 353.72 | 10.97 | 8.95 |
| QH99WP1 46 | 2.34 | 34.30 | 2.89 | 1.02 | * | * | * | * | * | * | * | * |
| QH56WP1 56 | 2.38 | 33.60 | 2.93 | 1.03 | 34.34 | 21.44 | 55.70 | 50.20 | 254.00 | 332.22 | 9.76 | 8.05 |
| QH99WP2 122 | 2.49 | 35.80 | 2.92 | 1.03 | * | * | * | * | * | * | * | * |
| QH99WP3 242 | 2.64 | 38.30 | 2.95 | 1.06 | 23.78 | * | 55.10 | * | 357.83 | * | * | * |

CHLOROSULFONATED POLYETHYLENE: AVERAGE FINAL PROPERTIES

| | | WEIGHT (gram) | THICKNESS (mil) | LENGTH (inch) | WIDTH (inch) | S-100 MODULUS M (lb/ inch width) | S-100 MODULUS T (lb/ inch width) | BREAKING FACTOR M (lb/ inch width) | BREAKING FACTOR T (pound/ inch width) | ELONGATION AT BREAK M (inch) | ELONGATION AT BREAK T (inch) | TEAR RESISTANCE M (lb) | TEAR RESISTANCE T (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | WATER 100.0% 23°C | | | | | | | | |
| QL01WP1 | 1 | 2.16 | 29.90 | 3.00 | 1.00 | 38.04 | 25.26 | 44.34 | 39.04 | 223.12 | 308.26 | 11.84 | 9.34 |
| QL07WP1 | 7 | 2.29 | 31.70 | 3.01 | 1.00 | 43.20 | 28.18 | 48.18 | 42.44 | 195.26 | 308.64 | 12.49 | 10.20 |
| QL14WP1 | 14 | 2.12 | 30.10 | 3.01 | 1.00 | 41.76 | 27.08 | 50.04 | 44.22 | 213.14 | 312.68 | 11.94 | 9.66 |
| QL28WP1 | 28 | 2.34 | 32.30 | 3.01 | 1.01 | 38.76 | 23.64 | 47.84 | 42.50 | 225.54 | 335.62 | 10.93 | 9.31 |
| QL99WP1 | 46 | 2.23 | 31.40 | 3.00 | 0.99 | * | * | * | * | * | * | * | * |
| QL56WP1 | 56 | 2.31 | 31.90 | 3.01 | 1.00 | 39.66 | 24.04 | 52.14 | 46.98 | 228.86 | 329.82 | 11.95 | 9.82 |
| QL99WP2 | 122 | 2.25 | 31.50 | 3.00 | 1.00 | * | * | * | * | * | * | * | * |
| QL99WP3 | 241 | 2.26 | 32.00 | 3.00 | 0.99 | 31.75 | * | 43.51 | * | 461.83 | * | * | * |
| | | | | | POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | |
| QH01XM1 | 1 | 2.27 | 31.70 | 2.96 | 1.01 | 40.20 | 26.20 | 50.92 | 45.92 | 229.68 | 314.04 | 11.33 | 9.72 |
| QH07XM1 | 7 | 2.12 | 29.80 | 2.93 | 1.01 | 37.00 | 24.30 | 47.06 | 44.52 | 230.88 | 325.80 | 11.13 | 9.18 |
| QH14XM1 | 14 | 2.27 | 32.10 | 2.93 | 1.01 | 37.14 | 24.16 | 48.28 | 46.54 | 219.14 | 324.84 | 11.28 | 9.13 |
| QH28XM1 | 28 | 2.15 | 30.50 | 2.93 | 1.01 | 31.28 | 20.32 | 41.76 | 38.02 | 256.14 | 354.64 | 10.31 | 8.53 |
| QH99XM1 | 46 | 2.19 | 31.80 | 2.88 | 1.01 | * | * | * | * | * | * | * | * |
| QH56XM1 | 56 | 2.09 | 29.50 | 2.93 | 1.01 | 36.94 | 24.82 | 53.46 | 48.86 | 238.88 | 318.40 | 10.54 | 8.77 |
| QH99XM2 | 132 | 2.19 | 31.90 | 2.88 | 1.01 | * | * | * | * | * | * | * | * |
| QH99XM3 | 242 | 2.19 | 32.00 | 2.87 | 1.01 | 32.98 | * | 55.53 | * | 435.17 | * | * | * |
| | | | | | POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | |
| QL01XM1 | 1 | 2.28 | 31.60 | 3.00 | 1.00 | 45.40 | 28.74 | 52.28 | 44.50 | 200.12 | 294.52 | 12.34 | 9.94 |
| QL07XM1 | 7 | 2.27 | 31.30 | 3.02 | 1.00 | 41.34 | 26.56 | 48.92 | 43.26 | 205.50 | 311.72 | 11.76 | 9.75 |
| QL14XM1 | 14 | 2.23 | 30.90 | 3.01 | 1.01 | 39.72 | 26.62 | 50.24 | 44.66 | 217.96 | 301.62 | 11.84 | 9.64 |
| QL28XM1 | 28 | 2.29 | 31.70 | 3.01 | 1.00 | 41.32 | 26.30 | 48.06 | 42.54 | 206.00 | 314.68 | 11.50 | 9.70 |
| QL99XM1 | 46 | 2.19 | 31.00 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| QL56XM1 | 56 | 2.45 | 33.90 | 3.01 | 1.01 | 40.84 | 25.10 | 52.06 | 46.34 | 229.52 | 318.50 | 11.75 | 9.33 |
| QL99XM2 | 132 | 2.19 | 31.00 | 2.99 | 1.00 | * | * | * | * | * | * | * | * |
| QL99XM3 | 241 | 2.19 | 31.20 | 2.98 | 0.99 | 32.29 | * | 41.72 | * | 451.75 | * | * | * |

# CSPE_LW : STATISTICS

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | | |
| QH01AM1 1 | 5 | 1.000 | 5 | 2.280 | 5 | 3.010 | 5 | 11.850 | 5 | 0.100 | 5 | 0.220 |
| QH07AM1 7 | 5 | 2.160 | 5 | 1.620 | 5 | 13.010 | 5 | 11.040 | 5 | 0.270 | 5 | 0.135 |
| QH14AM1 14 | 5 | 0.939 | 5 | 1.085 | 5 | 5.951 | 5 | 15.407 | 5 | 0.359 | 5 | 0.082 |
| QH28AM1 28 | 5 | 1.830 | 5 | 0.680 | 5 | 15.160 | 5 | 4.790 | 5 | 0.060 | 5 | 0.210 |
| QH56AM1 56 | 5 | 0.298 | 5 | 0.640 | 5 | 9.162 | 5 | 6.387 | 5 | 0.290 | 5 | 0.071 |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | | |
| QL01AM1 1 | 5 | 1.860 | 5 | 1.570 | 5 | 12.900 | 5 | 13.950 | 5 | 0.200 | 5 | 0.090 |
| QL07AM1 7 | 5 | 0.771 | 5 | 1.344 | 5 | 9.804 | 5 | 18.963 | 5 | 0.223 | 5 | 0.125 |
| QL14AM1 14 | 5 | 3.825 | 5 | 1.216 | 5 | 7.878 | 5 | 12.174 | 5 | 0.242 | 5 | 0.188 |
| QL28AM1 28 | 5 | 1.645 | 5 | 1.611 | 5 | 12.667 | 5 | 15.671 | 5 | 0.132 | 5 | 0.067 |
| QL56AM1 56 | 5 | 2.066 | 5 | 1.470 | 5 | 17.786 | 5 | 18.052 | 5 | 0.159 | 5 | 0.283 |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | | |
| QH01BM1 1 | 5 | 2.278 | 5 | 0.956 | 5 | 18.418 | 5 | 21.007 | 5 | 0.507 | 5 | 0.180 |
| QH07BM1 7 | 5 | 1.340 | 5 | 0.900 | 5 | 5.160 | 5 | 9.730 | 5 | 0.240 | 5 | 0.160 |
| QH14BM1 14 | 5 | 1.649 | 5 | 0.686 | 5 | 7.591 | 5 | 9.161 | 5 | 0.194 | 5 | 0.191 |
| QH28BM1 28 | 5 | 1.367 | 5 | 0.923 | 5 | 12.572 | 5 | 4.221 | 5 | 0.190 | 5 | 0.133 |
| QH56BM1 56 | 5 | 2.489 | 5 | 1.136 | 5 | 7.682 | 5 | 5.656 | 5 | 0.082 | 5 | 0.144 |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | | |
| QL01BM1 1 | 5 | 1.880 | 5 | 0.638 | 5 | 32.547 | 5 | 8.893 | 5 | 0.201 | 5 | 0.140 |
| QL07BM1 7 | 5 | 2.372 | 5 | 0.936 | 5 | 10.530 | 5 | 5.863 | 5 | 0.127 | 5 | 0.221 |
| QL14BM1 14 | 5 | 1.570 | 5 | 2.145 | 5 | 12.899 | 5 | 12.578 | 5 | 0.433 | 5 | 0.191 |
| QL28BM1 28 | 5 | 2.292 | 5 | 0.603 | 5 | 4.270 | 5 | 6.096 | 5 | 0.270 | 5 | 0.164 |
| QL56BM1 56 | 5 | 0.946 | 5 | 1.226 | 5 | 5.499 | 5 | 7.703 | 5 | 0.220 | 5 | 0.126 |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | | |
| QH01DH1 1 | 5 | 1.033 | 5 | 0.965 | 5 | 18.134 | 5 | 7.502 | 5 | 0.284 | 5 | 0.229 |
| QH07DH1 7 | 5 | 0.860 | 5 | 0.510 | 5 | 5.240 | 5 | 9.640 | 5 | 0.240 | 5 | 0.300 |
| QH14DH1 14 | 5 | 0.695 | 5 | 0.770 | 5 | 7.567 | 5 | 19.000 | 5 | 0.080 | 5 | 0.180 |
| QH28DH1 28 | 5 | 0.602 | 5 | 0.482 | 5 | 9.075 | 5 | 11.349 | * | * | * | * |
| QH56DH1 56 | 5 | 1.721 | 5 | 2.469 | 5 | 8.554 | 5 | 20.638 | 5 | 0.091 | 5 | 0.183 |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | | |
| QL01DH1 1 | 5 | 0.620 | 5 | 0.880 | 5 | 14.126 | 5 | 8.786 | 5 | 0.196 | 5 | 0.183 |
| QL07DH1 7 | 5 | 2.090 | 5 | 0.896 | 5 | 26.060 | 5 | 89.700 | 5 | 0.230 | 5 | 0.180 |
| QL14DH1 14 | 5 | 0.770 | 5 | 2.360 | 5 | 12.300 | 5 | 30.500 | 5 | 0.230 | 5 | 0.160 |
| QL28DH1 28 | 5 | 1.905 | 5 | 0.578 | 5 | 15.678 | 5 | 13.270 | 5 | 0.037 | 5 | 0.332 |
| QL56DH1 56 | 5 | 0.488 | 5 | 0.651 | 5 | 9.683 | 5 | 9.726 | 5 | 0.208 | 5 | 0.072 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | | |
| QH01DL1 1 | 5 | 1.128 | 5 | 1.031 | 5 | 10.182 | 5 | 21.216 | 5 | 0.244 | 5 | 0.294 |
| QH07DL1 7 | 5 | 1.400 | 5 | 1.060 | 5 | 15.010 | 5 | 56.700 | 5 | 0.490 | 5 | 0.120 |
| QH14DL1 14 | 5 | 0.760 | 5 | 0.560 | 5 | 12.490 | 5 | 13.510 | 5 | 0.320 | 5 | 0.280 |
| QH28DL1 28 | 5 | 2.347 | 5 | 1.520 | 5 | 11.848 | 5 | 9.810 | 5 | 0.201 | 5 | 0.086 |
| QH56DL1 56 | 5 | 2.340 | 5 | 2.505 | 5 | 6.750 | 5 | 13.180 | 5 | 0.493 | 5 | 0.114 |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | | |
| QL01DL1 1 | 5 | 1.395 | 5 | 0.865 | 5 | 11.228 | 5 | 10.712 | 5 | 0.178 | 5 | 0.130 |
| QL07DL1 7 | 5 | 1.400 | 5 | 0.620 | 5 | 17.700 | 5 | 8.140 | 5 | 0.270 | 5 | 0.080 |
| QL14DL1 14 | 5 | 1.880 | 5 | 2.180 | 5 | 8.700 | 5 | 17.360 | 5 | 0.210 | 5 | 0.350 |
| QL28DL1 28 | 5 | 1.594 | 5 | 1.169 | 5 | 18.150 | 5 | 12.569 | 5 | 0.113 | 5 | 0.243 |
| QL56DL1 56 | 5 | 1.892 | 5 | 1.573 | 5 | 17.944 | 5 | 17.763 | 5 | 0.273 | 5 | 0.277 |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | | |
| QH01DM1 1 | 5 | 2.218 | 5 | 0.610 | 5 | 22.112 | 5 | 15.973 | 5 | 0.303 | 5 | 0.204 |
| QH07DM1 7 | 5 | 2.230 | 5 | 0.480 | 5 | 17.180 | 5 | 10.920 | 5 | 0.090 | 5 | 0.280 |
| QH14DM1 14 | 5 | 1.006 | 5 | 0.680 | 5 | 5.280 | 5 | 11.740 | 5 | 0.100 | 5 | 0.250 |
| QH28DM1 28 | 5 | 0.908 | 5 | 0.900 | 5 | 9.743 | 5 | 12.900 | 5 | 0.210 | 5 | 0.208 |
| QH56DM1 56 | 5 | 0.401 | 5 | 1.195 | 5 | 8.189 | 5 | 12.958 | 5 | 0.230 | 5 | 0.199 |
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | | |
| QL01DM1 1 | 5 | 1.209 | 5 | 0.934 | 5 | 17.909 | 5 | 12.333 | 5 | 0.217 | 5 | 0.265 |
| QL07DM1 7 | 5 | 1.494 | 5 | 0.370 | 5 | 14.161 | 5 | 8.200 | 5 | 0.210 | 5 | 0.140 |
| QL14DM1 14 | 5 | 1.380 | 5 | 0.840 | 5 | 12.670 | 5 | 8.660 | 5 | 0.063 | 5 | 0.243 |
| QL28DM1 28 | 5 | 1.848 | 5 | 0.569 | 5 | 8.444 | 5 | 10.379 | 5 | 0.160 | 5 | 0.084 |
| QL56DM1 56 | 5 | 1.507 | 5 | 1.857 | 5 | 16.114 | 5 | 18.876 | 5 | 0.140 | 5 | 0.210 |
| FURFURAL 8.0% 50°C | | | | | | | | | | | | |
| QH01FH1 1 | 5 | 2.010 | 5 | 1.480 | 5 | 16.590 | 5 | 8.200 | 5 | 0.130 | 5 | 0.090 |
| QH07FH1 7 | 5 | 1.960 | 5 | 1.040 | 5 | 12.610 | 5 | 13.560 | 5 | 0.060 | 5 | 0.060 |
| QH14FH1 14 | 5 | 1.344 | 5 | 0.429 | 5 | 5.456 | 5 | 6.751 | 5 | 0.149 | 5 | 0.143 |
| QH28FH1 28 | 5 | 1.730 | 5 | 1.270 | 5 | 12.210 | 5 | 8.120 | 5 | 0.320 | 5 | 0.190 |
| QH56FH1 56 | 5 | 2.109 | 5 | 0.869 | 5 | 9.839 | 5 | 6.168 | 5 | 0.181 | 5 | 0.240 |
| FURFURAL 8.0% 23°C | | | | | | | | | | | | |
| QL01FH1 1 | 5 | 1.380 | 5 | 1.450 | 5 | 15.340 | 5 | 10.330 | 5 | 0.018 | 5 | 0.150 |
| QL07FH1 7 | 5 | 1.390 | 5 | 1.001 | 5 | 12.390 | 5 | 17.700 | 5 | 0.140 | 5 | 0.160 |
| QL14FH1 14 | 5 | 2.035 | 5 | 1.474 | 5 | 14.195 | 5 | 8.312 | 5 | 0.156 | 5 | 0.176 |
| QL28FH1 28 | 5 | 1.340 | 5 | 0.660 | 5 | 13.940 | 5 | 10.300 | 5 | 0.190 | 5 | 0.230 |
| QL56FH1 56 | 5 | 1.937 | 5 | 0.612 | 5 | 12.166 | 5 | 6.056 | 5 | 0.187 | 5 | 0.104 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 50°C | | | | | | | | | | | | |
| QH01FL1 1 | 5 | 3.590 | 5 | 0.730 | 5 | 7.780 | 5 | 6.630 | 5 | 0.230 | 5 | 0.120 |
| QH07FL1 7 | 5 | 0.940 | 5 | 0.610 | 5 | 6.310 | 5 | 2.850 | 5 | 0.160 | 5 | 0.210 |
| QH14FL1 14 | 5 | 1.646 | 5 | 1.886 | 5 | 13.208 | 5 | 14.567 | 5 | 0.320 | 5 | 0.168 |
| QH28FL1 28 | 5 | 2.930 | 5 | 2.370 | 5 | 18.550 | 5 | 8.040 | 5 | 0.150 | 5 | 0.110 |
| QH56FL1 56 | 5 | 3.210 | 5 | 2.228 | 5 | 7.299 | 5 | 8.969 | 5 | 0.343 | 5 | 0.211 |
| FURFURAL 1.0% 23°C | | | | | | | | | | | | |
| QL01FL1 1 | 5 | 1.240 | 5 | 0.690 | 5 | 5.690 | 5 | 8.640 | 5 | 0.120 | 5 | 0.290 |
| QL07FL1 9 | 5 | 2.139 | 5 | 2.134 | 5 | 13.536 | 5 | 16.376 | 5 | 0.270 | 5 | 0.129 |
| QL14FL1 14 | 5 | 2.511 | 5 | 2.209 | 5 | 18.550 | 5 | 20.436 | 5 | 0.207 | 5 | 0.274 |
| QL28FL1 28 | 5 | 2.300 | 5 | 1.690 | 5 | 16.330 | 5 | 23.100 | 5 | 0.170 | 5 | 0.100 |
| QL56FL1 56 | 5 | 0.813 | 5 | 0.858 | 5 | 12.714 | 5 | 12.143 | 5 | 0.120 | 5 | 0.157 |
| FURFURAL 4.0% 50°C | | | | | | | | | | | | |
| QH01FM1 1 | 5 | 2.300 | 5 | 1.140 | 5 | 8.310 | 5 | 7.220 | 5 | 0.229 | 5 | 0.130 |
| QH07FM1 7 | 5 | 1.140 | 5 | 1.270 | 5 | 14.610 | 5 | 13.500 | 5 | 0.090 | 5 | 0.178 |
| QH14FM1 14 | 5 | 0.977 | 5 | 1.171 | 5 | 4.165 | 5 | 14.796 | 5 | 0.078 | 5 | 0.247 |
| QH28FM1 28 | 5 | 1.610 | 5 | 1.340 | 5 | 13.240 | 5 | 20.230 | 5 | 0.180 | 5 | 0.120 |
| QH56FM1 56 | 5 | 0.953 | 5 | 0.585 | 5 | 3.113 | 5 | 4.569 | 5 | 0.119 | 5 | 0.097 |
| FURFURAL 4.0% 23°C | | | | | | | | | | | | |
| QL01FM1 1 | 5 | 2.240 | 5 | 1.480 | 5 | 12.030 | 5 | 9.500 | 5 | 0.140 | 5 | 0.090 |
| QL07FM1 7 | 5 | 2.194 | 5 | 1.219 | 5 | 17.418 | 5 | 7.603 | 5 | 0.123 | 5 | 0.239 |
| QL14FM1 14 | 5 | 0.301 | 5 | 0.569 | 5 | 13.471 | 5 | 10.036 | 5 | 0.193 | 5 | 0.129 |
| QL28FM1 28 | 5 | 1.390 | 5 | 0.950 | 5 | 11.870 | 5 | 10.830 | 5 | 0.100 | 5 | 0.080 |
| QL56FM1 56 | 5 | 1.756 | 5 | 0.649 | 5 | 18.566 | 5 | 7.477 | 5 | 0.102 | 5 | 0.128 |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | | |
| QH01MH1 1 | 5 | 0.873 | 5 | 2.094 | 5 | 11.544 | 5 | 19.519 | 5 | 0.151 | 5 | 0.085 |
| QH07MH1 7 | 5 | 0.687 | 5 | 0.822 | 5 | 6.589 | 5 | 5.886 | 5 | 0.333 | 5 | 0.376 |
| QH14MH1 14 | 5 | 0.880 | 5 | 1.310 | 5 | 6.830 | 5 | 5.710 | 5 | 0.180 | 5 | 0.280 |
| QH28MH1 28 | 5 | 1.078 | 5 | 1.676 | 5 | 5.217 | 5 | 19.029 | 5 | 0.131 | 5 | 0.298 |
| QH56MH1 56 | 5 | 0.380 | 5 | 1.027 | 5 | 7.719 | 5 | 7.656 | 5 | 0.193 | 5 | 0.137 |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | | |
| QL01MH1 1 | 5 | 0.941 | 5 | 0.611 | 5 | 5.252 | 5 | 11.616 | 5 | 0.202 | 5 | 0.179 |
| QL07MH1 7 | 5 | 1.053 | 5 | 0.697 | 5 | 8.257 | 5 | 5.148 | 5 | 0.180 | 5 | 0.297 |
| QL14MH1 14 | 5 | 1.010 | 5 | 0.400 | 5 | 7.070 | 5 | 11.580 | 5 | 0.170 | 5 | 0.260 |
| QL28MH1 28 | 5 | 1.433 | 5 | 0.619 | 5 | 12.485 | 5 | 10.097 | 5 | 0.148 | 5 | 0.325 |
| QL56MH1 56 | 5 | 1.062 | 5 | 1.016 | 5 | 4.108 | 5 | 14.381 | 5 | 0.172 | 5 | 0.100 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | | |
| QH01ML1 1 | 5 | 1.038 | 5 | 1.351 | 5 | 17.094 | 5 | 15.719 | 5 | 0.099 | 5 | 0.146 |
| QH07ML1 7 | 5 | 1.553 | 5 | 0.502 | 5 | 10.108 | 5 | 11.317 | 5 | 0.098 | 5 | 0.167 |
| QH14ML1 14 | 5 | 1.680 | 5 | 0.560 | 5 | 10.150 | 5 | 2.610 | 5 | 0.060 | 5 | 0.410 |
| QH28ML1 28 | 5 | 2.016 | 5 | 1.437 | 5 | 4.311 | 5 | 14.771 | 5 | 0.176 | 5 | 0.045 |
| QH56ML1 56 | 5 | 1.437 | 5 | 0.665 | 5 | 5.239 | 5 | 10.336 | 5 | 0.180 | 5 | 0.134 |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | | |
| QL01ML1 1 | 5 | 1.110 | 5 | 1.085 | 5 | 11.769 | 5 | 40.087 | 5 | 0.246 | 5 | 0.178 |
| QL07ML1 7 | 5 | 2.290 | 5 | 1.750 | 5 | 25.370 | 5 | 27.801 | 5 | 0.093 | 5 | 0.141 |
| QL14ML1 14 | 5 | 0.670 | 5 | 0.860 | 5 | 7.740 | 5 | 14.750 | 5 | 0.160 | 5 | 0.220 |
| QL28ML1 28 | 5 | 0.882 | 5 | 1.614 | 5 | 25.321 | 5 | 22.141 | 5 | 0.102 | 5 | 0.148 |
| QL56ML1 56 | 5 | 1.000 | 5 | 1.000 | 5 | 13.500 | 5 | 8.800 | 5 | 0.288 | 5 | 0.201 |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | | |
| QH01MM1 1 | 5 | 1.356 | 5 | 0.746 | 5 | 6.917 | 5 | 9.808 | 5 | 0.053 | 5 | 0.174 |
| QH07MM1 7 | 5 | 1.350 | 5 | 1.277 | 5 | 4.232 | 5 | 3.417 | 5 | 0.707 | 5 | 0.172 |
| QH14MM1 14 | 5 | 0.840 | 5 | 4.340 | 5 | 2.890 | 5 | 40.370 | 5 | 0.180 | 5 | 0.240 |
| QH28MM1 28 | 5 | 1.648 | 5 | 1.169 | 5 | 4.664 | 5 | 11.745 | 5 | 0.165 | 5 | 0.193 |
| QH56MM1 56 | 5 | 1.406 | 5 | 1.003 | 5 | 5.442 | 5 | 5.088 | 5 | 0.247 | 5 | 0.085 |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | | |
| QL01MM1 1 | 5 | 0.266 | 5 | 0.147 | 5 | 5.932 | 5 | 4.618 | 5 | 0.198 | 5 | 0.346 |
| QL07MM1 7 | 5 | 1.087 | 5 | 0.764 | 5 | 18.336 | 5 | 17.026 | 5 | 0.262 | 5 | 0.137 |
| QL14MM1 14 | 5 | 1.510 | 5 | 1.460 | 5 | 7.010 | 5 | 4.010 | 5 | 0.149 | 5 | 0.251 |
| QL28MM1 28 | 5 | 1.299 | 5 | 1.880 | 5 | 12.366 | 5 | 25.666 | 5 | 0.160 | 5 | 0.045 |
| QL56MM1 56 | 5 | 1.049 | 5 | 1.277 | 5 | 6.373 | 5 | 10.159 | 5 | 0.225 | 5 | 0.232 |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | | |
| QH01OM1 1 | 5 | 2.309 | 5 | 0.832 | 5 | 23.144 | 5 | 6.193 | 5 | 0.101 | 5 | 0.188 |
| QH07OM1 7 | 5 | 1.303 | 5 | 1.184 | 5 | 14.171 | 5 | 26.235 | 5 | 0.240 | 5 | 0.349 |
| QH14OM1 14 | 5 | 3.503 | 5 | 2.784 | 5 | 8.044 | 5 | 19.616 | 5 | 0.195 | 5 | 0.120 |
| QH28OM1 28 | 5 | 1.499 | 5 | 1.665 | 5 | 12.341 | 5 | 10.460 | 5 | 0.220 | 5 | 0.265 |
| QH56OM1 56 | 5 | 1.300 | 5 | 1.042 | 5 | 5.498 | 5 | 6.907 | 5 | 0.697 | 5 | 0.068 |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | | |
| QL01OM1 1 | 5 | 1.445 | 5 | 1.436 | 5 | 3.737 | 5 | 5.642 | 5 | 0.215 | 5 | 0.134 |
| QL07OM1 7 | 5 | 0.841 | 5 | 0.433 | 5 | 9.823 | 5 | 18.291 | 5 | 0.174 | 5 | 0.054 |
| QL14OM1 14 | 5 | 1.519 | 5 | 1.424 | 5 | 11.806 | 5 | 14.402 | 5 | 0.228 | 5 | 0.170 |
| QL28OM1 28 | 5 | 1.736 | 5 | 2.051 | 5 | 17.726 | 5 | 16.588 | 5 | 0.249 | 5 | 0.095 |
| QL56OM1 56 | 5 | 2.622 | 5 | 1.701 | 5 | 10.784 | 5 | 9.377 | 5 | 0.242 | 5 | 0.131 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | | |
| QH01OP1 1 | 5 | 0.670 | 5 | 1.429 | 5 | 9.230 | 5 | 15.535 | 5 | 0.174 | 5 | 0.168 |
| QH07OP1 7 | 5 | 1.220 | 5 | 1.600 | 5 | 22.400 | 5 | 17.800 | 5 | 0.250 | 5 | 0.160 |
| QH14OP1 14 | 5 | 1.344 | 4 | 0.819 | 5 | 25.194 | 4 | 19.463 | 5 | 0.116 | 5 | 0.174 |
| QH28OP1 28 | 5 | 1.728 | 5 | 0.570 | 5 | 12.806 | 5 | 5.980 | 5 | 0.148 | 5 | 0.091 |
| QH56OP1 56 | 5 | 3.095 | 5 | 2.200 | 5 | 20.632 | 5 | 14.160 | 5 | 0.082 | 5 | 0.120 |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | | |
| QL01OP1 1 | 5 | 1.348 | 5 | 0.868 | 5 | 16.734 | 5 | 6.435 | 5 | 0.241 | 5 | 0.159 |
| QL07OP1 7 | 5 | 0.867 | 4 | 0.742 | 5 | 8.338 | 4 | 8.520 | 5 | 0.262 | 5 | 0.254 |
| QL14OP1 14 | 5 | 1.431 | 5 | 1.274 | 5 | 10.781 | 5 | 9.798 | 5 | 0.155 | 5 | 0.196 |
| QL28OP1 28 | 5 | 2.467 | 5 | 1.777 | 5 | 9.266 | 5 | 23.405 | 5 | 0.145 | 5 | 0.094 |
| QL56OP1 56 | 5 | 1.949 | 5 | 0.758 | 5 | 15.599 | 5 | 14.693 | 5 | 0.253 | 5 | 0.296 |
| PHENOL 8.0% 50°C | | | | | | | | | | | | |
| QH01PH1 1 | 5 | 1.480 | 5 | 1.677 | 5 | 7.211 | 5 | 12.263 | 5 | 0.146 | 5 | 0.201 |
| QH07PH1 7 | 5 | 0.562 | 5 | 0.791 | 5 | 7.153 | 5 | 12.386 | 5 | 0.145 | 5 | 0.169 |
| QH14PH1 14 | 5 | 1.690 | 5 | 1.650 | 5 | 16.000 | 5 | 7.020 | 5 | 0.310 | 5 | 0.046 |
| QH28PH1 28 | 5 | 0.483 | 5 | 1.136 | 5 | 5.462 | 5 | 19.296 | 5 | 0.210 | 5 | 0.118 |
| QH56PH1 56 | 5 | 1.220 | 5 | 1.240 | 5 | 4.600 | 5 | 6.190 | 5 | 0.102 | 5 | 0.105 |
| PHENOL 8.0% 23°C | | | | | | | | | | | | |
| QL01PH1 1 | 5 | 3.847 | 5 | 0.648 | 5 | 26.123 | 5 | 10.794 | 5 | 0.364 | 5 | 0.185 |
| QL07PH1 7 | 5 | 1.932 | 5 | 1.101 | 5 | 19.782 | 5 | 16.898 | 5 | 0.264 | 5 | 0.164 |
| QL14PH1 14 | * | * | * | * | 5 | 30.314 | 5 | 8.110 | 5 | 0.049 | 5 | 0.091 |
| QL28PH1 28 | 5 | 2.442 | 5 | 1.680 | 5 | 17.323 | 5 | 19.080 | 5 | 0.089 | 5 | 0.160 |
| QL56PH1 56 | 5 | 0.554 | 5 | 2.270 | 5 | 13.590 | 5 | 12.950 | 5 | 0.068 | 5 | 0.197 |
| PHENOL 1.0% 50°C | | | | | | | | | | | | |
| QH01PL1 1 | 5 | 1.986 | 5 | 0.747 | 5 | 9.591 | 5 | 2.939 | 5 | 0.147 | 5 | 0.240 |
| QH07PL1 7 | 5 | 2.897 | 5 | 1.303 | 5 | 12.892 | 5 | 8.525 | 5 | 0.801 | 5 | 0.813 |
| QH14PL1 14 | 5 | 1.660 | 5 | 0.680 | 5 | 3.510 | 5 | 15.570 | 5 | 0.180 | 5 | 0.080 |
| QH28PL1 28 | 5 | 0.810 | 5 | 0.830 | 5 | 4.400 | 5 | 11.830 | 5 | 0.060 | 5 | 0.090 |
| QH56PL1 56 | 5 | 2.080 | 5 | 2.630 | 5 | 7.010 | 5 | 17.850 | 5 | 0.161 | 5 | 0.111 |
| PHENOL 1.0% 23°C | | | | | | | | | | | | |
| QL01PL1 1 | 5 | 1.861 | 5 | 4.818 | 5 | 13.117 | 5 | 30.667 | 5 | 0.241 | 5 | 0.134 |
| QL07PL1 7 | 5 | 1.826 | 5 | 0.931 | 5 | 11.109 | 5 | 14.394 | 5 | 0.463 | 5 | 0.191 |
| QL14PL1 14 | 5 | 1.740 | 5 | 0.750 | 5 | 0.940 | 5 | 7.050 | 5 | 0.160 | 5 | 0.192 |
| QL28PL1 28 | 5 | 1.257 | 5 | 2.176 | 5 | 7.374 | 5 | 25.033 | 5 | 0.201 | 5 | 0.176 |
| QL56PL1 56 | 5 | 1.419 | 5 | 2.260 | 5 | 8.708 | 5 | 7.160 | 5 | 0.298 | 5 | 0.100 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 50°C | | | | | | | | | | | | |
| QH01PM1 1 | 5 | 1.620 | 5 | 3.219 | 5 | 20.423 | 5 | 15.517 | 5 | 0.305 | 5 | 0.359 |
| QH07PM1 7 | 5 | 1.703 | 5 | 1.639 | 5 | 8.283 | 5 | 14.495 | 5 | 0.257 | 5 | 0.205 |
| QH14PM1 14 | * | * | * | * | 5 | 5.080 | 5 | 3.560 | 5 | 0.161 | 5 | 0.169 |
| QH28PM1 28 | 5 | 1.210 | 5 | 1.883 | 5 | 4.023 | 5 | 18.938 | 5 | 0.166 | 5 | 0.137 |
| QH56PM1 56 | 5 | 1.180 | 5 | 1.330 | 5 | 7.210 | 5 | 8.940 | 5 | 0.210 | 5 | 0.080 |
| PHENOL 4.0% 23°C | | | | | | | | | | | | |
| QL01PM1 1 | 5 | 2.408 | 5 | 2.774 | 5 | 7.578 | 5 | 28.413 | 5 | 0.415 | 5 | 0.474 |
| QL07PM1 7 | 5 | 0.745 | 5 | 1.822 | 5 | 18.013 | 5 | 16.646 | 5 | 0.159 | 5 | 0.119 |
| QL14PM1 14 | * | * | * | * | 5 | 11.410 | 5 | 8.170 | 5 | 0.170 | 5 | 0.068 |
| QL28PM1 28 | 5 | 1.316 | 5 | 0.784 | 5 | 12.382 | 5 | 9.204 | 5 | 0.104 | 5 | 0.078 |
| QL56PM1 56 | 5 | 3.220 | 5 | 0.982 | 5 | 16.540 | 5 | 10.480 | 5 | 0.089 | 5 | 0.159 |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | | |
| QH01SH1 1 | 5 | 1.546 | 5 | 1.439 | 5 | 29.047 | 5 | 16.169 | 5 | 0.172 | 5 | 0.240 |
| QH07SH1 7 | 5 | 1.150 | 5 | 1.200 | 5 | 15.930 | 5 | 10.400 | 5 | 0.190 | 5 | 0.180 |
| QH14SH1 14 | 5 | 1.649 | 5 | 1.256 | 5 | 15.213 | 5 | 7.145 | 5 | 0.250 | 5 | 0.199 |
| QH28SH1 28 | 5 | 1.380 | 5 | 1.180 | 5 | 14.980 | 5 | 13.170 | 5 | 0.140 | 5 | 0.290 |
| QH56SH1 56 | 5 | 2.503 | 5 | 1.043 | 5 | 14.685 | 5 | 13.569 | 5 | 0.187 | 5 | 0.303 |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | | |
| QL01SH1 1 | 5 | 1.339 | 5 | 1.522 | 5 | 14.803 | 5 | 12.437 | 5 | 0.381 | 5 | 0.161 |
| QL07SH1 7 | 5 | 1.330 | 5 | 1.560 | 5 | 21.010 | 5 | 26.330 | 5 | 0.190 | 5 | 0.170 |
| QL14SH1 14 | 5 | 1.875 | 5 | 1.847 | 5 | 17.768 | 5 | 19.490 | 5 | 0.305 | 5 | 0.207 |
| QL28SH1 28 | 5 | 2.356 | 5 | 1.448 | 5 | 15.119 | 5 | 11.790 | 5 | 0.230 | 5 | 0.145 |
| QL56SH1 56 | 5 | 1.355 | 5 | 2.092 | 5 | 11.893 | 5 | 23.096 | 5 | 0.276 | 5 | 0.305 |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | | |
| QH01SM1 1 | 5 | 1.804 | 5 | 1.320 | 5 | 28.116 | 5 | 36.617 | 5 | 0.242 | 5 | 0.311 |
| QH07SM1 7 | 5 | 1.580 | 5 | 1.023 | 5 | 17.880 | 5 | 23.120 | 5 | 0.160 | 5 | 0.120 |
| QH14SM1 14 | 5 | 3.146 | 5 | 1.845 | 5 | 6.453 | 5 | 8.953 | 5 | 0.409 | 5 | 0.318 |
| QH28SM1 28 | 5 | 1.170 | 5 | 1.260 | 5 | 14.780 | 5 | 8.430 | 5 | 0.080 | 5 | 0.190 |
| QH56SM1 56 | 5 | 0.659 | 5 | 1.194 | 5 | 7.833 | 5 | 6.233 | 5 | 0.092 | 5 | 0.159 |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | | |
| QL01SM1 1 | 5 | 1.785 | 5 | 1.170 | 5 | 12.097 | 5 | 11.410 | 5 | 0.076 | 5 | 0.129 |
| QL07SM1 7 | 5 | 1.280 | 5 | 0.690 | 5 | 17.640 | 5 | 7.210 | 5 | 0.190 | 5 | 0.028 |
| QL14SM1 14 | 5 | 1.813 | 5 | 5.077 | 5 | 24.282 | 5 | 56.481 | 5 | 0.180 | 5 | 0.161 |
| QL28SM1 28 | 5 | 1.250 | 5 | 2.550 | 5 | 12.550 | 5 | 23.800 | 5 | 0.230 | 5 | 0.140 |
| QL56SM1 56 | 5 | 1.405 | 5 | 1.461 | 5 | 18.309 | 5 | 12.349 | 5 | 0.107 | 5 | 0.099 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: STANDARD DEVIATIONS OF CHEMICAL IMMERSION RESULTS

| | NUMBER BF M | STD DEV BF M | NUMBER BF T | STD DEV BF T | NUMBER EAB M | STD DEV EAB M | NUMBER EAB T | STD DEV EAB T | NUMBER TEAR M | STD DEV TEAR M | NUMBER TEAR T | STD DEV TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 50°C | | | | | | | | | | | | |
| QH01WP1 1 | 5 | 1.007 | 5 | 1.383 | 5 | 11.972 | 5 | 31.926 | 5 | 0.258 | 5 | 0.322 |
| QH07WP1 7 | 5 | 1.010 | 5 | 0.630 | 5 | 10.110 | 5 | 6.910 | 5 | 0.310 | 5 | 0.280 |
| QH14WP1 14 | 5 | 1.344 | 5 | 1.138 | 5 | 3.596 | 5 | 9.899 | 5 | 0.423 | 5 | 0.454 |
| QH28WP1 28 | 4 | 0.535 | 5 | 1.725 | 4 | 9.282 | 5 | 16.117 | 5 | 0.151 | 5 | 0.116 |
| QH56WP1 56 | 5 | 1.244 | 5 | 1.308 | 5 | 4.982 | 5 | 5.130 | 5 | 0.222 | 5 | 0.060 |
| WATER 100.0% 23°C | | | | | | | | | | | | |
| QL01WP1 1 | 5 | 1.018 | 5 | 1.919 | 5 | 15.636 | 5 | 17.000 | 5 | 0.232 | 5 | 0.140 |
| QL07WP1 7 | 5 | 1.303 | 5 | 1.656 | 5 | 21.055 | 5 | 8.046 | 5 | 0.188 | 5 | 0.111 |
| QL14WP1 14 | 5 | 1.454 | 5 | 1.547 | 5 | 11.175 | 5 | 12.564 | 5 | 0.351 | 5 | 0.231 |
| QL28WP1 28 | 5 | 2.173 | 5 | 1.002 | 5 | 12.309 | 5 | 11.282 | 5 | 0.166 | 5 | 0.178 |
| QL56WP1 56 | 5 | 0.896 | 5 | 1.871 | 5 | 7.725 | 5 | 13.945 | 5 | 0.098 | 5 | 0.114 |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | | |
| QH01XM1 1 | 5 | 0.920 | 5 | 1.650 | 5 | 14.700 | 5 | 15.810 | 5 | 0.150 | 5 | 0.100 |
| QH07XM1 7 | 5 | 2.981 | 5 | 1.966 | 5 | 16.285 | 5 | 11.414 | 5 | 0.085 | 5 | 0.158 |
| QH14XM1 14 | 5 | 1.710 | 5 | 2.020 | 5 | 17.390 | 5 | 18.180 | 5 | 0.285 | 5 | 0.134 |
| QH28XM1 28 | 5 | 0.820 | 5 | 0.920 | 5 | 10.700 | 5 | 9.600 | 5 | 0.180 | 5 | 0.210 |
| QH56XM1 56 | 5 | 1.807 | 5 | 0.798 | 5 | 8.847 | 5 | 7.885 | 5 | 0.185 | 5 | 0.135 |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | | |
| QL01XM1 1 | 5 | 2.000 | 5 | 2.370 | 5 | 11.680 | 5 | 17.060 | 5 | 0.340 | 5 | 0.201 |
| QL07XM1 7 | 5 | 1.230 | 5 | 0.730 | 5 | 18.570 | 5 | 11.750 | 5 | 0.200 | 5 | 0.080 |
| QL14XM1 14 | 5 | 2.320 | 5 | 2.230 | 5 | 11.750 | 5 | 18.220 | 5 | 0.196 | 5 | 0.190 |
| QL28XM1 28 | 5 | 3.310 | 5 | 1.370 | 5 | 23.300 | 5 | 17.150 | 5 | 0.150 | 5 | 0.280 |
| QL56XM1 56 | 5 | 1.270 | 5 | 1.873 | 5 | 9.973 | 5 | 17.113 | 5 | 0.195 | 5 | 0.139 |

# CSPE_LW : RETENTION OF PROPERTIES

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HYDROCHLORIC ACID 10.0% 50°C | | | | | | | | | | | |
| QH01AM1 1 | .3 | 1.0 | .2 | 88 | 90 | 103 | 111 | 107 | 100 | 92 | 89 |
| QH07AM1 7 | 1.4 | 2.6 | 1.3 | 86 | 88 | 109 | 119 | 114 | 105 | 92 | 91 |
| QH14AM1 14 | 5.9 | 5.3 | 3.8 | 82 | 88 | 107 | 129 | 119 | 108 | 88 | 91 |
| QH28AM1 28 | 6.4 | 9.2 | 8.5 | 82 | 81 | 116 | 130 | 113 | 108 | 83 | 84 |
| QH99AM1 46 | 12.3 | 15.7 | 16.6 | * | * | * | * | * | * | * | * |
| QH56AM1 56 | 11.6 | 13.9 | 14.7 | 67 | 63 | 114 | 135 | 117 | 115 | 67 | 72 |
| QH99AM2 123 | 21.2 | 22.5 | 28.8 | * | * | * | * | * | * | * | * |
| QH99AM3 242 | 21.1 | 24.5 | 31.8 | 42 | * | 100 | * | 131 | * | * | * |
| HYDROCHLORIC ACID 10.0% 23°C | | | | | | | | | | | |
| QL01AM1 1 | .3 | .3 | .3 | 99 | 102 | 106 | 112 | 93 | 92 | 102 | 100 |
| QL07AM1 7 | .4 | * | .3 | 94 | 91 | 102 | 103 | 97 | 98 | 99 | 97 |
| QL14AM1 14 | 4.2 | * | .1 | 95 | 91 | 108 | 101 | 104 | 108 | 97 | 94 |
| QL28AM1 28 | .6 | 1.3 | 1.6 | 95 | 96 | 104 | 115 | 99 | 102 | 101 | 99 |
| QL99AM1 46 | .5 | .7 | 1.0 | * | * | * | * | * | * | * | * |
| QL56AM1 56 | .7 | 1.0 | 1.1 | 88 | 87 | 104 | 112 | 102 | 102 | 94 | 96 |
| QL99AM2 123 | 1.0 | .7 | .8 | * | * | * | * | * | * | * | * |
| QL99AM3 241 | 2.4 | 2.6 | 3.2 | 82 | * | 88 | * | 111 | * | * | * |
| SODIUM HYDROXIDE 10.0% 50°C | | | | | | | | | | | |
| QH01BM1 1 | .3 | 2.2 | .7 | 90 | 92 | 94 | 107 | 89 | 103 | 91 | 93 |
| QH07BM1 7 | 1.0 | 5.3 | 3.3 | 82 | 83 | 91 | 99 | 98 | 99 | 89 | 89 |
| QH14BM1 14 | 5.2 | 10.1 | 9.3 | 91 | 93 | 109 | 108 | 96 | 84 | 87 | 90 |
| QH28BM1 28 | 10.1 | 11.2 | 12.7 | 91 | 96 | 111 | 106 | 88 | 70 | 77 | 83 |
| QH99BM1 46 | 11.7 | 16.4 | 16.5 | * | * | * | * | * | * | * | * |
| QH56BM1 56 | 11.6 | 14.4 | 16.2 | 102 | 107 | 130 | 125 | 87 | 69 | 79 | 80 |
| QH99BM2 124 | 24.7 | 26.8 | 34.0 | * | * | * | * | * | * | * | * |
| QH99BM3 242 | 27.5 | 28.2 | 38.8 | 83 | * | 130 | * | 75 | * | * | * |
| SODIUM HYDROXIDE 10.0% 23°C | | | | | | | | | | | |
| QL01BM1 1 | .4 | .6 | .6 | 92 | 83 | 96 | 98 | 87 | 110 | 93 | 98 |
| QL07BM1 7 | .5 | 1.0 | 1.3 | 89 | 87 | 92 | 97 | 97 | 104 | 90 | 91 |
| QL14BM1 14 | .6 | 1.4 | 1.5 | 92 | 89 | 104 | 107 | 102 | 99 | 94 | 90 |
| QL28BM1 28 | 2.7 | 3.2 | 4.2 | 87 | 81 | 110 | 113 | 115 | 112 | 91 | 92 |
| QL99BM1 46 | 11.7 | 14.9 | 17.9 | * | * | * | * | * | * | * | * |
| QL56BM1 56 | 13.2 | 16.3 | 18.6 | 97 | 92 | 131 | 133 | 105 | 99 | 85 | 84 |
| QL99BM2 124 | 15.0 | 27.0 | 32.5 | * | * | * | * | * | * | * | * |
| QL99BM3 241 | 22.3 | 28.4 | 37.7 | 82 | * | 125 | * | 95 | * | * | * |
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | |
| QH01DH1 1 | 9.9 | 8.2 | 9.8 | 56 | 58 | 78 | 88 | 152 | 139 | 74 | 78 |
| QH07DH1 7 | 10.3 | 9.3 | 9.8 | 54 | 54 | 79 | 89 | 148 | 141 | 72 | 77 |
| QH14DH1 14 | 11.9 | 10.8 | 14.4 | 52 | 54 | 80 | 89 | 156 | 140 | 71 | 76 |
| QH28DH1 28 | 14.5 | 14.8 | 16.8 | 44 | 47 | 78 | 85 | 165 | 140 | | |
| QH99DH1 46 | 9.0 | 14.1 | 11.7 | * | * | * | * | * | * | * | * |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .8% 50°C | | | | | | | | | | | |
| QH56DH1 56 | 10.5 | 12.5 | 12.7 | 73 | 74 | 98 | 110 | 119 | 106 | 81 | 89 |
| QH99DH2 137 | 16.3 | 21.4 | 21.8 | * | * | * | * | * | * | * | * |
| QH99DH3 242 | 21.6 | 26.5 | 30.4 | 54 | * | 98 | * | 95 | * | * | * |
| 1 2 DICHLOROETHANE .8% 23°C | | | | | | | | | | | |
| QL01DH1 1 | 6.3 | 3.7 | 6.7 | 65 | 64 | 80 | 84 | 130 | 123 | 78 | 81 |
| QL07DH1 7 | 6.4 | 4.2 | 7.6 | 67 | 74 | 81 | 84 | 127 | 101 | 80 | 80 |
| QL14DH1 14 | 8.8 | 6.4 | 10.9 | 61 | 59 | 84 | 84 | 143 | 125 | 73 | 74 |
| QL28DH1 28 | 7.0 | 4.7 | 6.8 | 73 | 74 | 89 | 101 | 114 | 121 | 80 | 84 |
| QL99DH1 46 | 7.6 | 6.1 | 9.5 | * | * | * | * | * | * | * | * |
| QL56DH1 56 | 8.0 | 6.5 | 9.7 | 68 | 67 | 88 | 96 | 131 | 107 | 72 | 77 |
| QL99DH2 137 | 8.1 | 7.4 | 9.8 | * | * | * | * | * | * | * | * |
| QL99DH3 241 | 9.4 | 8.7 | 12.1 | 65 | * | 87 | * | 130 | * | * | * |
| 1 2 DICHLOROETHANE .1% 50°C | | | | | | | | | | | |
| QH01DL1 1 | 1.9 | 3.0 | 100.0 | 72 | 75 | 84 | 95 | 117 | 118 | 85 | 85 |
| QH07DL1 7 | 3.5 | 4.0 | 4.2 | 69 | 70 | 83 | 93 | 122 | 111 | 88 | 88 |
| QH14DL1 14 | 3.8 | 4.9 | 4.5 | 63 | 59 | 87 | 94 | 137 | 133 | 84 | 89 |
| QH28DL1 28 | 5.2 | 6.3 | 6.3 | 71 | 71 | 98 | 106 | 129 | 118 | 81 | 87 |
| QH99DL1 46 | 6.9 | 9.7 | 8.9 | * | * | * | * | * | * | * | * |
| QH56DL1 56 | 7.0 | 8.9 | 9.1 | 71 | 70 | 100 | 110 | 121 | 108 | 81 | 81 |
| QH99DL2 137 | 14.0 | 16.4 | 18.2 | * | * | * | * | * | * | * | * |
| QH99DL3 242 | 20.1 | 22.4 | 29.0 | 57 | * | 109 | * | 92 | * | * | * |
| 1 2 DICHLOROETHANE .1% 23°C | | | | | | | | | | | |
| QL01DL1 1 | 1.1 | .3 | * | 75 | 75 | 81 | 90 | 106 | 116 | 85 | 83 |
| QL07DL1 7 | 1.8 | .3 | 1.2 | 81 | 78 | 89 | 97 | 117 | 118 | 89 | 92 |
| QL14DL1 14 | 2.3 | 1.7 | 2.7 | 64 | 64 | 82 | 89 | 133 | 124 | 81 | 82 |
| QL28DL1 28 | 2.7 | 2.2 | 3.0 | 74 | 74 | 89 | 97 | 117 | 117 | 87 | 89 |
| QL99DL1 46 | 2.8 | 2.7 | 2.9 | * | * | * | * | * | * | * | * |
| QL56DL1 56 | 3.1 | 2.7 | 3.6 | 76 | 71 | 95 | 99 | 122 | 123 | 93 | 97 |
| QL99DL2 137 | 3.9 | 4.4 | 5.6 | * | * | * | * | * | * | * | * |
| QL99DL3 241 | 3.8 | 5.4 | 6.2 | 74 | * | 95 | * | 115 | * | * | * |
| 1 2 DICHLOROETHANE .5% 50°C | | | | | | | | | | | |
| QH01DM1 1 | 5.9 | 6.1 | 6.4 | 60 | 60 | 81 | 88 | 141 | 136 | 75 | 76 |
| QH07DM1 7 | 6.1 | 5.4 | 6.4 | 63 | 58 | 81 | 89 | 138 | 133 | 74 | 85 |
| QH14DM1 14 | 7.7 | 8.3 | 9.8 | 51 | 49 | 77 | 84 | 154 | 141 | 83 | 86 |
| QH28DM1 28 | 8.0 | 9.1 | 9.7 | 73 | 74 | 97 | 108 | 128 | 115 | 77 | 82 |
| QH99DM1 46 | 7.2 | 11.3 | 9.0 | * | * | * | * | * | * | * | * |
| QH56DM1 56 | 7.6 | 11.2 | 9.9 | 74 | 76 | 101 | 110 | 121 | 106 | 80 | 87 |
| QH99DM2 137 | 13.3 | 17.9 | 18.0 | * | * | * | * | * | * | * | * |
| QH99DM3 242 | 21.3 | 24.5 | 29.8 | 56 | * | 113 | * | 101 | * | * | * |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 2 DICHLOROETHANE .5% 23°C | | | | | | | | | | | |
| QL01DM1 1 | 4.8 | 2.7 | 5.0 | 74 | 71 | 83 | 88 | 116 | 119 | 81 | 84 |
| QL07DM1 7 | 5.3 | 3.4 | 5.2 | 71 | 66 | 91 | 91 | 118 | 124 | 80 | 82 |
| QL14DM1 14 | 5.7 | 2.7 | 5.0 | 68 | 63 | 84 | 90 | 124 | 126 | 80 | 78 |
| QL28DM1 28 | 5.4 | 4.0 | 6.1 | 69 | 68 | 88 | 94 | 128 | 123 | 82 | 83 |
| QL99DM1 46 | 4.1 | 2.6 | 4.0 | * | * | * | * | * | * | * | * |
| QL56DM1 56 | 5.3 | 4.0 | 5.4 | 72 | 68 | 91 | 98 | 122 | 121 | 85 | 92 |
| QL99DM2 137 | 5.0 | 4.6 | 5.9 | * | * | * | * | * | * | * | * |
| QL99DM3 241 | 7.5 | 6.6 | 9.3 | 68 | * | 89 | * | 122 | * | * | * |
| FURFURAL 8.0% 50°C | | | | | | | | | | | |
| QH01FH1 1 | 9.3 | 7.5 | 9.8 | 63 | 60 | 92 | 102 | 135 | 131 | 74 | 75 |
| QH07FH1 7 | 12.7 | 13.7 | 15.3 | 61 | 59 | 97 | 106 | 137 | 124 | 71 | 76 |
| QH14FH1 14 | 14.1 | 14.1 | 17.9 | 59 | 57 | 96 | 102 | 136 | 125 | 68 | 73 |
| QH28FH1 28 | 16.5 | 16.6 | 21.2 | 64 | 63 | 90 | 97 | 123 | 110 | 64 | 67 |
| QH99FH1 46 | 27.1 | 25.9 | 34.7 | * | * | * | * | * | * | * | * |
| QH56FH1 56 | 24.7 | 23.7 | 33.4 | 59 | 57 | 103 | 112 | 123 | 111 | 54 | 64 |
| QH99FH2 137 | 35.1 | 35.7 | 50.6 | * | * | * | * | * | * | * | * |
| QH99FH3 242 | 37.9 | 39.4 | 58.9 | 55 | * | 67 | * | 54 | * | * | * |
| FURFURAL 8.0% 23°C | | | | | | | | | | | |
| QL01FH1 1 | 7.2 | 4.7 | 8.4 | 75 | 71 | 96 | 104 | 120 | 116 | 83 | 85 |
| QL07FH1 7 | 11.3 | 7.6 | 12.9 | 68 | 62 | 93 | 95 | 123 | 121 | 72 | 77 |
| QL14FH1 14 | 9.9 | 10.8 | 11.5 | 77 | 77 | 98 | 112 | 111 | 117 | 85 | 86 |
| QL28FH1 28 | 12.4 | 9.4 | 15.0 | 62 | 62 | 82 | 87 | 136 | 128 | 71 | 73 |
| QL99FH1 46 | 12.5 | 8.8 | 14.8 | * | * | * | * | * | * | * | * |
| QL56FH1 56 | 13.8 | 11.0 | 17.7 | 62 | 59 | 89 | 94 | 137 | 131 | 74 | 80 |
| QL99FH2 137 | 13.4 | 10.8 | 17.0 | * | * | * | * | * | * | * | * |
| QL99FH3 241 | 15.8 | 12.5 | 20.2 | 56 | * | 83 | * | 125 | * | * | * |
| FURFURAL 1.0% 50°C | | | | | | | | | | | |
| QH01FL1 1 | 1.7 | 2.5 | 1.7 | 84 | 83 | 104 | 120 | 113 | 114 | 90 | 95 |
| QH07FL1 7 | 3.9 | 5.2 | 4.3 | 78 | 76 | 109 | 124 | 122 | 117 | 83 | 91 |
| QH14FL1 14 | 3.6 | 4.8 | 4.5 | 76 | 74 | 104 | 117 | 116 | 112 | 81 | 85 |
| QH28FL1 28 | 4.6 | 6.7 | 6.5 | 78 | 77 | 97 | 109 | 117 | 112 | 84 | 84 |
| QH99FL1 46 | 6.5 | 9.5 | 8.8 | * | * | * | * | * | * | * | * |
| QH56FL1 56 | 7.1 | 9.2 | 9.5 | 79 | 77 | 114 | 124 | 115 | 106 | 79 | 78 |
| QH99FL2 137 | 13.5 | 16.0 | 18.6 | * | * | * | * | * | * | * | * |
| QH99FL3 242 | 19.7 | 20.9 | 26.9 | 59 | * | 109 | * | 93 | * | * | * |
| FURFURAL 1.0% 23°C | | | | | | | | | | | |
| QL01FL1 1 | 1.0 | 1.0 | 1.3 | 97 | 97 | 112 | 122 | 103 | 102 | 100 | 103 |
| QL07FL1 9 | 2.3 | 1.9 | 2.9 | 88 | 90 | 105 | 116 | 105 | 107 | 94 | 92 |
| QL14FL1 14 | 2.0 | 2.0 | 2.8 | 88 | 81 | 104 | 113 | 103 | 110 | 92 | 95 |
| QL28FL1 28 | 2.6 | 2.6 | 3.8 | 71 | 70 | 83 | 93 | 117 | 115 | 87 | 89 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FURFURAL 1.0% 23°C | | | | | | | | | | | |
| QL99FL1 46 | 3.0 | 2.6 | 3.9 | * | * | * | * | * | * | * | * |
| QL56FL1 56 | 3.3 | 2.5 | 4.3 | 74 | 68 | 97 | 103 | 125 | 122 | 83 | 89 |
| QL99FL2 137 | 4.1 | 3.9 | 5.2 | * | * | * | * | * | * | * | * |
| QL99FL3 241 | 4.5 | 4.9 | 6.7 | 74 | * | 98 | * | 125 | * | * | * |
| FURFURAL 4.0% 50°C | | | | | | | | | | | |
| QH01FM1 1 | 4.4 | 4.7 | 5.0 | 68 | 68 | 94 | 105 | 131 | 120 | 78 | 81 |
| QH07FM1 7 | 7.3 | 8.1 | 8.2 | 68 | 69 | 99 | 113 | 131 | 123 | 79 | 83 |
| QH14FM1 14 | 7.0 | 8.0 | 9.0 | 69 | 67 | 103 | 110 | 127 | 115 | 75 | 80 |
| QH28FM1 28 | 11.0 | 9.4 | 12.1 | 74 | 69 | 88 | 95 | 117 | 120 | 81 | 86 |
| QH99FM1 46 | 12.3 | 14.4 | 15.8 | * | * | * | * | * | * | * | * |
| QH56FM1 56 | 12.7 | 13.6 | 16.2 | 74 | 73 | 110 | 123 | 115 | 106 | 67 | 72 |
| QH99FM2 137 | 23.4 | 24.2 | 31.9 | * | * | * | * | * | * | * | * |
| QH99FM3 242 | 22.6 | 24.5 | 32.3 | 58 | * | 101 | * | 90 | * | * | * |
| FURFURAL 4.0% 23°C | | | | | | | | | | | |
| QL01FM1 1 | 2.9 | 1.9 | 3.6 | 87 | 84 | 104 | 112 | 113 | 113 | 93 | 94 |
| QL07FM1 7 | 5.0 | 3.3 | 5.0 | 75 | 73 | 97 | 106 | 119 | 116 | 81 | 88 |
| QL14FM1 14 | 4.7 | 1.3 | 8.0 | 62 | 59 | 89 | 96 | 130 | 125 | 69 | 74 |
| QL28FM1 28 | 2.9 | 2.9 | 4.2 | 73 | 71 | 99 | 107 | 121 | 111 | 76 | 80 |
| QL99FM1 46 | 6.1 | 4.5 | 7.3 | * | * | * | * | * | * | * | * |
| QL56FM1 56 | 6.7 | 5.9 | 9.4 | 78 | 74 | 102 | 108 | 118 | 118 | 83 | 87 |
| QL99FM2 137 | 7.0 | 6.1 | 8.9 | * | * | * | * | * | * | * | * |
| QL99FM3 241 | 8.3 | 7.4 | 11.2 | 70 | * | 93 | * | 121 | * | * | * |
| METHYL ETHYL KETONE 26.0% 50°C | | | | | | | | | | | |
| QH01MH1 1 | 23.6 | 28.9 | 41.2 | 40 | 36 | 72 | 76 | 175 | 157 | 44 | 47 |
| QH07MH1 7 | 35.8 | 35.5 | 50.1 | 33 | 31 | 67 | 72 | 173 | 151 | 42 | 53 |
| QH14MH1 14 | 35.8 | 33.9 | 50.7 | 40 | 47 | 79 | 96 | 156 | 129 | 49 | 55 |
| QH28MH1 28 | 33.3 | 2.5 | 10.2 | 36 | 37 | 73 | 85 | 170 | 144 | 48 | 48 |
| QH99MH1 46 | 33.6 | 44.3 | 46.2 | * | * | * | * | * | * | * | * |
| QH56MH1 56 | 38.5 | 39.7 | 61.7 | 34 | 32 | 75 | 80 | 147 | 124 | 34 | 39 |
| QH99MH2 137 | 52.9 | 55.1 | 42.8 | * | * | * | * | * | * | * | * |
| QH99MH3 242 | 37.5 | 42.3 | 35.0 | 33 | * | 30 | * | 69 | * | * | * |
| METHYL ETHYL KETONE 26.0% 23°C | | | | | | | | | | | |
| QL01MH1 1 | 15.5 | 11.7 | 21.8 | 57 | 56 | 79 | 81 | 138 | 127 | 57 | 65 |
| QL07MH1 7 | 16.1 | 12.7 | 22.1 | 52 | 56 | 76 | 81 | 146 | 131 | 62 | 64 |
| QL14MH1 14 | 16.9 | 13.8 | 22.4 | 61 | 62 | 92 | 100 | 131 | 119 | 62 | 65 |
| QL28MH1 28 | 17.4 | 14.3 | 24.1 | 53 | 50 | 76 | 81 | 145 | 139 | 64 | 68 |
| QL99MH1 46 | 18.1 | 15.4 | 24.5 | * | * | * | * | * | * | * | * |
| QL56MH1 56 | 17.4 | 17.0 | 30.5 | 44 | 41 | 75 | 78 | 152 | 141 | 52 | 53 |
| QL99MH2 137 | 18.9 | 16.3 | 25.4 | * | * | * | * | * | * | * | * |
| QL99MH3 241 | 19.5 | 16.7 | 66.1 | 44 | * | 89 | * | 136 | * | * | * |

TABLE 10A. WATER ABSORPTION. CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE 3.0% 50°C | | | | | | | | | | | |
| QH01ML1 1 | 2.9 | 4.8 | 4.6 | 67 | 68 | 79 | 86 | 118 | 119 | 80 | 81 |
| QH07ML1 7 | 5.0 | 6.7 | 6.9 | 67 | 69 | 95 | 104 | 129 | 124 | 82 | 82 |
| QH14ML1 14 | 5.6 | 7.2 | 7.9 | 72 | 71 | 100 | 114 | 124 | 118 | 82 | 87 |
| QH28ML1 28 | 6.2 | 7.9 | 8.6 | 65 | 67 | 88 | 100 | 133 | 122 | 78 | 83 |
| QH99ML1 46 | 9.2 | 13.4 | 12.4 | * | * | * | * | * | * | * | * |
| QH56ML1 56 | 9.3 | 13.2 | 15.6 | 74 | 66 | 111 | 109 | 116 | 109 | 69 | 73 |
| QH99ML2 137 | 19.6 | 22.5 | 26.4 | * | * | * | * | * | * | * | * |
| QH99ML3 242 | 20.1 | 24.4 | 29.3 | 55 | * | 101 | * | 87 | * | * | * |
| METHYL ETHYL KETONE 3.0% 23°C | | | | | | | | | | | |
| QL01ML1 1 | 1.1 | .6 | 1.0 | 72 | 73 | 79 | 83 | 108 | 108 | 79 | 85 |
| QL07ML1 7 | 2.6 | 2.1 | 3.7 | 77 | 73 | 84 | 89 | 107 | 113 | 85 | 84 |
| QL14ML1 14 | 2.9 | 1.6 | 3.2 | 80 | 79 | 104 | 111 | 118 | 113 | 86 | 90 |
| QL28ML1 28 | 3.2 | 2.9 | 4.6 | 71 | 67 | 84 | 87 | 124 | 124 | 87 | 85 |
| QL99ML1 46 | 3.7 | 3.0 | 4.8 | * | * | * | * | * | * | * | * |
| QL56ML1 56 | 3.9 | 3.9 | 5.8 | 73 | 67 | 99 | 101 | 130 | 123 | 83 | 84 |
| QL99ML2 137 | 4.6 | 4.0 | 5.5 | * | * | * | * | * | * | * | * |
| QL99ML3 241 | 5.1 | 5.0 | 6.8 | 71 | * | 95 | * | 131 | * | * | * |
| METHYL ETHYL KETONE 13.0% 50°C | | | | | | | | | | | |
| QH01MM1 1 | 11.6 | 15.8 | 19.1 | 50 | 50 | 77 | 87 | 158 | 147 | 52 | 62 |
| QH07MM1 7 | 20.2 | 22.9 | 26.9 | 46 | 47 | 80 | 93 | 158 | 137 | 63 | 64 |
| QH14MM1 14 | 21.8 | 23.5 | 32.5 | 56 | 58 | 99 | 104 | 144 | 119 | 65 | 73 |
| QH28MM1 28 | 22.5 | 24.6 | 33.9 | 52 | 51 | 88 | 98 | 147 | 127 | 63 | 68 |
| QH99MM1 46 | 28.7 | 34.6 | 42.2 | * | * | * | * | * | * | * | * |
| QH56MM1 56 | 26.7 | 31.3 | 42.1 | 42 | 39 | 89 | 95 | 146 | 125 | 47 | 53 |
| QH99MM2 137 | 28.0 | 35.0 | 37.9 | * | * | * | * | * | * | * | * |
| QH99MM3 242 | 27.4 | 35.9 | 40.4 | 43 | * | 71 | * | 86 | * | * | * |
| METHYL ETHYL KETONE 13.0% 23°C | | | | | | | | | | | |
| QL01MM1 1 | 6.7 | 5.1 | 9.5 | 67 | 68 | 82 | 82 | 126 | 118 | 75 | 80 |
| QL07MM1 7 | 8.8 | 6.4 | 11.5 | 56 | 54 | 72 | 76 | 140 | 135 | 69 | 69 |
| QL14MM1 14 | 9.1 | 7.8 | 13.1 | 77 | 79 | 102 | 114 | 116 | 113 | 79 | 84 |
| QL28MM1 28 | 9.6 | 6.2 | 19.1 | 61 | 57 | 80 | 82 | 136 | 128 | 74 | 73 |
| QL99MM1 46 | 9.4 | 9.1 | 13.5 | * | * | * | * | * | * | * | * |
| QL56MM1 56 | 9.6 | 8.8 | 15.2 | 56 | 53 | 85 | 88 | 143 | 131 | 66 | 66 |
| QL99MM2 137 | 10.2 | 11.4 | 14.8 | * | * | * | * | * | * | * | * |
| QL99MM3 240 | 11.6 | 12.3 | 14.7 | 61 | * | 93 | * | 140 | * | * | * |
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | |
| QH01OM1 1 | 2.0 | 3.2 | 3.1 | 82 | 80 | 92 | 103 | 107 | 111 | 89 | 89 |
| QH07OM1 7 | 12.1 | 11.5 | 14.8 | 67 | 63 | 89 | 101 | 130 | 130 | x§§§§F | |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASTM #2 OIL SATURATED 50°C | | | | | | | | | | | |
| QH99OM1 46 | 7.1 | 9.6 | 9.2 | * | * | * | * | * | * | * | * |
| QH56OM1 56 | 9.8 | 10.4 | 12.0 | 75 | 73 | 115 | 129 | 118 | 107 | 73 | 78 |
| QH99OM2 133 | 16.9 | 18.2 | 23.8 | * | * | * | * | * | * | * | * |
| QH99OM3 242 | 27.7 | 24.8 | 36.8 | 57 | * | 112 | * | 88 | * | * | * |
| ASTM #2 OIL SATURATED 23°C | | | | | | | | | | | |
| QL01OM1 1 | .6 | 1.0 | 1.1 | 87 | 87 | 94 | 103 | 98 | 104 | 96 | 96 |
| QL07OM1 7 | 1.2 | 1.6 | 1.9 | 82 | 81 | 90 | 94 | 115 | 114 | 90 | 89 |
| QL14OM1 14 | 1.5 | 1.3 | 2.0 | 82 | 80 | 97 | 106 | 108 | 106 | 88 | 96 |
| QL28OM1 28 | 2.3 | 1.6 | 2.6 | 86 | 83 | 101 | 112 | 103 | 110 | 91 | 92 |
| QL99OM1 46 | 2.2 | 2.0 | 2.8 | * | * | * | * | * | * | * | * |
| QL56OM1 56 | 3.2 | 3.0 | 4.4 | 83 | 78 | 104 | 115 | 109 | 112 | 89 | 89 |
| QL99OM2 106 | 4.7 | 5.3 | 7.5 | * | * | * | * | * | * | * | * |
| QL99OM3 241 | 6.7 | 5.6 | 9.4 | 72 | * | 88 | * | 129 | * | * | * |
| ASTM #2 OIL 100.0% 50°C | | | | | | | | | | | |
| QH01OP1 1 | 16.4 | 19.4 | 24.0 | 63 | 57 | 80 | 89 | 122 | 125 | 65 | 70 |
| QH07OP1 7 | 48.4 | 38.0 | 66.7 | 27 | 21 | 67 | 77 | 173 | 177 | 37 | 50 |
| QH14OP1 14 | 71.6 | 52.7 | 98.3 | 16 | 26 | 56 | 62 | 188 | 155 | 27 | 40 |
| QH28OP1 28 | 84.1 | 2.9 | 34.3 | 13 | 24 | 50 | 62 | 181 | 146 | 23 | 31 |
| QH99OP1 46 | 103.0 | 83.2 | 134.1 | * | * | * | * | * | * | * | * |
| QH56OP1 56 | 85.5 | 67.6 | 124.0 | 16 | 24 | 55 | 69 | 160 | 143 | 21 | 25 |
| QH99OP2 128 | 103.3 | 97.0 | 150.4 | * | * | * | * | * | * | * | * |
| QH99OP3 242 | 96.8 | 96.4 | 148.2 | 7 | * | 52 | * | 111 | * | * | * |
| ASTM #2 OIL 100.0% 23°C | | | | | | | | | | | |
| QL01OP1 1 | .7 | 1.0 | 1 1 | 92 | 92 | 94 | 100 | 95 | 104 | 93 | 91 |
| QL07OP1 7 | 1.4 | 1.0 | 100.0 | 92 | 91 | 102 | 106 | 107 | 103 | 89 | 93 |
| QL14OP1 14 | 2.8 | 2.7 | 3.9 | 92 | 90 | 100 | 103 | 96 | 96 | 85 | 91 |
| QL28OP1 28 | 4.7 | 4.5 | 7.1 | 85 | 87 | 101 | 111 | 110 | 106 | 87 | 79 |
| QL99OP1 46 | 5.8 | 4.6 | 8.3 | * | * | * | * | * | * | * | * |
| QL56OP1 56 | 7.0 | 5.0 | 9.4 | 81 | 78 | 98 | 106 | 109 | 105 | 82 | 80 |
| QL99OP2 128 | 9.8 | 6.9 | 14.4 | * | * | * | * | * | * | * | * |
| QL99OP3 241 | 13.3 | 10.6 | 20.9 | 71 | * | 95 | * | 111 | * | * | * |
| PHENOL 8.0% 50°C | | | | | | | | | | | |
| QH01PH1 1 | 14.7 | 13.0 | 18.4 | 55 | 55 | 97 | 109 | 149 | 137 | 65 | 76 |
| QH07PH1 7 | 16.4 | 16.9 | 22.7 | 55 | 49 | 101 | 109 | 154 | 143 | 67 | 71 |
| QH14PH1 14 | 16.9 | 17.9 | 23.9 | 32 | 21 | 77 | 89 | 145 | 142 | 60 | 67 |
| QH28PH1 28 | 22.8 | 22.7 | 75.0 | 46 | 42 | 99 | 108 | 154 | 139 | 55 | 59 |
| QH99PH1 46 | 29.2 | 27.8 | 39.3 | * | * | * | * | * | * | * | * |
| QH56PH1 56 | 28.5 | 23.8 | 37.1 | 46 | 41 | 95 | 107 | 143 | 131 | 48 | 55 |
| QH99PH2 137 | 38.9 | 35.0 | 53.7 | * | * | * | * | * | * | * | * |
| QH99PH3 242 | 44.0 | 38.8 | 62.7 | 33 | * | 67 | * | 107 | * | * | * |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 8.0% 23°C | | | | | | | | | | | |
| QL01PH1 1 | 6.7 | 4.9 | 7.8 | 76 | 69 | 86 | 93 | 106 | 128 | 81 | 84 |
| QL07PH1 7 | 10.7 | 8.4 | 13.8 | 59 | 57 | 88 | 94 | 144 | 139 | 73 | 75 |
| QL14PH1 14 | 9.0 | 9.3 | 13.8 | * | * | * | * | 134 | 141 | 77 | 74 |
| QL28PH1 28 | 9.5 | 7.2 | 11.8 | 61 | 57 | 96 | 103 | 144 | 138 | 69 | 73 |
| QL99PH1 46 | 10.9 | 7.2 | 12.8 | * | * | * | * | * | * | * | * |
| QL56PH1 56 | 9.8 | 7.9 | 12.9 | 60 | 53 | 80 | 92 | 148 | 143 | 73 | 74 |
| QL99PH2 137 | 11.5 | 7.8 | 13.2 | * | * | * | * | * | * | * | * |
| QL99PH3 241 | 12.6 | 8.8 | 14.8 | 53 | * | 82 | * | 149 | * | * | * |
| PHENOL 1.0% 50°C | | | | | | | | | | | |
| QH01PL1 1 | 1.9 | 2.6 | 2.3 | 82 | 71 | 107 | 93 | 110 | 118 | 85 | 91 |
| QH07PL1 7 | 2.5 | 3.9 | 2.9 | 84 | 83 | 112 | 129 | 118 | 114 | 89 | 100 |
| QH14PL1 14 | 1.8 | 4.7 | 4.1 | 59 | 49 | 90 | 102 | 125 | 116 | 84 | 90 |
| QH28PL1 28 | 4.0 | 6.1 | 5.3 | 81 | 78 | 118 | 125 | 122 | 111 | 79 | 84 |
| QH99PL1 46 | 6.0 | 8.2 | 7.2 | * | * | * | * | * | * | * | * |
| QH56PL1 56 | 5.0 | 6.4 | 6.4 | 66 | 67 | 92 | 106 | 125 | 113 | 72 | 74 |
| QH99PL2 137 | 15.9 | 17.0 | 20.3 | * | * | * | * | * | * | * | * |
| QH99PL3 242 | 23.5 | 24.3 | 32.6 | 54 | * | 116 | * | 94 | * | * | * |
| PHENOL 1.0% 23°C | | | | | | | | | | | |
| QL01PL1 1 | .9 | .7 | 1.3 | 94 | 90 | 109 | 103 | 91 | 101 | 95 | 96 |
| QL07PL1 7 | 1.8 | 1.4 | 2.3 | 91 | 89 | 109 | 118 | 111 | 108 | 99 | 101 |
| QL14PL1 14 | 1.9 | 1.7 | 2.4 | 83 | 79 | 90 | 100 | 118 | 122 | 90 | 95 |
| QL28PL1 28 | 2.0 | .3 | .9 | 86 | 83 | 107 | 113 | 115 | 110 | 89 | 91 |
| QL99PL1 46 | 2.0 | 1.6 | 2.5 | * | * | * | * | * | * | * | * |
| QL56PL1 56 | 2.2 | 2.1 | 3.0 | 83 | 76 | 109 | 102 | 114 | 120 | 84 | 88 |
| QL99PL2 137 | 2.4 | 1.9 | 2.6 | * | * | * | * | * | * | * | * |
| QL99PL3 241 | 2.4 | 2.3 | 2.9 | 75 | * | 96 | * | 125 | * | * | * |
| PHENOL 4.0% 50°C | | | | | | | | | | | |
| QH01PM1 1 | 6.1 | 5.4 | 6.7 | 63 | 65 | 81 | 108 | 126 | 130 | 78 | 80 |
| QH07PM1 7 | 6.8 | 7.5 | 8.3 | 66 | 64 | 104 | 115 | 139 | 127 | 77 | 79 |
| QH14PM1 14 | 7.3 | 8.3 | 8.9 | * | * | * | * | 137 | 131 | 74 | 77 |
| QH28PM1 28 | 9.8 | 10.8 | 11.8 | 63 | 58 | 109 | 114 | 138 | 120 | 64 | 70 |
| QH99PM1 46 | 12.8 | 14.6 | 16.3 | * | * | * | * | * | * | * | * |
| QH56PM1 56 | 11.9 | 12.4 | 15.6 | 62 | 56 | 108 | 108 | 133 | 129 | 65 | 72 |
| QH99PM2 137 | 33.0 | 31.2 | 45.2 | * | * | * | * | * | * | * | * |
| QH99PM3 242 | 39.5 | 37.3 | 57.0 | 40 | * | 85 | * | 95 | * | * | * |
| PHENOL 4.0% 23°C | | | | | | | | | | | |
| QL01PM1 1 | 2.9 | 2.3 | 3.3 | 81 | 86 | 98 | 109 | 107 | 98 | 93 | 88 |
| QL07PM1 7 | 6.0 | 3.7 | 7.0 | 72 | 69 | 95 | 100 | 131 | 123 | 83 | 82 |
| QL14PM1 14 | 5.7 | 3.7 | 6.6 | * | * | * | * | 137 | 130 | 77 | 80 |
| QL28PM1 28 | 6.4 | 5.5 | 8.5 | 73 | 66 | 105 | 109 | 132 | 124 | 77 | 79 |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PHENOL 4.0% 23°C | | | | | | | | | | | |
| QL99PM1 46 | 6.4 | 4.5 | 7.2 | * | * | * | * | * | * | * | * |
| QL56PM1 56 | 6.6 | 4.1 | 6.5 | 63 | 63 | 94 | 109 | 130 | 125 | 73 | 73 |
| QL99PM2 137 | 7.0 | 5.1 | 8.1 | * | * | * | * | * | * | * | * |
| QL99PM3 241 | 7.3 | 5.8 | 8.6 | 60 | * | 81 | * | 142 | * | * | * |
| SODIUM CHLORIDE 35.0% 50°C | | | | | | | | | | | |
| QH01SH1 1 | .3 | 2.0 | .8 | 87 | 85 | 93 | 102 | 92 | 107 | 90 | 91 |
| QH07SH1 7 | .3 | 3.2 | 1.0 | 87 | 92 | 91 | 98 | 99 | 103 | 95 | 96 |
| QH14SH1 14 | .4 | 1.9 | .6 | 91 | 91 | 103 | 114 | 102 | 103 | 96 | 94 |
| QH28SH1 28 | .4 | 3.0 | .9 | 86 | 86 | 93 | 99 | 99 | 103 | 91 | 89 |
| QH99SH1 46 | .6 | 3.3 | .9 | * | * | * | * | * | * | * | * |
| QH56SH1 56 | .6 | 3.0 | 2.0 | 90 | 94 | 107 | 115 | 100 | 90 | 88 | 97 |
| QH99SH2 131 | .6 | 4.3 | 1.6 | * | * | * | * | * | * | * | * |
| QH99SH3 242 | .2 | 4.7 | 2.1 | 94 | * | 107 | * | 102 | * | * | * |
| SODIUM CHLORIDE 35.0% 23°C | | | | | | | | | | | |
| QL01SH1 1 | .2 | .7 | .7 | 85 | 83 | 86 | 94 | 86 | 106 | 96 | 99 |
| QL07SH1 7 | .2 | .6 | 1.0 | 94 | 91 | 94 | 93 | 98 | 98 | 96 | 95 |
| QL14SH1 14 | .3 | 1.0 | 1.2 | 90 | 91 | 95 | 103 | 93 | 103 | 99 | 99 |
| QL28SH1 28 | .4 | .6 | .9 | 91 | 88 | 98 | 107 | 94 | 103 | 93 | 94 |
| QL99SH1 46 | .3 | .3 | .4 | * | * | * | * | * | * | * | * |
| QL56SH1 56 | .4 | .7 | .9 | 89 | 89 | 103 | 105 | 99 | 92 | 97 | 93 |
| QL99SH2 131 | .4 | .7 | .5 | * | * | * | * | * | * | * | * |
| QL99SH3 241 | .3 | 1.7 | 1.7 | 87 | * | 86 | * | 106 | * | * | * |
| SODIUM CHLORIDE 10.0% 50°C | | | | | | | | | | | |
| QH01SM1 1 | .4 | 1.8 | .5 | 83 | 82 | 87 | 94 | 93 | 100 | 83 | 91 |
| QH07SM1 7 | .4 | 3.2 | 1.2 | 83 | 82 | 91 | 101 | 109 | 110 | 93 | 92 |
| QH14SM1 14 | .5 | 1.9 | .1 | 80 | 86 | 98 | 113 | 112 | 107 | 93 | 91 |
| QH28SM1 28 | .6 | 3.4 | 1.8 | 78 | 75 | 90 | 98 | 113 | 110 | 84 | 82 |
| QH99SM1 46 | .6 | 2.9 | .6 | * | * | * | * | * | * | * | * |
| QH56SM1 56 | .7 | 2.4 | 1.1 | 84 | 87 | 103 | 117 | 108 | 101 | 88 | 88 |
| QH99SM2 124 | .3 | 2.9 | .3 | * | * | * | * | * | * | * | * |
| QH99SM3 242 | .1 | 3.6 | .9 | 92 | * | 110 | * | 95 | * | * | * |
| SODIUM CHLORIDE 10.0% 23°C | | | | | | | | | | | |
| QL01SM1 1 | .3 | .7 | .7 | 84 | 79 | 89 | 93 | 103 | 107 | 92 | 92 |
| QL07SM1 7 | .4 | 1.0 | 1.3 | 89 | 87 | 90 | 97 | 98 | 107 | 94 | 93 |
| QL14SM1 14 | .5 | .3 | .2 | 92 | 88 | 101 | 103 | 100 | 95 | 95 | 94 |
| QL28SM1 28 | .5 | 1.0 | 1.3 | 86 | 87 | 99 | 106 | 104 | 100 | 91 | 91 |
| QL99SM1 46 | .7 | .3 | .1 | * | * | * | * | * | * | * | * |
| QL56SM1 56 | .6 | 1.6 | 2.2 | 89 | 88 | 105 | 115 | 105 | 105 | 92 | 94 |
| QL99SM2 124 | .6 | .3 | .4 | * | * | * | * | * | * | * | * |
| QL99SM3 241 | .8 | .3 | .2 | 85 | * | 97 | * | 120 | * | * | * |

CHLOROSULFONATED POLYETHYLENE LOW WATER ABSORPTION: CHEMICAL IMMERSION RESULTS, RETENTION OF PROPERTIES

| | PERCENT WEIGHT CHANGE | PERCENT THICKNESS CHANGE | PERCENT THICKNESS CHANGE | PERCENT RETENTION SMOD M | PERCENT RETENTION SMOD T | PERCENT RETENTION BF M | PERCENT RETENTION BF T | PERCENT RETENTION EAB M | PERCENT RETENTION EAB T | PERCENT RETENTION TEAR M | PERCENT RETENTION TEAR T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WATER 100.0% 50°C | | | | | | | | | | | |
| QH01WP1 1 | 1.0 | 2.9 | 1.4 | 93 | 91 | 100 | 108 | 88 | 100 | 92 | 95 |
| QH07WP1 7 | 2.3 | 4.4 | 2.9 | 74 | 73 | 92 | 101 | 123 | 116 | 85 | 89 |
| QH14WP1 14 | 3.2 | 5.1 | 4.5 | 69 | 72 | 96 | 112 | 121 | 115 | 82 | 83 |
| QH28WP1 28 | 4.4 | 6.3 | 5.8 | 74 | 74 | 101 | 110 | 127 | 116 | 86 | 88 |
| QH99WP1 46 | 6.7 | 8.5 | 8.2 | * | * | * | * | * | * | * | * |
| QH56WP1 56 | 6.0 | 7.7 | 7.5 | 74 | 71 | 114 | 126 | 120 | 109 | 77 | 79 |
| QH99WP2 122 | 13.3 | 13.3 | 15.7 | * | * | * | * | * | * | * | * |
| QH99WP3 242 | 20.3 | 21.2 | 28.1 | 60 | * | 110 | * | 87 | * | * | * |
| WATER 100.0% 23°C | | | | | | | | | | | |
| QL01WP1 1 | .4 | .3 | .3 | 82 | 84 | 90 | 98 | 106 | 101 | 93 | 92 |
| QL07WP1 7 | 1.0 | 1.0 | 1.3 | 93 | 94 | 98 | 106 | 93 | 102 | 98 | 100 |
| QL14WP1 14 | 1.3 | 2.0 | 2.5 | 90 | 90 | 102 | 111 | 101 | 103 | 94 | 95 |
| QL28WP1 28 | 1.8 | 1.9 | 2.3 | 84 | 79 | 98 | 106 | 107 | 110 | 86 | 91 |
| QL99WP1 46 | 2.3 | 1.3 | 2.3 | * | * | * | * | * | * | * | * |
| QL56WP1 56 | 2.1 | 1.9 | 2.5 | 86 | 80 | 106 | 117 | 108 | 108 | 94 | 96 |
| QL99WP2 122 | 2.9 | 1.6 | 2.8 | * | * | * | * | * | * | * | * |
| QL99WP3 241 | 3.7 | 3.2 | 4.2 | 80 | * | 87 | * | 112 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 50°C | | | | | | | | | | | |
| QH01XM1 1 | .5 | 1.6 | 1.1 | 87 | 87 | 104 | 115 | 109 | 103 | 89 | 95 |
| QH07XM1 7 | .9 | 2.8 | 1.4 | 80 | 81 | 96 | 111 | 109 | 107 | 88 | 90 |
| QH14XM1 14 | .8 | 2.9 | 1.4 | 80 | 81 | 99 | 116 | 104 | 107 | 89 | 89 |
| QH28XM1 28 | 1.0 | 3.4 | 1.4 | 68 | 68 | 85 | 95 | 121 | 117 | 81 | 84 |
| QH99XM1 46 | .9 | 3.6 | .9 | * | * | * | * | * | * | * | * |
| QH56XM1 56 | 1.2 | 3.1 | 1.5 | 80 | 83 | 109 | 122 | 113 | 105 | 83 | 86 |
| QH99XM2 132 | 1.1 | 3.9 | 1.2 | * | * | * | * | * | * | * | * |
| QH99XM3 242 | 1.2 | 4.2 | 1.5 | 83 | * | 111 | * | 106 | * | * | * |
| POTASSIUM DICHROMATE 10.0% 23°C | | | | | | | | | | | |
| QL01XM1 1 | .5 | .6 | .9 | 98 | 96 | 107 | 111 | 95 | 97 | 97 | 97 |
| QL07XM1 7 | .7 | * | .7 | 89 | 89 | 100 | 108 | 97 | 103 | 93 | 96 |
| QL14XM1 14 | .8 | .7 | 1.3 | 86 | 89 | 103 | 112 | 103 | 99 | 93 | 95 |
| QL28XM1 28 | 1.2 | 1.6 | 2.1 | 89 | 88 | 98 | 106 | 98 | 104 | 91 | 95 |
| QL99XM1 46 | 1.2 | 1.6 | 1.8 | * | * | * | * | * | * | * | * |
| QL56XM1 56 | 1.5 | 1.8 | 2.5 | 88 | 84 | 106 | 116 | 109 | 105 | 93 | 91 |
| QL99XM2 132 | 1.3 | 1.6 | 1.7 | * | * | * | * | * | * | * | * |
| QL99XM3 241 | 1.3 | 2.3 | 2.1 | 81 | * | 83 | * | 110 | * | * | * |