

# Furniture/Wood Manufacturing and Refinishing

## Industry Overview

Not all furniture/wood manufacturing and refinishing operations produce hazardous waste. If, however, you use any solvents, flammable or combustible liquids, combustible solids, ignitable paints containing flammable solvents, or other materials containing toxic chemicals, the waste generated from using these materials might be hazardous, and you might be subject to Resource Conservation and Recovery Act (RCRA) requirements covering the generation, transportation, and management of hazardous waste.

Your business is included in the *furniture/wood manufacturing and refinishing* category if you manufacture, refinish, reupholster, or repair:

- Wooden kitchen cabinets
- Hardwood veneer, softwood veneer, or plywood
- Particleboard
- Wooden household furniture or upholstered furniture
- Wooden office furniture, lockers, office and store fixtures.

## Hazardous Wastes from Furniture/Wood Manufacturing and Refinishing

The furniture/wood manufacturing and refinishing industry uses many solvents. Spent solvents and solvent still bottoms are usually hazardous wastes. In addition to solvent wastes, your facility might generate ignitable wastes or toxic wastes. Many wastes generated from the use of paints, wood treatments, stains, varnishes, polishes, and adhesives might be ignitable or might fail the Toxicity Characteristic Leaching Procedure (TCLP) test. Sawmills and planing mills can generate wastewaters that fail the TCLP test.

Table 1 lists general processes/operations that use hazardous materials and that can result in the generation of hazardous waste. If you generate 100 kilograms (220 pounds or about half of a 55-gallon drum) or more of hazardous waste per month, you must fill out a Uniform Hazardous Waste Manifest when you ship the hazardous waste off your property. The Manifest requires the proper Department of Transportation (DOT) description for each waste. Table 2 lists proper DOT shipping descriptions for a number of wastes that might be generated during furniture and wood manufacturing and refinishing. Table 1 and Table 2 are not comprehensive lists. If you generate a waste that is not in these tables, consult your EPA Regional office or state hazardous waste management agency to determine if your waste is hazardous and to obtain the proper DOT information.

## Waste Minimization

An effective waste minimization program can reduce the costs, liabilities, and regulatory burdens of hazardous waste management, while potentially enhancing efficiency, product quality, and community relations. Waste minimization techniques that can

help you reduce the amount of hazardous waste that you generate include:

- Production planning and sequencing
- Process/equipment adjustment or modification
- Raw material substitution
- Loss prevention and housekeeping
- Waste segregation and separation
- Recycling.

Training and supervision of employees implementing waste minimization techniques is an important part of your successful program. Call the RCRA/Superfund Hotline toll-free at 800-424-9346 (or TDD 800-553-7672 for the hearing-impaired) for waste minimization information and publications.

**Table 1**  
**Typical Furniture Manufacturing and Refinishing Operations:**  
**Materials Used and Hazardous Wastes that Might be Generated**

Process/Operation	Materials Used	Typical Material Ingredient	General Types of Waste Generated
Wood Cleaning and Wax Removal	Petroleum distillates, white spirits	Petroleum distillates, mineral spirits	Ignitable wastes Toxic wastes Solvent wastes
Refinishing/Stripping	Paint removers, varnish removers, enamel removers, shellac removers, paint solvents, turpentine	Acetone, toluene, petroleum distillates, methanol, methylene chloride, alcohols, ketones, oxygenated solvents	Ignitable wastes Toxic wastes Paint wastes Solvent wastes
Staining	Stains	Mineral spirits, alcohol, pigments	Ignitable wastes Toxic wastes Solvent wastes
Painting	Enamels, lacquers, epoxies, alkyds, acrylics	Toluene, pigments, titanium dioxide, epoxy-ester resins, aromatic hydrocarbons, glycol ether, halogenated hydrocarbons, vinyl-acetate acrylic	Ignitable wastes Toxic wastes Paint wastes Solvent wastes
Finishing	Varnish, shellac, polyurethane, lacquers, wood treatments, polish	Denatured alcohols, resins, shellac, petroleum distillates, toluene diisocyanate	Ignitable wastes Toxic wastes Spent solvents Solvent still bottoms
Brush Cleaning and Spray Gun Cleaning	Paint thinners, enamel reducers, varnish removers, shellac removers, white spirits	Acetone, toluene, petroleum distillates, methanol, methylene chloride, isopropanol, mineral spirits, alcohols	Ignitable wastes Toxic wastes Spent solvents Solvent still bottoms

**Table 2**  
**Furniture/Wood Manufacturing and Refinishing Waste Descriptions<sup>1</sup>**

Waste Type	Designations/Trade Names	DOT Shipping Name	Hazard Class	UN/NA ID Number
<b>SPENT SOLVENTS AND STILL BOTTOMS AND IGNITABLE OR TOXIC WASTES CONTAINING:</b>				
Ethylene Dichloride*	Ethylene Dichloride, 1,2-Dichloroethane	Waste Ethylene Dichloride	Flammable Liquid <sup>2</sup>	UN1184
Benzene*	Benzene	Waste Benzene (benzol)	Flammable Liquid	UN1114
Toluene	Toluene	Waste Toluene (toluol)	Flammable Liquid	UN1294
Ethyl Benzene	Ethyl Benzene	Waste Ethyl Benzene	Flammable Liquid	UN1175
Chlorobenzene*	Chlorobenzene, Monochlorobenzene, Phenylchloride	Waste Chlorobenzene	Flammable Liquid	UN1134
Methyl Ethyl Ketone*	Methyl Ethyl Ketone, MEK, Methyl Acetone, Meeto, Butanone, Ethyl Methyl Ketone	Waste Methyl Ethyl Ketone	Flammable Liquid	UN1193
Chloroform*	Chloroform	Waste Chloroform	ORM-A	UN1888
Carbon Tetrachloride*	Perchloromethane, Tetraform, Carbona Halon 104	Waste Carbon Tetrachloride	ORM-A	UN1846
Hexachloroethane*	Hexachloroethane	Waste Hexachloroethane	ORM-A	NA9037
Cresols*	o-Cresol, m-Cresol, p-Cresol, (m,p)-Cresol, (o,m,p-Cresol)	Waste Cresol	Corrosive Material	UN2076
Pentachlorophenol*	Pentachlorophenol	Waste Pentachlorophenol, Liquid or Solid	ORM-E	NA2020
Acetone	Acetone	Waste Acetone	Flammable Liquid	UN1090
White Spirits, Varsol	White Spirits, Mineral Spirits, Naphtha	Waste Naphtha	Flammable Liquid	UN2553
Kerosene	Kerosene, Fuel Oil #1	Waste Kerosene	Combustible Liquid <sup>3</sup>	UN1223
Methylene Chloride	Dichloromethane, Methane Dichloride, Methylene Bichloride, NCI-C50102, Solasthin, Aerothene, Narkotil, Solmethine	Waste Dichloromethane or Methylene Chloride	ORM-A	UN1593
Toluene	Toluene, Methacide, Methylbenzene, Methylbenzol, Phenylmethane, Toluol, Antisal 1A	Waste Toluene (Toluol)	Flammable Liquid	UN1294
Benzene*	Benzene, Benzol	Waste Benzene (Benzol)	Flammable Liquid	UN1114
Ethanol	Ethanol, Ethyl Alcohol	Waste Ethyl Alcohol	Flammable Liquid	UN1770
Phenol*	Phenol	Waste Phenol	Poison B	UN1671
<b>PAINT WASTES WITH HEAVY METALS</b>				
Heavy Metal paints with: Lead* Nickel* Chromium*		Hazardous Waste, Liquid or Solid, NOS <sup>4</sup>	ORM-E	NA9189
<b>OTHER WASTES</b>				
Ignitable Wastes, NOS	Ignitable Wastes NOS, Solvents	Waste Flammable Liquid, NOS Waste Combustible Liquid, NOS Waste Flammable Solid, NOS Waste Petroleum Distillates	Flammable Liquid Combustible Liquid Flammable Solid Flammable Liquid	UN1993 NA1993 UN1325 UN1268
Hazardous Wastes, NOS		Hazardous Waste, Liquid or Solid, NOS	ORM-E	NA9189

\* Toxicity Characteristic constituent. Any waste that results in a TCLP extract containing a Toxicity Characteristic constituent equal to or above regulatory levels is hazardous.

1 These descriptions may change given variations in waste characteristics or conditions. Note that the DOT shipping name, hazard class, and UN/NA ID number do not directly correspond to RCRA hazardous waste categories.

2 A flammable liquid has a flash point below 100°F.

3 A combustible liquid has a flash point between 100°F and 200°F.

4 NOS - Not otherwise specified.

**For further information call the RCRA/Superfund Hotline 1-800-424-9346**