

X7CL

Evaluation of Engineering Lubricants Systems Corporation's
"Val-Do" Combustion Cleaner and Power Lube Fuel Additives

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Emission Control Technology Division
Office of Air and Water Programs
Environmental Protection Agency

Background

The Emission Control Technology Division was contacted by Engineering Lubricants Systems Corporation concerning "Val-Do" Combustion Cleaner and Power Lube additives. Upon receiving favorable data from Olson Laboratories the Test and Evaluation Branch initiated a test program.

Device Description

Prior to the initiation of a mileage accumulation program one ounce of Combustion Cleaner was applied to each of the engine cylinders through the spark plug holes. After a short soak period the engine was started and approximately one pint of Combustion Cleaner was poured into the engine through the carburetor. The engine was then run at fast idle for approximately 15 minutes. The Power Lube additive was added to the gasoline in a concentration of one ounce per every four gallons of fuel, and used during mileage accumulation and gaseous emission testing.

Test Program

Test work was conducted on a 1963 Chevrolet with a standard transmission and a 1962 Chevrolet with an automatic transmission. Both vehicles were powered by 283 CID engines. Mileage accumulation was conducted using the 1962 Chevrolet. The 1963 Chevrolet was only used to confirm initial before-and-after combustion cleaner compression test results. Test work on the 1962 Chevrolet included compression tests before-and-after application of the Combustion Cleaner and compression tests after accumulation of 500 miles. Gaseous emission testing in accordance with the 1975 FTP was conducted before-and-after the mileage accumulation. Gaseous testing included one test using the light duty Diesel procedure with a heated FID as the fuel additive was oily in nature and suspected of having a possible heavy hydrocarbon exhaust component.

Results

The effect of the cleaner and fuel additive on engine compression is given in the attached Tables I and II. It can be seen that there was a marked increase in compression pressure immediately following application of the cleaner, but that there was no longer an effect after 500 miles of driving. Gaseous emission results for work conducted on the 1962 Chevrolet are given in the attached Table III. No marked emission reduction is apparent. Limited heated FID work suggests that the fuel additive may contribute a heavy hydrocarbon exhaust component.

The application of the Combustion Cleaner created objectionable visual white smoke for at least 10 minutes after application.

Conclusions

1. No marked emission reductions were observed after application of Val-Do Combustion Cleaner and 500 miles of driving using the Val-Do Power Lube fuel additive.
2. Limited data suggests that the Power Lube additive may contribute a heavy hydrocarbon exhaust component.

TABLE I

Compression Test Results - 1962 Chevy

<u>Cyl. No.</u>	<u>Compression pressure before application of comb. cleaner</u>	<u>Compression pressure after application of comb. cleaner</u>	<u>Compression pressure after 26-mile Ann Arbor prep route</u>	<u>Compression pressure after 500-mile dyno mileage accum.</u>
1	150 psi	170 psi	165 psi	150 psi
2	152	162	160	150
3	150	175	168	155
4	155	170	168	150
5	150	165	163	150
6	150	165	160	150
7	152	162	165	155
8	145	162	160	150

TABLE II

Compression Test Results - 1963 Chevy

<u>Cyl. No.</u>	<u>Compression pressure before application of comb. cleaner</u>	<u>Compression pressure after application of comb. cleaner</u>
1	150 psi	175 psi
2	155	180
3	150	175
4	155	180
5	155	180
6	150	180
7	150	180
8	155	175

TABLE III

1975 FTP Results on 1962 Chevy

Baseline

	<u>HC</u> (gm/mi)	<u>CO</u> (gm/mi)	<u>NOx</u> (gm/mi)
	5.27	48.06	3.76
	4.95	46.77	3.54
	4.89	44.87	4.03
Average	5.03	46.57	3.78

After Combustion Cleaner and 30-miles Use
with Fuel Additive

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
	5.22	44.80	3.24
	5.17	44.82	3.79
Average	5.20	44.81	3.52

After 500-miles Use with Fuel Additive

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
	5.64	58.23	4.41
	4.36*	36.19	3.29
	4.50	38.24	3.25
Average	4.83	44.22	3.65

*Heated FID HC = 5.90 gm/mi