



LS441 Lubricant Package Additives

**Lone Star
Enterprises**

Premium Diesel Engine Oil

Description

LS441 is a high-performance additive package for formulating premium quality diesel engine oils. Used at the recommended treat rate in combination with approved base oils and viscosity modifier. **LS441** is made from superior detergent, dispersant, and antioxidant/corrosion inhibitor. **LS441** provides engine oils meet the API performance category CI-4, among others.

Recommended Dosage

Performance Level	Multi grade , wt%
CI-4 / SL	12
CH-4 / SL	10.9
CF-4	7

Typical Properties

Property	Unit	Value	Method
Density @ 15° C	kg/m ³	0.98 – 0.99	ASTM D4052
Flash Point (Open Cup)	° C	180 >	ASTM D92
Viscosity at 100° C	cSt	45 – 55	ASTM D445
Zinc	mass %	1.2 – 1.4	ASTM D6595
Phosphorus	mass %	1.1 – 1.2	ASTM D6595
Calcium	mass %	3.2 – 3.6	ASTM D6595
Total Base No.	mg KOH/g	105 - 115	ASTM D2896

Storage and Handling

This product can be blended using conventional equipment for blending finished fluids. Follow precautions normally taken for handling lube oil stocks. Do not heat over the maximum loading/unloading temperature. Avoid contact with water which can cause product degradation. Avoid high temperature contact with air which darkens product. Avoid contact with moist air. Tanks should have adequate agitation to avoid excessive skin temperatures. Dry conditions are essential since water may promote decomposition of the additive. Min Load/Unload Temp: 55 °c (131 °F) Max Load/Unload Temp: 65 °C {149 °F} Shelf Life Recommendation: 24 months @ ambient temperature

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LONE STAR EFFICIENT FORMULATION