

Alpha Syn L.E. Plus

Diesel Engine Oil

No. 421

SAE 15w/40

DESCRIPTION:

Alpha Syn L.E. Plus Engine Oil is a premium blend of synthetic fluids and hydro-treated base oils formulated specifically to optimize performance in all diesel engines running on Ultra Low Sulfur Diesel Fuel. **Alpha Syn L.E. Plus** is fully compliant with all 2007 engines with diesel oxidation catalysts and particulate filters requiring a CK-4 specification. This exclusive formulation exceeds API CK-4, SN, ACEA E9-16 performance requirements as well as all major engine manufacturers' specifications. It is designed to provide unsurpassed control of soot and provide the highest degree of protection in the industry against wear of piston rings and cylinder liners. **Alpha Syn L.E. Plus** also provides unequalled protection of highly stressed valve train systems used in modern diesel engines. **Alpha Syn L.E. Plus Engine Oil is compounded with Frontier's exclusive ETX extender additive package that neutralizes acids in the early stages of use without sacrificing long term TBN values. This enables it to be used as an extended drain interval oil.**

PERFORMANCE CHARACTERISTICS:

Today's engine designs are changing to meet emission requirements by using systems such as EGR (exhaust gas recirculation), SCR (Selective Catalytic Reduction) or DPF (Diesel Particulate Filter) systems. Many engine manufacturers are using EGR (exhaust gas recirculation) to reduce particulate emissions. The use of EGR systems can increase the soot loading in a lubricant leading to higher wear, oil thickening and filter plugging. The engines being developed today have higher operating temperatures, and are more susceptible to deposits. **Alpha Syn L.E. Plus** has been developed specifically for these engines with a higher thermal stability and the recommended maximum detergency to reduce varnish and gum deposits and to greatly reduce oil oxidation and oil consumption. These benefits not only protect low-emissions diesels from wear and deposits, they also provide maximum protection in pre 2007 engines running on ultra low sulfur fuel as well. Extensive field tests show superior deposit control to any other oil on the market. The reason for better performance is increased levels of reserve alkalinity. Detergent/Dispersant alkalinity has been directly correlated with reduced ring wear, improved piston cleanliness, reduced bearing wear, improved oil consumption, extended service intervals and better fuel economy.

SUMMARY:

Alpha Syn L.E. Plus Engine Oil provides the following advantages:

- * Meets or exceeds the performance requirements of current and proposed engine oil specifications
- * Protects low emission diesel engines from wear and deposits
- * Provides excellent wear and deposit protection in pre 2007 engines running on ULSD fuel
- * Resists soot related viscosity increase, filter plugging and wear
- * Extends engine life while meeting emissions requirements

PERFORMANCE CAPABILITIES:

Meets or exceeds the following performance requirements:

API: CH-4, PC-6, CI, CI-4 Plus, CJ-4, CK-4
API: SH, SJ, SM, SN
ACEA: E9-16

CAT ECF-3	MB-APPROVAL 228.31
CUMMINS CES 20081	MB-APPROVAL 228.51
DETROIT DIESEL DDC 93K218	MTU TYPE 2.1
MACK EO-S 4.5	VOLVO VDS-4

TYPICAL SPECIFICATIONS:

SAE Grade	Test Method	15w/40
Color		Amber
TBN	ASTM D 2896	11
Sulfated Ash, wt %		<1
Viscosity @ 40°C (104°F) @ 100°C (212°F)		100.1 14.62
Viscosity Index	ASTM D2270	>150
Pour Point °F		- 30
Flash Point COC °F		430
Four Ball Wear 40 kg., 1200 RPM, 1 hr.	ASTM D-4172	0.35 mm

Values shown are typical, and due to manufacturing tolerances may vary.

PERFORMANCE PRODUCTS GUARANTEED