PRODUCT NAME: LA 346 DIESEL ENGINE OIL

SAE VISCOSITY: 10W-40

MAJOR RATINGS: API CI-4 PLUS/SL ACEA E7-16

DESCRIPTION

Ultra-high performance heavy duty diesel (HDD) engine oil recommended for all four ACEA E7-16, API CI-4 PLUS four stroke EGR motors. Enhanced durability protection, fuel conserving, turbocharger and wear protection in US, European and Japanese HDD group performance motors..

PRODUCT APPLICATION

LA 346 SAE 10W-40 ACEA E7 is specially formulated for HUEI (hydraulic/electronic unit injection) controlled diesel engines, including those fitted with CEGR motors. LA 346 meets the stringent test requirements for all EPA 2002 compliant engines utilising Cooled Exhaust Gas Recirculation (CEGR) systems and protects against NOx (Nitric Oxide) ingestion in the lubricating oil. LA 346 provides enhanced protection of bearing and valve train wear for worldwide engine specifications.

SYNTHETIC FORMULA

LubeAlloy Specialised Lubricants proprietary blend of *PARA-SYN*™ synthetic base oils, are formulated to enhance engine life and durability whilst exceeding OEM requirements.

GREATER FRICTIONAL PERFORMANCE

PARA-SYN™ base oils have been developed as a result of extensive research of friction coefficient chemistry. This research has shown that, in a bearing subjected to a high sliding velocity, reducing the dynamic viscosity produces a more consistent hydrodynamic film that is highly resistant to mechanical shear, effectively reducing friction between sliding and bearing surfaces.

THERMAL OXIDATION STABILITY

PARA-SYN™ base oils reduce operating temperature, viscosity loss and oil consumption. *PARA-SYN*™ base oils are able to withstand higher temperatures as the chemistry effectively reduce the mechanisms that induce oxidation rates within the oil.

PROTECTION AGAINST SOOT

LA 346 advanced chemistry protects against CEGR recirculated exhaust from metal corroding acids and soots (partially burned fuel and oil), which induces wear and thickens oil.

FUEL EFFICIENCY

Low coefficient of friction properties of *PARA-SYN*™ base oils and requirements for OEM specific chemistry, results in maximum reduction of engine internal friction, providing fuel economy benefits.

WEAR PROTECTION

LA 346 overcomes potential problems of 'High Temperature/High Shear' levels in oils. The combination of *PARA-SYN*™ base oils and highly advanced additive technology utilised in LA 346 provides a resilient oil film to protect internal engine components, including turbocharger shafts and bearings, when operated under harsh conditions of long distance highway driving and towing loads.

FEATURES & OPERATIONAL BENEFITS

FEATURES	ADVANTAGES AND OPERATIONAL BENEFITS
Non-detergent/Ashless Formulation	Contains no harmful metallic compounds, No carbon soot build up on reciprocating compressors
Exceptional high temperature thermal stability and oxidation resistance	Increase equipment high temperature operating capability Eliminate insoluble and varnish deposits to enable efficient operation and long filter life
High Viscosity Index	Retains viscosity and film thickness at high temperatures Provides exceptional low temperature performance, lowering voltage draw at start-up
Reduced co-efficient static friction	Reduced friction and increase efficiency in sliding and rolling gear/bearing mechanisms. Measurable reduced power consumption and lower steady-state operating temperatures.
High load carrying efficiency	Protects metal surfaces under heavy and shock loads.
Balanced additive chemistry	Delivers exceptional performance in relation to rust and corrosion prevention, water separability, foam control and air release performance.
Yellow Metal Oxidation Resistant	Protects non-ferrous metal surfaces from corrosive elements where rotor, valve, ring and cylinder operate
Oil Purity	Maintains gas purity of compressed air and downline cooling
Cooler Oil Viscosity Film	Seals rotor gaps and clearances between male and female rotors to ensure air flow efficiency and pressure, Minimises expansion of rotor metals from compressed air
Anti-Oxidant Protection	Ensures lubricant life is protected from acid attack and viscosity increase
Demulsibility Capability	Reduces effect of water contamination to form sludge and other harmful debris
Broad spectrum use	Covers wide wear protection required for all major pump OEM specifications
Protects against rust and corrosion	Retains system cleanliness in both liquid and vapour phase

SPECIFICATIONS & APPROVALS

API: CI-4 PLUS/SL	DEUTZ: DQC III-0
ACEA: E7-12	GLOBAL: DHD-1
CATERPILLAR: ECF-2	JASO: DH-1
CUMMINS: CES 20078	MACK: EO-N
DETROIT DIESEL: DFS93K215	MAN: M3275
MB: 228.3	MTU: Type 2
RENAULT Truck: RLD-2	VOLVO: VDS 3

BACKWARD COMPATIBILITY

API: CH-4/SL, CG-4/SJ	ACEA: E2-96
CATERPILLAR: ECF-1a	CUMMINS: 20077/20076
DETROIT DIESEL: 93K214	MACK: EO-M Premium Plus
MB: 228.1	VOLVO: DS-2

PHYSICAL CHARACTERISTICS

TEST DESCRIPTION	ASTM	TEST RESULT
Description	**Visual**	**Clear/Amber**
Viscosity Grade	SAE	10W-40
Viscosity, cSt @ 40°C	D-445	89.52
Viscosity, cSt @ 100°C	D-445	14.65
Viscosity Index	D-2270	162
Density @ 15°C, kg/L	D-4052	0.859
Total Base Number (TBN), mg KOH/g	D-2896	10.23
HTHS Viscosity @ 150°C, cPa	D-4683	4.25
Cold Crank Viscosity, mPa.s @ -25°C	D-5293	5,384
Pour Point, °C	D-5950	-34
Flash Point (COC), °C	D-92	240
NOACK Volatility, Evaporative Loss @ 250°C	D-5800	9.86%

Typical formulation specifications at time of production, minor variations may occur.

Health and Safety: This product is not expected to cause health concerns when used for the intended application and according to the recommendations in the Material Safety Data Sheet (MSDS).