



Renewable Lubricants, Inc.

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Bio-SynXtra™ HD Plus SHP Motor Oil **SAE 15W40 (Low Ash)**



"Biobased Lubricants that Perform Like Synthetics"

Advanced Heavy Duty for OEM Long Drain Performance

Bio-SynXtra™ Heavy Duty Plus Super High-Performance SAE 15W40 is specially formulated to meet the requirements for EPA compliant diesel engines equipped with after treatment devices such as diesel oxidation catalysts and particulate filters that require low ash. This patented formulation contains the most advanced, universal low ash technology available for heavy-duty naturally aspirated and high performance turbocharged, and supercharged diesel, gasoline, LP, and natural gas engines that require API Service **SN/CK-4**, and prior **API Service SJ, SL, SM, CD, CDII, CE, CF, CF-2, CF-4, CH-4, CI-4, CI-4 Plus, CJ-4** and including: ACEA E9-08-Issue 2, ACEA E7-04- Issue 2, ACEA E9-16, MTU Type 2.1, CAT ECF-1-A, ECF-1, ECF-2, ECF-3, VOLVO VDS-2, VDS-3, VDS-4, VDS-5, Mack EO-O Premium Plus, MACK EO-O PP-07, EO-S-4.5, Detroit Diesel DDC 93K218, DFS93K222, Daimler Chrysler MB228.1 MB228.3 & MB228.31, MAN 271, MAN M 3575, CUMMINS CES 20071, 20072, 20076, 20081, 20085, 20086, 20087, 20092, Renault Truck RLD-3, RLD-4, Deutz DQC III-10 LA, JASO DH-2, FORD WSS-M2C171-F1.

Bio-SynXtra™ Heavy Duty Plus can be used with complete success in all naturally aspirated or turbo-charged gas and diesel engines used in commercial trucks, buses, or off-high-way heavy equipment. Renewable Lubricants, Inc. formulates this lubricant to exceed most API requirements. RLI's patented chemistry is blended into the highest quality Bio-synthetic base stocks that provides extended engine life relative to other conventional oils without this proven chemistry. This premium quality additive technology has documented records of **excellent field performance** in Caterpillar, Cummins, Detroit Diesel, Mack, Volvo, and Mercedes Benz in terms of:

- Superior wear and corrosion protection in both conventional valve train and overhead cams
- Superior viscosity stability and low volatility reduces emissions
- High temperature thermal stability and provides unsurpassed soot control
- Superb protection from low temperature sludge and varnish formation
- Enhanced shear and oxidation stability
- Power-shift transmission performance for Cat TO-2, Allison C-3/C-4
- **Reserve alkalinity (10.3 TBN) combats acidic fuel sulfur and nitrates to meet OEM extended drain**

HIGH PERFORMANCE BENEFITS OF STABILIZED HOBS FORMULATIONS:

Stabilized HOBS produce a super high Viscosity Index (VI) that is higher than mineral and synthetic base oils (HOBS avg. 220 VI compared to mineral oil and synthetic at avg. 100 to 140VI). HOBS super high VI provides considerable improvement in fluid film protection and less mechanical and thermal shear in formulations. In addition, HOBS provide superior friction reducing properties and have virtually no volatility comparing to mineral and synthetic base oils. Incorporating these high performance benefits provide a more energy conserving formulation that increases fuel economy and reduces emissions. **(Lubricity Enhanced Energy Conserving Formula)**

Since 1993, RLI's unique, first of their kind, Bio-Super High Performance Motor Oils have proven exceptional performance in the racing world, and they are the lubricants of choice for top performing world and national champions. These high performance racing oils have exceeded the performance of conventional petroleum based products and have shown performance equal to and better than synthetic formulas. Excellent performance has also been experienced from the heavy loads (3000 HP @ >9000 RPM) of IHRA Seven Time World Champion alcohol fueled dragster to the high-temperature, long-term endurance, championship, road racing. These specially formulated racing oils have been designed and tested to run in extreme conditions that would be expected with the motor sport, high performance engines. This high performance technology is also the key additive technology in this Bio-SynXtra HD Motor Oil.

This Heavy Duty Lubricant is formulated using the most advanced and newest API SM, SN/CK-4/ FA-4 approved additives. While no formal engine oil license performance is implied or guaranteed in this formulation, (unlicensed formula) the key physical properties have been met as defined by SAE J300, and the formula passed the tests required for API and ILSAC base oil interchange. This biobased formulation is inherently biodegradable and is designed to reduce emissions over conventional formulas.

(Meets USDA BioPreferredSM)

STABILIZED by Renewable Lubricants™ is RLI's trademark on their proprietary and patented anti-oxidant, anti-wear, and cold flow technology. High Oleic Base Stocks (HOBS) are biobased oils. This Stabilized technology allows the HOBS to perform as a high performance formula in high and low temperature applications, reducing oil thickening and deposits. US Patents: 5,990,055, 6,383,992, 6,534,454, Canada Patents: 2,498,812, 2,538,768, 2,609,756, Mexico Patents: 275,334, 308,832 with additional pending and Foreign Patents.™ Trademark of Renewable Lubricants, Inc. Copyright 1999 Renewable Lubricants, Inc.

Availability F.O.B. Hartville, Ohio USA	Quart	1 Gallon	5 Gal Pail	Drum	Totes	Bulk
Product Item #	85351	85353	85354	85356	85357	85359

Bio-SynXtra™ HD Plus SHP Motor Oil SAE 15W40

Proven Performance in Old and New Vehicles:

This patented biobased lubricant is formulated to meet and exceed the Original Equipment Manufacturers (OEM) requirements and has proven to improve performance in new vehicles. In addition to newer vehicles, older vehicles with higher mileage and equipment with higher hours using conventional motor oils can also need a different lubricant that improves performance in these out of warranty machines. As the engine wears the lubrication film needs to be improved and the additive technology should also be increased to prevent additional wear and condition the seals for longer life. Unlike conventional motor oils, this patented biobased formula has special booster additives and superior viscosity stability that help improve engine life in new and old vehicles. The super high viscosity index is key to reduced fuel dilution, reduced wear, and improved fuel economy.

TYPICAL SPECIFICATIONS	METHOD	<u>SAE 15W40</u>
Viscosity @ 100°C	ASTM D-445	15.2
Viscosity @ 40°C	ASTM D-445	90
Viscosity Index	ASTM D-2270	179
Flash Point (COC)	ASTM D-92	242°C
Pour Point, °C	ASTM D-97	-36
CCS @ -20°C, cp	ASTM D-5293	<6,000
MRV-TP1 @ -25°C, cP	ASTM D-4684	13,000
Yield Stress, Pa		None
HTHS @ 150° C, Apparent Viscosity, cP	ASTM D-4683	>4.5
NOACK Volatility % max 1h at 250°C	NOACK	6.0
Total Base Number	ASTM D-2896	10.3
Sulfated Ash, % max	ASTM D-874	<1
Zinc, ppm max	ASTM D-4951	1202
Phosphorus, ppm max	ASTM D-4951	1082
Sulfur, ppm max	ASTM D-4951	3800

The following are some of the organizations and companies who are using RLI's Bio-Syn Engine Oils successfully:

Many USDA Facilities
 U.S. Coast Guard
 U. S. Army
 National Aeronautics and Space Administration (NASA)
 Pictured Rocks National Lakeshore
 Sleepy Hollow State Park
 Point Reyes National Seashore
 Cape Cod National Seashore
 Atkinson Contractors
 Mark Thomas Racing
 Volunteer Chevy
 NOAA and the Great Lakes Region
 Portage Area Regional Transit Authority (PARTA)