



Renewable Lubricants, Inc.

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Bio-SynXtra™ HD Plus SHP Motor Oil

SAE 5W20 (Low Ash)

STABILIZED™
by Renewable Lubricants

"Biobased Lubricants that Perform Like Synthetics"

Advanced Heavy Duty for OEM Long Drain Performance

Bio-SynXtra™ Heavy Duty Plus Super High Performance SAE 5W20 is specially formulated to meet the requirements for EPA 2007 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 API SN/CJ-4 chemical technology available for high performance naturally aspirated, turbocharged and supercharged diesel and gasoline engines that require API Service CJ-4, and prior API Service SJ, SL, SM, CD, CDII, CE, CF, CF-2, CF-4, CH-4, CI-4, CI-4 Plus and including: ACEA E9-08-Issue 2, ACEA E7-04- Issue 2, MTU Type 2.1, CAT ECF-1-A, ECF-2, ECF-3, VOLVO VDS-3, VDS-4, Detroit Diesel DDC 93K218, Daimler Chrysler MB228.31, MAN M 3575, Deutz DQC III-10 LA and Renault Truck RLD-3. In addition, this product provides excellent performance for many small cubic inch turbocharged and supercharged diesel and gas engines in passenger cars, sport utility vehicles, light duty trucks, motor sport vehicles and small four-stroke air cooled *engines* (where they recommend a lower viscosity SAE 5W20 formulation).

Renewable Lubricants, Inc. formulates this lubricant to exceed most API requirements. RLI's patented chemistry is blended into the highest quality biobased, bio-synthetic base stocks to provide 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 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 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 produces 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), providing an exceptionally higher VI with less mechanical and thermal shear, reducing viscosity breakdown. 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, (1000 HP) 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/CJ-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 additive technology has been increased. 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 Gallon Pail Drum Totes Bulk

Bio-SynXtra™ HD Plus SHP SAE 5W20 Motor Oil

Proven Performance In Old And New Vehicles:

This patented biobased lubricant is formulated to meet and exceed the Original Equipment Manufactures (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 5W20</u>
Viscosity @ 100°C	ASTM D-445	9.05
Viscosity @ 40°C	ASTM D-445	48.0
Viscosity Index	ASTM D-2270	173
Flash Point (COC)	ASTM D-92	220°C
Pour Point	ASTM D-97	-40
CCS @ -30°C, cp	ASTM-D-5293	Max – 6,600
MRV-TP1 @ -35°C, cP	ASTM-D-4684	20,000
Yield Stress, Pa		None
HTHS @ 150° C, Apparent Viscosity, cP	ASTM-D-4683	3.0
NOACK Volatility % max 1h at 250°C	NOACK	12.0
Total Base Number	ASTM D-2896	10.3
Sulfated Ash, % max	ASTM D-874	1.0
Phosphorus, % max	ASTM D-4951	0.12
Sulfur, % max	ASTM D-4951	0.4
Energy Conserving		YES

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

Many USDA Facilities

U.S. Coast Guard

U.S. Army

National Aeronautics and Space Administration (NASA)

Grand Canyon National Park

Pictured Rocks National Lakeshore

Sleepy Hollow State Park

Point Reyes National Seashore

Wells State Park

Cape Cod National Seashore

Atkinson Contractors

Mark Thomas Racing

Volunteer Chevy

Dave May Racing

NOAA and the Great Lakes Region

Portage Area Regional Transit Authority (PARTA)

Garnier Farms-Renewable Lubricants Inc.