



## Renewable Lubricants, Inc.

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### **Bio-Food Grade™ Hydraulic Fluids** **(ISO-32, 46, 68, and 100)**



H1, H2

#### ***"Biobased Lubricants that Perform Like Synthetics"***

Bio-Food Grade™ Hydraulic Fluids are multi-functional biosynthetic lubricants that contain ingredients, which are “Generally Regarded as Safe” (GRAS) for food processing equipment. These BioPreferred<sup>SM</sup> Fluids are formulated to perform in hydraulic systems and gear drives that require Anti-Wear (AW), anti-rust, anti-oxidation, anti-foam, and demulsibility properties. They are highly inhibited against moisture and rusting in both fresh and sea water and pass both A and B Sequences of the ASTM D-665 Turbine Oil Rust Test. Incorporating the super high viscosity index of the Stabilized\* High Oleic Base Stocks (HOBS) into the formula, increases the viscosity index past synthetic levels (Energy Conserving Formulas). These food grade<sup>1</sup> hydraulic fluids are ultimate biodegradable<sup>2</sup> and environmentally non-toxic and can be used in environmentally sensitive areas such as in agriculture, marine, water treatment, and food processing plants. Contains no animal byproducts and are manufactured under kosher supervision.

Bio-Food Grade™ Hydraulic Fluids are designed for use in vane, piston, and gear-type pumps and have shown to have excellent anti-wear performance in ASTM D-4172 Four Ball Wear Test. The anti-wear performance meets and exceeds requirements for Vickers M-2950-S (35VQ-25) and I-286-S (V-104C), Rexroth, US Steel 126, 136, and 127, and DIN 51524 Part 2. They also meet the requirements for ashless GL-1, GL-2, and GL-3 gear oils in reduction units and gear sets. (*Use Viscosity Sufficient For OEM Application*)

The super high viscosity index of the HOBS naturally improves the thermal shear stability of the formula and increases load capacity. The HOBS's extremely low volatility increases the flash and fire safety features in the formula.

#### **Applications With Incidental Food Contact In and Around Food Processing Equipment Areas**

Hydraulic systems, gear drives, gearhead motors, drip oilers, air-oilers, air-tools, water pumps, bearings, machine oils, roller chains, cables, circulating oils, etc., and general lubrication. These products may also be used in reduction units where original equipment manufactures (OEM) require an R&O lubricant (i.e. AFNOR NFE 48-600 HL, DIN 51524 Part 1, and Denison HF-1 fluids).

The advantages are biodegradable, renewable, low toxicity, food grade, no volatile organic compounds (VOCs), safer, more fire resistant, EPA and ISO 14000 compliant, reduces foreign oil, and helps secure the Economy. OSHA and worker acceptance is high with biobased oils.

<sup>1</sup> The products are acceptable as lubricants with incidental food contact (H1) for use in and around food processing areas. Such compounds may be used on food processing equipment as a protective anti-rust film, as a release agent on gaskets or seals of tank closures, and as a lubricant for machine parts and equipment in locations in which there is a potential exposure of the lubricated part to food.

- Meet the Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for ENVIRONMENTALLY ACCEPTED LUBRICANTS (EALs), and should be used where LOW TOXICITY, BIODEGRADABILITY and NON-BIOACCUMULATION properties are required.
- They exceed the acute toxicity (LC-50 / EC-50 >1000 ppm) criteria adopted by the US Fish and Wildlife Service and the US EPA.
- They are ENVIRONMENTALLY RESPONSIBLE lubricants formulated from renewable agricultural biobased resources.
- Earth's environmental future rests in the use of renewable materials.

<sup>2</sup> Based on previous ASTM D-5864 studies and ASTM D-7373 Calculations, Bio-Food Grade™ Hydraulic Fluids are Ultimate/Readily Biodegradable >60% within 28 days in Aerobic Aquatic Biodegradation of Lubricants.

STABILIZED by Renewable Lubricants\* is RLI's trademark on their proprietary and patented technology. High Oleic Base Stock (HOBS) are agricultural 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.

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**Availability** **F.O.B. :Hartville, Ohio, USA** **1 Gallon** **5 Gallon Pail** **Drum** **Totes** **Bulk**

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ISO Viscosity Grades 32, 46, and 68 meet and exceeds “Military Specifications DOD-L-24651 Lubricating Oils, Food Grade, and Food Processing Equipment”. This specification is approved for use by the Departments and Agencies of the U.S. Department of Defense. ISO Viscosity Grades 32, 46 and 68 meet DOD-L-24651 Type I for general purpose and gear oil lubricants. This specification also requires a rating of USDA H-1 for incidental food contact.



ISO Grade	<b>32</b>	<b>46</b>	<b>68</b>	<b>100</b>
NSF Registration H1,H2	<b>140349</b>	<b>140347</b>	<b>140348</b>	<b>140350</b>

<b>Typical Data</b>				
ISO grade	<b>32</b>	<b>46</b>	<b>68</b>	<b>100</b>
AGMA Grade	N/A	<b>1</b>	<b>2</b>	<b>3</b>
ASTM Grade	<b>150</b>	<b>215</b>	<b>315</b>	<b>465</b>
Specific Gravity @60°F. (D287)	.875	.877	.880	.880
VISCOSITIES:				
@100°C., cSt. (D-445)	7.0	9.0	12.9	18.0
@40°C., cSt. (D-445)	33.7	45.0	67.9	98.4
Viscosity Index (D-2270)	180	186	194	202
Flash Point, COC, °C (D-92)	245	251	260	264
Pour Point, °C (D-97)	-40	-38	-33	-31
Copper Corrosion 3hr @ 100°C (D-130)	1A	1A	1A	1A
Acid Number (D-974)	1.1	1.1	1.1	1.1
4-Ball Wear, mm (D-4172)	.40	.40	.40	.40
4-Ball EP Weld Point (kg)	160	160	160	160
4-Ball EP Load Wear Index	47	47	47	47
FZG Test (DIN 51354)	11	11	11	11
Demulsibility (D-2711)	40/40/0	40/40/0	40/40/0	40/40/0
Foam Sequence I, II, III (D-892)	< 30/0 Foam	< 30/0 Foam	< 30/0 Foam	< 30/0 Foam
Rust Prevention (D-665 A & B)	Pass	Pass	Pass	Pass
Dielectric Strength, kV (D-877)	>40	>40	44	41
Oxidation RPVOT (D-2272) Minutes	>250	>250	>250	>250
<b>RLI Product Item #</b>	<b>87120</b>	<b>87130</b>	<b>87140</b>	<b>87150</b>

RLI's Products have been tested by the USDA to meet the biobased content guidelines for BioPreferred Procurement by the U.S. Federal Agencies. The Biobased Content Guidelines are listed in law H.R. 2646 Section 9001