



Renewable Lubricants, Inc.

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Bio-Food Grade™ Hydraulic Fluids **(ISO 10, 15, & 22)** USDA H1-H2

STABILIZED™
by Renewable Lubricants

"Biobased Lubricants that Perform Like Synthetics"

Bio-Food Grade™ Hydraulic Fluids are multi-functional biobased lubricants that contain ingredients, which are "Generally Regarded as Safe" (GRAS) for food and water processing equipment. These BioPreferredSM Fluids are formulated to perform in hydraulic systems, gear drives, bearings and high speed **spindle** applications that require a lower viscosity formulation with 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. These food grade¹, ultimate biodegradable² hydraulic fluids can be used in environmentally sensitive areas such as in agriculture, marine, and food processing plants.

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

Bio-Food Grade™ Hydraulic Fluids are designed for use in vane, piston, and gear-type pumps and have shown 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 and GL-2 gear oils in reduction units and gear sets where EP gear oils are not recommended (*Use Viscosity Sufficient for OEM Application*).

Applications With Incidental Food Contact In and Around Food Processing Equipment Areas:

Hydraulic systems, spindle oils, 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 small reduction units where original equipment manufacturers (OEM) may require a lower viscosity R&O lubricant (i.e. AFNOR NFE 48-600 HL, DIN 51524 Part 1, and Denison HF-1 fluids).

¹Food Grade components in this product are listed in 21 CFR 178.3570, Lubricants for incidental food contact (USDA HX-1, H1). Full compliance with other applicable restrictions of FDA, USDA, oil spill, and oil pollution prevention statutes is recommended.

Bio-Food Grade™ Hydraulic Fluids meet the Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for Environmentally Acceptable Lubricants (EALs), and should be used in hydraulic systems 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. Bio-Food Grade™ Hydraulic Fluids are **ENVIRONMENTALLY RESPONSIBLE** lubricants that are formulated from renewable agricultural biobased resources. We believe Earth's environmental future rests in the use of renewable materials.

²Ultimate Biodegradation (Pw1) within 28 days in ASTM D-5864 Aerobic Aquatic Biodegradation of Lubricants

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

ISO Viscosity Grades 10, 15 & 22 meets and exceeds requirements for low viscosity Food Grade Lubricating Oils used in Food Processing Equipment and many other industrial applications. Their lower viscosities can improve lubrication performance in close clearance and cold temperature applications.

Additional Low Viscosity Applications:

- High speed spindle bearings in machine tools and equipment where high speeds and fine clearances are involved
- Precision grinders, lathes, jig borers and tracer mechanisms
- For "zero clearance" type spindle bearings which operate with extremely close clearances
- For sleeve type spindle bearings having greater clearances, the viscosity depends on the relation between clearance and spindle speed
- Hydraulic systems where appropriate viscosity is selected
- Air line oilers
- For some sensitive instruments such as telescopes, laboratory equipment, etc.

Applications With Incidental Food Contact (NSF H1, H2) In and Around Food Processing Equipment Areas Including For Use By Bakeries, Bottlers, Breweries, Canneries, Dairies, Meat and Poultry Processors and Pharmaceutical Manufacturers For Hydraulic Systems, Spindle application, Gear Drives, Gearhead Motors, Drip Oilers, Air-Oilers, Air-Tools, Water Pumps, Bearings, Machine Oil, Roller Chains, Cables, Circulating Oil, etc., and General Lubrication. These Products May Also Be Used In Reduction Units Where Original Equipment Manufacture's (OEM) Require an R&O Lubricant (i.e. AFNOR NFE 48-600 HL, DIN 51524 Part 1, and Denison HF-1 fluids).

These 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.

Typical Data			
ISO grade	10	15	22
ASTM Grade	60	75	100
Specific Gravity @60°F. (D287)	.86	.86	.86
VISCOSITIES:			
@100°C., cSt. (D-445)	3.0	4.09	5.1
@40°C., cSt. (D-445)	10.2	15.6	21.1
Viscosity Index (D-2270)	166	175	184
Flash Point, COC, °C (D-92)	180	185	225
Pour Point, °C (D-97)	-50	-48	-44
Copper Corrosion 3hr @ 100°C (D-130)	1A	1A	1A
Acid Number (D-974)	1.1	1.1	1.1
4-Ball Wear, mm (D-4172)	.45	.45	.45
FZG Test (DIN 51354)	11	11	11
Demulsibility (D-2711)	40/40/0	40/40/0	40/40/0
Foam Sequence I, II, III (D-892)	0 Foam	0 Foam	0 Foam
Rust Prevention (D-665 A & B)	Pass	Pass	Pass
Dielectric Strength, kV (D-877)	>40	>40	>40
Oxidation RPVOT (D-2272), Minutes	350	300	350
RLI Product Item #	87080	87090	87100

RLI's Products have been tested by the USDA to meet the biobased content guidelines for BioPreferredSM Procurement by the U.S. Federal Agencies. The Biobased Content Guidelines are listed in law H.R. 2646 Section 9001 and Bio-Food Grade Hydraulic Fluids ISO 15 & 22 meet and exceed the requirements in this law for biobased hydraulic fluids.