**Renewable Lubricants, Inc.**
476 Griggy Rd. NE, PO Box 474
Hartville, OH 44632-0474
Voice: 330.877.9982 Fax: 330.877.2266
www.renewablelube.com

# Bio-Bottle Jack™ Hydraulic Fluid (ISO 32)

STABILIZED™ by Renewable Lubricants

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

Bio-Bottle Jack™ Hydraulic Fluid is a biobased, biodegradable and environmentally non-toxic hydraulic oil for use in general purpose hydraulic systems. This patented ISO 32 viscosity grade hydraulic oil is specially designed to be a direct replacement for petroleum oil based hydraulic fluids in mobile and stationary hydraulic vane, piston and gear type pumps. This patented technology provides superior oxidation stability and longer fluid life compared to other vegetable based hydraulic oils. It meets or exceeds the requirements for Type I, II and III hydraulic tools.

Bio-Bottle Jack™ Hydraulic Fluid is ultimately biodegradable[1] vegetable based formula that meets and exceeds Vickers M-2950-S, Vickers 1-286-5, U.S. Steel 126, and U.S. Steel 127. This patented bio-renewable hydraulic fluid is formulated to perform in fleet, marine, and industrial hydraulic systems that require Anti-Wear (AW), anti-rust, anti-oxidation, anti-foam, and demulsibility properties. An environmentally friendly, zinc-free additive system has also been developed that meets or exceeds high pressure pump requirements. The anti-wear performance meets the requirements for Vickers 35VQ-25 and V-104C (ASTM D-2882) vane pump stand tests, and exceeds DIN 51524 Part 2 load stage 10 that is recommended for piston and gear pumps.

Bio-Bottle Jack™ Hydraulic Fluid is the perfect **economical** choice for hydraulic equipment operating outside, where unpredictable higher moisture and dusty environments are more prominent and the equipment require more frequent oil change intervals. It is highly inhibited against moisture and rusting in both fresh and sea water, passed both A and B Sequences of the ASTM D-665 Turbine Oil Rust Test and provides excellent water separation as shown in ASTM D-1401 Demulsibility Test.

Incorporating the super high viscosity index (VI) of the Stabilized* High Oleic Base Stocks (HOBS) into the formula, increases the VI past synthetic levels (Energy Conserving Formulas). In addition, this super high VI naturally improves the thermal and mechanical shear stability of the formula and provides additional fluid protection under higher loads and pressures. The HOBS's extremely low volatility increases the flash and fire safety features in the formula. This biobased fluid is designed to provide seal conditioning for longer seal life and to reduce oil leakage from the system.

Bio-Bottle Jack™ Hydraulic Fluid meets 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. This product exceeds the acute toxicity (LC-50 / EC-50 >1000 ppm) criteria adopted by the US Fish and Wildlife Service and the US EPA. Bio-Bottle Jack™ Hydraulic Fluid is an ENVIRONMENTALLY RESPONSIBLE lubricant that is formulated from renewable agricultural biobased resources. We believe Earth's environmental future rests in the use of renewable materials.

**[1]Ultimate Biodegradation (Pw1) within 28 days in ASTM D-5864 Aerobic Aquatic Biodegradation of Lubricants**

STABILIZED by Renewable Lubricants™,* is RLI's trademark on their proprietary and patented anti-oxidant, anti-wear, and cold flow 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.



| Availability | F.O.B. :Hartville, Ohio, USA | 1 Quart | 1 Gallon | 5 Gal Pail | Drum | Totes | Bulk |
|---|---|---|---|---|---|---|---|
| Item #: | | 81631 | 81633 | 81634 | 81636 | 81637 | 81639 |

**PRODUCT BENEFITS**

 Specially designed to be compatible with petroleum hydraulic fluid and their systems and existing equipment may be "topped off". (Safe for use with Buna N, Viton, Neoprene Elastomers)

 Lubricates  Improved oxidation stability  Prevents Rust  Renewable
 Non-foaming  Maintains viscosity  Biobased, Biodegradable, Eco Non-toxic
 Low temperature performance  Excellent anti-wear

**TYPICAL APPLICATIONS**

 Hydraulic vane, piston and gear pumps  Fork lift gates  Floor lifts
 Floor jacks  Hydraulic hand jacks  Hydraulic lift gates  Pallet jacks
 Tilt cab systems  ISO 32 specified hydraulic applications  Safety gates
 Jack stand  Stadium gates

# Bio-Bottle Jack™ Hydraulic Fluid ISO 32

| TYPICAL SPECIFICATIONS | METHOD | ISO 32 | Spec. Requirements |
|---|---|---|---|
| Specific Gravity @ 15.6°C | ASTM D-287 | **0.88** | Report |
| Viscosity @ 40°C | ASTM D-445 | **30.5** | Note 1 |
| Viscosity @ 100°C | ASTM D-445 | **6.7** | Note 1 |
| Viscosity @ -25°C, Brookfield | ASTM D-2983 | **1,400 cP** | Note 1 |
| Viscosity Index | ASTM D-2270 | **186** | 90 (min) |
| Pour Point | ASTM D-97 | **-35°C** | Note 1 |
| Flash Point (COC) | ASTM D-92 | **232°C** | 198°C (min) |
| Fire Point (COC) | ASTM D-92 | **255°C** | 218°C (min) |
| Foam Sequence I, II, III (10 min) | ASTM D-892 | **0 Foam** | 0 Foam |
| Rust Prevention | ASTM D-665 | | |
| Distilled Water | | **Pass** | Pass |
| Syn. Sea Water | | **Pass** | Pass |
| Copper Corrosion Strip 3hr @ 100°C | ASTM D-130 | **1A** | DIN 51524 2(max) |
| Rotary Bomb Oxidation, (minutes) | ASTM D-2272 | **272** | USS 120 (min) |
| Neutralization Number mg KOH/g | ASTM D-974 | **0.5** | 1.5 (max) |
| Swell of Synthetic NBR-L Rubber, % (Avg.) | DIN 53538, Part | | |
| Volume Change (%) | 1 | **6.0** | 0 to 12 |
| Shore A Hardness Change (%) | | **-4** | 0 to -7 |
| Demulsibility, ML Oil/Water/Emulsion | ASTM D-1401 | **40/ 40/0** **<10 minutes** | 40/37/3 (max) (30 minutes) |
| 4-Ball Wear, 1h, 167°F, 1200 RPM, 40 kg | ASTM D-4172 | **0.40** | USS 127 0.5 (max) US.Steel 10 (min) |
| FZG Test | DIN 51354 | **11** | |
| **Biodegradation Classification** | ASTM D-5864 OECD 301B | Ultimate PW1 Readily | Ultimate PW1 Readily |
| **Environmentally Friendly** | ISO 15380 | yes | |
| **USDA Biobased Tested** | New Carbon | yes | meets/exceeds over 50% |
| ***Note 1 Viscosity Sufficient for Application*** | | | |
| ***Note 2 Not Required*** | | | |