Renewable Lubricants, Inc.
476 Griggy Rd., P.O. Box 474
Hartville, Ohio 44632-0474

Bio-Ultimax™ 1200LT Hydraulic Fluids

(AW ISO 15, 22, 32, 46)

Bio-Ultimax™ 1200LT Hydraulic Fluids are biodegradable biosynthetic replacements for full synthetic hydraulic applications. These patented biobased hydraulic fluids are formulated to perform in fleet, marine and industrial hydraulic systems that require Anti-Wear (AW), anti-rust, anti-oxidation, anti-foam, and demulsibility properties. Bio-Ultimax™ 1200LT is formulated with PAO/ester synthetics, which provides excellent seal conditioning and oxidation stability. These fluids are the best choice for extreme cold temperature operations in environmentally sensitive areas.

Benefits

- Readily biodegradable, environmentally non-toxic, not bioaccumulative
- Superior cold temperature performance compared to other biobased formulations
- Excellent oxidation stability provided by synthetic base oils
- High viscosity index provides energy efficiency across broad temperature ranges
- Compatible with conventional hydraulic fluids and systems
- Highly filtered formulation meets or exceeds OEM pump particle count
- Great demulsification properties, inhibiting moisture and rust in both fresh and salt water
- Environmentally friendly, zinc free formula

Application / New Filling

- For construction, fleet, forestry, marine and industrial applications
- Before changing over to Bio-Ultimax 1200LT, please ask for filling instructions

Specifications and Approvals

- ASTM D 5864
- OECD 301
- USDA Bio-preferred
- EPA EAL VGP Compliant (USCG approved)
- Vickers (20VQ, 35VQ-25(M-2950-S), V-104C (ASTM D-2882), I-286-S)
- DIN 51524 (Part 2, 3) for vane, piston, and gear pumps
- DIN 51354 FZG load stage 10-12
- Dennison T-5D
- US Steel (126, 136, 127)

STABILIZED™ by Renewable Lubricants

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

ISOGREEN CERTIFIED LUBRICANTS

Bio-Ultimax 1200LT™ Typical Specifications

The test data below shows that the Bio-Ultimax™ 1200LT Hydraulic Fluids provide high performance in a wide variety of stationary and transportation equipment, that operate in broad ranges of environmental conditions. In equipment operating outside, wear from poor cold temperature pumpability, surge loads, moisture, and dusty environments are more prominent. Bio-Ultimax™ 1200LT Hydraulic Fluids are formulated to improve performance in equipment that requires excellent anti-wear, rapid water separation, filterability, and cold temperature pumpability as low as -40C.

TYPICAL SPECIFICATIONS	METHOD	ISO 5	ISO 10	ISO 15	ISO 22	ISO 32	ISO 46	Spec. Require
Viscosity @ 40°C, cSt	ASTM D-445	**4.48**	**10.65**	**14.0**	**21.3**	**30.9**	**44.9**	**Note 1**
Viscosity @ 100°C, cSt	ASTM D-445	**1.35**	**3.08**	**3.9**	**5.3**	**7.1**	**9.8**	**Note 1**
Viscosity @ -20°C, cSt	ASTM D-445	**86.68**	**154.8**	**225**	**425**	**775**	**1030**	**Note 1**
Viscosity @ -30°C Brookfield	ASTM D-2983	**500**	**900**	**900**	**1300**	**1750**	**2250**	**Note 1**
Viscosity @ -40°C MRV TP1	ASTM D-4684	**2200 cP**	**2200 cP**	**2200 cP**	**3050 cP**	**6500 cP**	**17500 cP**	**0W= <60,000 cP**
Viscosity Index	ASTM D-2270	**151**	**160**	**189**	**199**	**204**	**212**	**90 (min)**
Pour Point	ASTM D-97	**-60°C**	**-60°C**	**-60°C**	**-54°C**	**-50°C**	**-48°C**	**Note 1**
Flash Point (COC)	ASTM D-92	**320°F/160°C**	**338°F/170°C**	**365°F/185°C**	**428°F/220°C**	**451°F/233°C**	**462°F/239°C**	**175-195°C (min)**
Hydrolytic Stability,	ASTM D-2619							**(DIN EN ISO 2592) 0.2**
Copper Wt. Loss (mg)		**0.0139**	**0.0139**	**0.0139**	**0.0208**	**0.0208**	**0.0208**	**Report**
Copper Appearance		**1B**	**1B**	**1B**	**1B**	**1B**	**1B**	**4**
Water Layer		**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	
Foam Sequence I, II, III (10 min)	ASTM D-892	**<40/0 Foam**	**<40/0 Foam**	**<30/0 Foam**	**<30/0 Foam**	**<30/0 Foam**	**<30/0 Foam**	**150/0, 80/0, 150/0 (DIN EN ISO 6247)**
Rust Prevention	ASTM D-665							
Distilled Water		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
Syn. Sea Water		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
Copper Corrosion Strip 3hr @ 100°C	ASTM D-130	**1A**	**1A**	**1A**	**1A**	**1A**	**1A**	**DIN 51524 2(max)**
Rotary Bomb Oxidation, (minutes)	ASTM D-2272	**450**	**450**	**450**	**450**	**450**	**450**	**USS 120 (min)**
Dielectric Strength (KV) (Avg)	ASTM D-877	**49**	**49**	**49**	**49**	**50**	**45**	**>35**
Oxidation Stability (Pressure Differential Scanning Calorimeter) min	ASTM D-5483 Modified	**90 (165°C)**	**90 (165°C)**	**90 (165°C)**	**90 (165°C)**	**90 (165°C)**	**90 (165°C)**	**Note 2**
Neutralization Number mg KOH/g	ASTM D-974	**<0.4**	**<0.4**	**<0.4**	**<0.4**	**<0.4**	**<0.4**	**1.5 (max)**
Swell of Synthetic NBR1 Rubber, % (Avg.)	DIN 53538, Part 1							
Volume Change (%)		**12.0**	**12.0**	**11.0**	**11.0**	**10.0**	**8.0**	**0 to 12**
Shore A Hardness Change (%)		**-7**	**-7**	**-7**	**-6**	**-6**	**-5**	**0 to -7**
Filterability								
A-No Water (s) (Avg)	Denison TP 02100 HF-0	**72**	**72**	**72**	**85**	**111**	**260**	**600 (max)**
B-2% Water (s) (Avg)		**98**	**98**	**98**	**105**	**124**	**271**	**2xA (max)**
Demulsibility, ML Oil/Water/Emulsion	Requirement	**40/ 40/ 0 (<10 min)**	**40/ 40/ 0 (<10 min)**	**40/ 40/ 0 (<10 min)**	**40/ 40/ 0 (<10 min)**	**40/ 40/ 0 (<10 min)**	**40/ 40/ 0 (<10 Min)**	**40/37/3 (max) (30 minutes)**
4-Ball Wear, 1h, 167°F, 1200 RPM, 40 kg	ASTM D-1401 ASTM D-4172	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**USS 127 0.5 (max) 10 (min)**
FZG Test A/8,3/90	DIN 51354 Part 2	**10**	**10**	**11**	**11**	**12**	**12+**	
Biodegradation Classification	**ASTM D-5864 OECD 301B ISO 15380**	**Ultimate PW1 Readily**	**Ultimate PW1 Readily**	**Ultimate PW1 Readily**	**Ultimate PW1 Readily**	**Ultimate PW1 Readily**	**Ultimate PW1 Readily**	**Ultimate PW1 Readily**
Environmentally Friendly		**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**meets/exceeds**
USDA Biobased	**New Carbon**	**>60%**	**>60%**	**>60%**	**>60%**	**>60%**	**>60%**	**meets/exceeds**
Environmental Management System	**ISO 14001:1996**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**	**meets/exceeds**
Ecotoxicity LC-50 / EC-50	EPA 560/6-82-002, 003	**meets/exceeds**	**meets/exceeds**	**meets/exceeds**	**meets/exceeds**	**meets/exceeds**	**meets/exceeds**	**meets/exceeds**
Note 1 Viscosity Sufficient for Application								
Note 2 Not Required								
Product Item #		**8146-**	**8147-**	**8131-**	**8132-**	**8133-**	**8134-**	