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Hydro-Safe Select Hydraulic Fluid

(ISO 22, 32, 46, 68)

STABILIZED™ by Renewable Lubricants

"Biobased Lubricants that Perform Like Synthetics"

Hydro-Safe Select Hydraulic Fluids are ultimately biodegradable[1] vegetable based formulas that meets and exceeds Vickers M-2950-S, Vickers 1-286-5, U.S. Steel 126, and U.S. Steel 127. 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. 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 3 load stage 10 that is recommended for vane, piston and gear pumps.

Hydro-Safe Select Hydraulic Fluids are the perfect choice for hydraulic equipment operating outside where higher moisture and dusty environments are more prominent. They are 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 they provide excellent water separation as shown in ASTM D-1401 Demulsibility Test. Hydro-Safe Select Hydraulic Fluids are the best economical choice where these unpredictable environmental conditions exist and the equipment require more frequent oil change intervals.

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. These biobased fluids are designed to provide seal conditioning for longer seal life and to reduce oil leakage from the system.

Hydro-Safe Select Hydraulic Fluid 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. Hydro-Safe Select Hydraulic Fluids are **ENVIRONMENTALLY ACCEPTED LUBRICANTS (EALs)** that are 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.

Patented Product: US Patent 6,383,992, US Patent 6,534,454 with additional Pending and Foreign Patents

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

Hydro-Safe Select Hydraulic Fluid ISO 22, 32, 46, 68

TYPICAL SPECIFICATIONS	METHOD	**ISO 22**	**ISO 32**	**ISO 46**	**ISO 68**	Spec. Requirements
Specific Gravity @ 15.6°C	ASTM D-287	**0.88**	**0.88**	**0.88**	**0.88**	Report
Viscosity @ 40°C	ASTM D-445	**22.3**	**30.5**	**43.1**	**62.8**	Note 1
Viscosity @ 100°C	ASTM D-445	**5.27**	**6.7**	**8.8**	**11.9**	Note 1
Viscosity @ -25°C, Brookfield	ASTM D-2983	**1,000 cP**	**1,400 cP**	**3,400 cP**	**4,700 cP**	Note 1
Viscosity Index	ASTM D-2270	**182**	**186**	**190**	**189**	90 (min)
Pour Point	ASTM D-97	**-38°C**	**-35°C**	**-33°C**	**-30°C**	Note 1
Flash Point (COC)	ASTM D-92	**205°C**	**232°C**	**240°C**	**248°C**	198°C (min)
Fire Point (COC)	ASTM D-92	**230°C**	**255°C**	**264°C**	**270°C**	218°C (min)
Foam Sequence I, II, III (10 min)	ASTM D-892	**0 Foam**	**0 Foam**	**0 Foam**	**0 Foam**	0 Foam
Rust Prevention	ASTM D-665					
Distilled Water		**Pass**	**Pass**	**Pass**	**Pass**	Pass
Syn. Sea Water		**Pass**	**Pass**	**Pass**	**Pass**	Pass
Copper Corrosion Strip 3hr @ 100°C	ASTM D-130	**1A**	**1A**	**1A**	**1A**	DIN 51524 2(max)
Dielectric Strength, KV (Avg)	ASTM D-877	**46**	**40**	**40**	**40**	>35
Rotary Bomb Oxidation, (minutes)	ASTM D-2272	**270**	**272**	**270**	**260**	USS 120 (min)
Neutralization Number mg KOH/g	ASTM D-974	**0.5**	**0.5**	**0.5**	**0.5**	1.5 (max)
Swell of Synthetic NBR-L Rubber, % (Avg.)	DIN 53538, Part					
Volume Change (%)	1	**8.0**	**6.0**	**5.0**	**5.0**	0 to 12
Shore A Hardness Change (%)		**-5**	**-4**	**-4**	**-4**	0 to -7
Demulsibility, ML Oil/Water/Emulsion	ASTM D-1401	**40/40/0 <10 minutes**	**40/ 40/0 <10 minutes**	**40/ 40/0 <10 minute**	**40/ 40/0 <10 minute**	40/37/3 (max) (30 minutes)
4-Ball Wear, 1h, 167°F, 1200 RPM, 40 kg	ASTM D-4172	**0.42**	**0.40**	**0.40**	**0.40**	USS 127 0.5 (max) US.Steel 10 (min)
FZG Test A/8,3/90	DIN 51354	**11**	**11**	**11**	**11**	
Biodegradation Classification	ASTM D-5864	Ultimate PW1 yes	Ultimate PW1 yes	Ultimate PW1 yes	Ultimate PW1 yes	Ultimate PW1
Environmentally Friendly	ISO 15380	yes	yes	yes	yes	
USDA Biobased Tested	New Carbon			yes	yes	meets/exceeds over 50%
Note 1 Viscosity Sufficient for Application						
Note 2 Not Required		7081	7082			
Hydro Safe® Product Item #				7083	7084	