



Renewable Lubricants, Inc.

Distributed By: DM's Bio-Based Fluid Supply Inc.
10 McEwan Dr. W, Unit 4B
Bolton, ON, Canada L7E 1H1
Voice: 905.951.1100 Fax: 905.951.2100
www.dmsbiobased.ca

Bio-based Products That Perform Like Synthetics at a Lower Cost

Additional independent tests have been run by another major chemical company laboratory who requested their name to be kept confidential for this report. (see Assessment of RLI Ultimax Technology Attached) The tests were run to see how RLI's Bio-Ultimax™ Technology compared to Quaker's polyolester bio-hydraulic fluid and Cargill's vegetable oil bio-hydraulic fluid. The accelerated bench tests, again, show that RLI's Bio-Ultimax™ Technology can out-perform the commercial vegetable hydraulic fluid and can perform as good as or better than the polyolester synthetic hydraulic fluid.

In the ASTM-D2270 RBOT, RLI's Bio-Ultimax™ 1000 ISO 46 and 2000 ISO 46 zinc-free antiwear additive technology with 261 and 509 minutes considerably out-performed the Quaker and Cargill fluids with poorer oxidation of 27 and 177 minutes. In the ASTM D2893 Oxidation Test, the viscosities and total acid number (TAN) are compared. The Quaker synthetic showed a total 14% viscosity change from -5.8 to 8.2 percent with higher TAN of 2.0 to 1.3 (mg KOH/g) compared to RLI's total 16.2% and 15.6% viscosity change with much lower TAN of 0.28 to 0.43 and 0.35 to 0.29. The Cargill fluid shows very poor oxidation stability and was destroyed in this test with a viscosity of molasses and a very high TAN of 0.92 to 7.4. In comparing the cost the bio-based (vegetable) hydraulic fluids are priced at \$500 to \$1,000 per 55 gallon drum and synthetic hydraulic fluids are priced at \$1,000 to \$2,000 per 55 gallon drum. This performance allows RLI's Bio-Ultimax™ Hydraulic Fluids to perform according to required OEM oil change specifications.

Contact RLI for additional independent test data and lower cost products.

Respectfully submitted,

William W. Garmier, Vice-President
Renewable Lubricants, Inc.

Assessment of RLI Ultimex Technology - 6 September, 2005

		RLI Ultimex 1000	RLI Ultimex 2000	Commercial Polyolester bio-hydraulic fluid <i>Quaker</i>	Commercial vegetable oil bio-hydraulic fluid <i>Cargill</i>
Physical Properties				<i>Quaker</i>	<i>Cargill</i>
Viscosity @ 40oC, cSt	ASTM D445	47	47.9	48.2	37.7
Viscosity @ 100oC, cSt	ASTM D445	9.62	9.74	10.9	8.65
Viscosity Index	ASTM D2272	195	194	225	215
Pour Point, oC	ASTM D97	-40	-31	-32	n/d
Flash Point, oF	ASTM D92	460	465	500	590
Corrosion Testing	ASTM D665A	Pass	Pass	Pass	Pass
	ASTM D665B	Pass	Pass	Pass	Pass
Oxidation Testing - RBOT @150oC, mins	ASTM D2272	261	509	177	27
Oxidation Testing - 121oC for 13 days	ASTM D2893				
Viscosity change @ 40oC after 13 days, %		10.2	5.6	-5.8	2780
Viscosity change @ 100oC after 13 days, %		7.3	3.7	-6.6	902
Viscosity change at 40oC after 6 weeks, %		16.2	15.6	8.2	not tested
TAN change after 13 days, mgKOH/g		0.28 to 0.43	0.35 to 0.29	2.0 to 1.3	0.92 to 7.4
Foam Testing					
Sequence I	ASTM D892	0 Foam (10 min)	0 Foam (10 min)	0 Foam (10 min)	0 Foam (10 min)
Sequence II	ASTM D893	0 Foam (10 min)	0 Foam (10 min)	0 Foam (10 min)	0 Foam (10 min)
Sequence III	ASTM D894	0 Foam (10 min)	0 Foam (10 min)	0 Foam (10 min)	0 Foam (10 min)