



# Renewable Lubricants, Inc.

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## Bio-SynXtra™ Stern Tube Lubes (ISO 68, 100, 150, 220)

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

Bio-SynXtra™ Stern Tube Lubes are specially designed, biobased synthetic formulas that replace conventional mineral oil based lubricants for lubricating bearing sets in ship stern tubes and certain designed retractable fin stabilizers and controllable pitch propeller systems. They are ultimate biodegradable<sup>1</sup> and specifically designed to provide the proper emulsification of seawater for improved lubrication in wet conditions. In ASTM D-1401 modified test, 20% water in oil emulsion remained thick and stable after setting static for 24 hours. An environmentally friendly additive system has been developed that provides excellent anti-wear, anti-oxidation, and anti-foam performance and the fluids are highly inhibited to prevent wear and corrosion, if up to 20% seawater enters bearing and gear-set areas. They are compatible with yellow and white metals and petroleum oils they come in contact with. The antiwear performance is enhanced by use of the Stabilized\* biosynthetic base oils which provides an exceptional oily boundary film protection. There super high viscosity index naturally improves the fluid film strength between metal surfaces and provides additional load carrying properties. They are formulated to provide seal conditioning for longer seal life, reduce oil leakage from the system, and heavier viscosities can serve as effective temporary leak control in the case of worn or damage seals.

These (BioPreferred<sup>sm</sup>) products have shown to provide exceptional protection in equipment subject to heavy shock loads and excessive moisture. With the exception of ASTM D1401 demulsification, they meet and exceed the requirements for ashless API GL-1, GL-2, GL-3, DIN 51517 Part 3, and AGMA Non-EP gear oils for bearings, reduction units, and gear sets. They can operate in static, mid-dynamic, and dynamic areas of systems that contain Viton fluorocarbon (FKM 2), fluorosilicone, Teflon (PTFE), Polyurethane (AU), polysulfide, low nitrile Buna-N, high nitrile Buna-N (NBR), and Hydrogenated Nitrile Buna Rubber (HNBR). They are **not recommended** for use where natural rubber and styrene-butadiene rubber (SBR, Buna S) seals are used.

Bio-SynXtra™ Stern Tube Lubes meet the Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) definition for Environmentally Acceptable Lubricants (EALs), and should be used where **LOW TOXICITY, BIODEGRADABILITY** and **NON-BIOACUMMULATION** 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-SynXtra™ Stern Tube Lubes 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.

#### <sup>1</sup> Ultimate Biodegradation (Pw1) within 28 days in ASTM D-5864 Aerobic Aquatic Biodegradation of Lubricants

*Different viscosities are provided to better service the applications, (Match Viscosity Below that is Sufficient for OEM System Design).*

#### Typical Specifications

ISO Viscosity Grade		<b>68</b>	<b>100</b>	<b>150</b>	<b>220</b>
VISCOSITIES:	ASTM D-445				
@ 100°C., cSt.		12.7	17.1	24	31
@ 40°C., cSt.		64.2	94.1	145	203
Viscosity Index	ASTM D-2270	202	199	198	196
Flash Point, COC, °C	ASTM D-92	259	262	268	270
Pour Point, °C	ASTM D-97	-36	-34	-31	-26
Copper Corrosion (3h@100°C)	ASTM D-130	1A	1A	1A	1A
4-Ball Wear (mm)	ASTM D-4172	0.35	0.35	0.35	0.35
Emulsion @ 168 hr. avg. 60 ml.	ASTM D-1401	Pass	Pass	Pass	Pass
Rust Prevention Syn. Seawater	ASTM D-665B	Pass	Pass	Pass	Pass
Humidity Cabinet >10 days	ASTM D-1748	Pass	Pass	Pass	Pass
Galvanic Corrosion	FED-STD 7915#5322	Pass	Pass	Pass	Pass
Corrosion/Oxidation @ 100°C	ASTM D-4636	Pass	Pass	Pass	Pass
Foam Sequence I, II, III	ASTM D-892	Pass	Pass	Pass	Pass
FZG Test A/8,3/90	DIN 51354 Part 2	>12	>12	>12	>12
2013 Vessel General Permit	US EPA	yes	yes	yes	yes
<b>RLI Product Item #</b>		<b>84500</b>	<b>84510</b>	<b>84520</b>	<b>84530</b>

\*STABILIZED by Renewable Lubricants is RLI's trademark on their proprietary and patented anti-oxidant, anti-wear, and cold flow technology. This Stabilized technology allows the products 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

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