



# Renewable Lubricants, Inc.

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## Bio-E.P.™ Gear Oils



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

Bio-E.P.™ Gear Oils are designed to meet and exceed the U.S. Steel 224, AGMA 9005-E02, DIN 51517 Part 3, ISO 12925-1 CKD, David Brown DB S1.53.101, and Cincinnati Machine performance requirements. They are recommended for lubricating spur, helical, bevel, and worm gear configurations which are subject to heavy loading or shock loading in heavy-duty applications. These patented biodegradable<sup>1</sup> formulas have combined energy conserving Stabilized HOBS technology with synthetic base stocks and exception E.P./antiwear technology. The result is a super high VI product which has the long life heat stability and additionally offers the protection advantages of increased gear life through extremely high film strength during operating temperatures. They provide rapid demulsification allowing the end user to drain water from the system quickly to prevent corrosion, protect components, and extend oil life. They are the perfect economical choice where leakage or contaminations are more prominent or equipment requires more frequent oil change intervals.

#### Typical Specifications

Industrial Grade Replacement		Light	Medium-Light	Medium	Heavy Medium	Heavy	Extra-Heavy
ISO grade Replacement	<b>46</b>	<b>68</b>	<b>100</b>	<b>150</b>	<b>220</b>	<b>320</b>	<b>460</b>
AGMA Replacement	<b>E.P. 1</b>	<b>E.P. 2</b>	<b>E.P. 3</b>	<b>E.P. 4</b>	<b>E.P. 5</b>	<b>E.P. 6</b>	<b>E.P. 7</b>
VISCOSITIES:							
@100°C., cSt. (D-445)	8.9	12.3	16.1	22.2	29.3	40.3	53
@40°C., cSt. (D-445)	43.1	63.9	88.2	132	186	274.1	384
Viscosity Index (D-2270)	193	194	196	197	199	202	205
Flash Point, COC, °C (D-92)	251	256	259	262	264	263	263
Pour Point, °C (D-97)	-38	-35	-34	-34	-32	-27	-22
Copper Corrosion 3hr @ 100°C (D-130)	1A	1A	1A	1A	1A	1A	1A
4-Ball Wear (US Steel S-205)	.30	.30	.30	.30	.30	.30	.30
4-Ball EP Weld Point (kg)	250	315	315	350	400	400	400
4-Ball EP Load Wear Index	47	51	51	55	57	57	57
FZG Test A/8.3/90 (ASTM D5182, ISO 14635-1)	>12	>12	>12	>12	>12	>12	>12
FZG Test A/16.6/90 (DIN 51354 modified)	>12	>12	>12	>12	>12	>12	>12
Demulsibility (D-1401)	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Foam Sequence I, II, III (D-892)	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Rust Prevention (D-665 A&B)	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Timken Load, OK Load (lbs) (D-2782)	60	70	70	70	70	70	70
<b>RLI Product Item #</b>	<b>82200</b>	<b>82210</b>	<b>82220</b>	<b>82230</b>	<b>82240</b>	<b>82250</b>	<b>82260</b>

#### Features

- (1) Energy Conserving Formulas - Because of the super high viscosity index (VI) of the \*Stabilized HOBS, these products provide a lighter viscosity (more energy efficient) in the lower start-up temperatures and an improved protective viscosity over mineral based formulas in the higher operating temperatures
- (2) Super high viscosity index provides wider temperature performance
- (3) Fortified with improved additive technology to resist wear, oxidation, rust, foam and water
- (4) Improve bearing and gear protection **with high levels of scuffing and micropitting resistance**
- (5) More fire resistant and improved heat dissipation and seal protection

Bio-E.P.™ Gear Oils meet the Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for Environmentally Acceptable Lubricants (EALs), and should be used where **LOW TOXICITY, BIODEGRADABILITY** and **NON-BIOACCUMULATION** properties are required. Bio-E.P.™ Gear Oils exceed the acute toxicity (LC-50 / EC-50 >1000 ppm) criteria adopted by the US Fish and Wildlife Service and the US EPA. Bio-E.P.™ Gear Oils are **ENVIRONMENTALLY RESPONSIBLE** lubricants that are formulated from renewable agricultural plant resources. We believe Earth's environmental future rests in the use of renewable material.

<sup>1</sup> Based on previous ASTM D-5864 studies and ASTM D-7373 Calculations, Bio-E.P.™ Gear Oils are Ultimate/Readily Biodegradable >60% within 28 days in 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  
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**Availability F.O.B. :Hartville, Ohio, USA    1 Gallon   5 Gallon Pail   Drum   Totes   Bulk**