



Renewable Lubricants, Inc.

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Bio-Heavy™ S Cut & Bio-Extreme Heavy™ S Cut (Heavy and Extreme Heavy Duty Metal Working/Machining Oils)



"Biobased Lubricants that Perform Like Synthetics"

Bio-Heavy™ S Cut and Bio-Extreme Heavy™ S Cut oils are ultimately biodegradable¹, biobased metal working oils formulated with active sulfur EP (S Cut) for heavy and extra heavy duty, ferrous metal working operations. Their color can be classified as transparent, which permits viewing the cutting operations while in process and they are formulated to reduce smoke and mist. Performance is enhanced by use of the Stabilized HOBS's, natural fatty acid composition, which provides tool wetting and oiliness; combined with excellent extreme pressure (EP) and antiwear technology. The super high viscosity index of the Stabilized HOBS adds additional load carrying properties. They are highly recommended for machining steel, stainless steel, and most ferrous alloys, but they are not recommended for non-ferrous metals (staining to yellow metals). The products do not contain chlorine, zinc, phosphorus, silicon, or heavy metals, and do not produce an abrasive odor. Operations include: stamping, drawing, milling, turning, drilling, grinding, honing, broaching, thread cutting, and tapping. The three viscosity grades below can be blended to change viscosities or EP performance. In addition, all S Cut oils are compatible with the Bio-General Purpose Cut 30 and 40. The Bio-Extreme Heavy™ S Cut 32 and 68 Oils provide additional EP over Bio-Heavy S Cut 46 and may be used as a concentrated additive to most straight cutting oils to increase performance (match viscosities and EP performance below to equipment and application requirements).

The advantages are many: biodegradable, renewable, low toxicity, no hazardous volatile organic compounds (VOC), more fire resistant, safer, EPA and ISO 14000 compliant, reduces foreign oil, and helps secure the American Economy, OSHA and worker acceptance is high with biobased oils.

Bio-Heavy™ S and Bio-Extreme Heavy™ S Cut 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 materials.

Typical Specifications

ISO Grade	Bio-Heavy <u>46</u>	Bio-Extreme Heavy <u>32</u>	Bio-Extreme Heavy <u>68</u>
Specific Gravity @60°F.	.92	.93	.94
VISCOSITIES: @100°C., cSt.	8.8	7.5	12.9
@40°C., cSt.	42.8	30.2	67.9
Viscosity Index	191	232	194
Flash Point, COC °C	230	190	250
Pour Point, °C	-18	-10	-16
Copper Corrosion ASTM D-130	4C	4C	4C
Rust Prevention ASTM D-665 A&B	No Rust	No Rust	No Rust
4-Ball EP Weld Pt. ASTM D-2783 (kg)	500	>800	>800
Taping (Relative Efficiency %) 1020 HR Steel	120	>120	>120
1018 Forming Steel	100	>100	>100
304 Stainless Steel	100	>100	>100

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.

¹ Ultimate Biodegradation (Pw1) within 28 days in ASTM D-5864 Aerobic Aquatic Biodegradation of Lubricants

Patented Product: US Patent 6,383,992, US Patent 6,534,454, Patent 6,624,124, US Patent 6,620,772 with additional Pending and Foreign Patents

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Availability **F.O.B. :Hartville, Ohio, USA** **5 Gallon Pails** **Drums** **Bulk**