



Renewable Lubricants, Inc.

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Bio-SynXtra™ Refrigeration/Compressor Oils **(Food Grade H1) ISO 15, 22, 32, 46, 68, 100, 150, 220**



"Biobased Lubricants that Perform Like Synthetics"

Bio-SynXtra™ Refrigeration/Compressor Oils (FG H1) are synthetic lubricants that contain ingredients, which are “Generally Regarded as Safe” (GRAS) for food possessing equipment. These Food Grade¹ formulas are biobased enhanced to improve lubricity, seal conditioning, and anti-wear performance for longer service life. They are compatible with same seals, materials and components that are designed to operate on mineral oils.

Compressors and Vacuum Pumps: Bio-SynXtra™ Refrigeration/Compressor Oils provide superior long-term oxidation stability and lubricating qualities for compressors, especially portable and stationary rotary compressors (screw and sliding vane) as well as in single-stage, two-stage, and multistage reciprocating compressors (water-cooled and air-cooled), centrifugal compressors and vacuum pumps. In addition, they provide excellent anti-rust, anti-foam, and demulsibility properties. They are highly inhibited against moisture and pass A and B Sequences of the ASTM D-665 Turbine Oil Rust Test. While specific compressor manufacturer recommendations vary, the ISO 32, 46 and 68 grades are commonly used for rotary compressors, while higher viscosity grades are preferred for reciprocating units (meets and exceeds DIN 51506 VDL requirements).

Refrigeration: Bio-SynXtra™ Refrigeration/Compressor Oils formulas are compatible in carbon dioxide (CO₂) and ammonia systems as well as systems containing R-12 refrigerant. They are recommended for CFC (chlorofluorocarbon) and HCFC (hydro-chlorofluorocarbon) refrigerants including R-717, R-11, R-12, R-13, R-113, R-114, R-115, R-22, R-123, R-141b, R-500, R-501, and R-502. They are not recommended for use with HFC (hydrofluorocarbon) refrigerants such as HFC R-134a. HFC's are more commonly recognized as freons. ISO grade 68 is consistent with the recommendation of refrigeration equipment manufactures.

Hydraulic & Gear: Bio-SynXtra™ Refrigeration/Compressor Oils have a zinc-free additive system that meets Food Grade H1 requirements and provides exceptional anti-wear performance in ASTM D-4172 Four Ball Wear Test. Because they are zinc-free, they may also be used where an R&O circulating oil or mild antiwear hydraulic oil with high temperature stability and excellent low temperature fluidity performance are required. They meet and exceed hydraulic pump requirements for Denison HF-O, Vickers, Rexroth, US Steel 126, 136, and 127, and DIN 51524 Part 2. They also meet the requirements for ashless GL-1, GL-2, GL-3, DIN 51517 Part 3, and AGMA Non-EP gear oils for bearings, reduction units, and gear sets (*Use a Viscosity Sufficient for OEM Requirement and Application*).

Turbines: Bio-SynXtra™ Refrigeration/Compressor Oils meet and exceed the requirements of Turbine R&O, AW Turbine R&O, Steam Turbine R&O and Gas Turbine R&O. ISO Grades 32 and 46 provide the Class I (SHC) electrical conductivity required in ASTM D-4308 and low volatility for required ASTM-E659 Autoignition Temperature above 310^oC for Gas Turbines. In addition, they provide excellent thermal and oxidation stability exceeding the 2000 hours ASTM D-943 TOST requirement for Solar Gas Turbine. The products may also be used as a heat transfer oil and in bearings and reduction units where original equipment manufacturers (OEM) require an R&O lubricant (i.e. AFNOR NFE 48-603 HL, DIN 51524 Part 1, and Denison HF-1 fluids).

¹ Base oils and additives in this product are listed in 21 CFR 178.3570, Lubricants for incidental food contact (USDA H-1). Full compliance with other applicable restrictions of FDA, USDA, oil spill, and oil pollution prevention statutes is recommended.

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

ISO Viscosity Grades 32, 46, 68, and 220 meet and exceeds “Military Specifications DOD-L-24651 Lubricating Oils, Food Grade, and Food Processing Equipment.” This specification is approved for use by the Departments and Agencies of the U.S. Department of Defense, ISO Viscosity Grades 32, 46, and 68 meet DOD-L-24651 Type I, ISO Viscosity Grade 220 Meet DOD-L-24651 Type II for general purpose and gear oil lubricants. This specification also requires a rating of USDA H-1 for incidental food contact.

Maximum oil change intervals can be obtained through proper maintenance and RLI’s oil analysis program. Under good operating conditions ISO Grades 32, 46, and 68 could extend service life up to 8,000 hours in rotary screw compressors.

Benefits:

➤ Reduced danger of fire and explosions	➤ Lower maintenance costs
➤ Outstanding oxidation and thermal stability	➤ Extended service life
➤ Exceptionally low pour point	➤ Low varnish forming tendencies
➤ Excellent rust protection	➤ High viscosity index
➤ Excellent demulsibility	➤ Low toxicity and energy conserving
➤ Excellent antiwear properties	➤ More biodegradable

Typical Data								
ISO Grade	15	22	32	46	68	100	150	220
VISCOSITIES:								
@100°C., cSt. (D-445)	3.7	4.49	5.9	7.9	11.0	14.9	20.0	26.9
@40°C., cSt. (D-445)	15.6	20.8	30.0	44.1	67.0	98.0	142.0	209.0
Viscosity Index (D-2270)	126	131	145	152	156	159	162	164
Flash Point, COC, °C (D-92)	190	225	230	238	242	243	245	248
Pour Point, °C (D-97)	-66	-60	-56	-54	-50	-48	-46	-44
Copper Corrosion 3hr @ 100°C (D-130)	1A	1A	1A	1A	1A	1A	1A	1A
Acid Number (D-974)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
4-Ball Wear, mm (D-4172)	.40	.40	.35	.33	.33	.33	.33	.33
4-Ball EP Weld Point (kg)	160	160	200	200	200	200	200	200
4-Ball EP Load Wear Index	45	45	47	50	50	50	50	50
FZG Test A/8,3/90 (DIN 51354)	10	10	11	12	12	12	12	12
Demulsibility (D-2711)	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0
Foam Sequence I, II, III (D-892)	0 Foam	0 Foam	0 Foam	0 Foam	0 Foam	0 Foam	0 Foam	0 Foam
Rust Prevention (D-665 A & B)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
TOST (ASTM-943 Hrs. 2.0 NNA)	10,000+	10,000+	10,000+	10,000+	10,000+	10,000+	10,000+	10,000+
Dielectric Strength, kV (D-877)	>40	>40	>40	>40	>40	>40	>40	>40
RLI Product Item #	87880	87890	87830	87840	87850	87860	87870	87880