



# MARINE LUBRICANTS WITH THE POWER TO PROTECT



**YOUR VESSEL, YOUR EQUIPMENT AND THE ENVIRONMENT**

## ATB BIOBASED EP-2 GREASE

- Meets U.S. EPA Vessel General Permit (VGP) Requirements.
- Passes U.S. EPA Static Sheen Test 1617.
- Passes U.S. EPA Acute Toxicity Test LC-50.
- Ultimately Biodegradable (Pw1) Base Fluid – 75.2%.
- For Use On Articulated Tug Barge (ATB) Notch Interface, Coupler Ram and Drive Screws, Above Deck Equipment, Rudder Shafts, Wire Rope, Port Equipment and Cranes, Barges and Oil Platforms.

## BIO-SYNXTREME HF SERIES HYDRAULIC FLUIDS

- Meets U.S. EPA Vessel General Permit (VGP) Requirements.
- Advanced synthetic Polyalkylene Glycol (PAG)-based formulas.
- Provides long service life and operating reliability, lower maintenance costs, and reduced overall downtime.
- Excellent Anti-Wear Performance - Rated as anti-wear (AW) fluids according to ASTM D7043 testing and FZG testing.
- High flash and fire points provide safety in high temperature applications.
- All Season Performance – High viscosity indices and low pour points, allowing year-round usage.
- Biodegradability – Readily biodegradable according to OECD 301F.
- Non-Sheening – Does not cause a sheen or discoloration on the surface of the water or adjoining shorelines.
- "Practically Non-Toxic" to fish and other aquatic wildlife according to the U.S. Fish and Wildlife Service hazard classification.



### VGP COMPLIANCE STATEMENT

LUBRIPLATE ATB BIOBASED EP-2 GREASE and BIO-SYNXTREME HF SERIES HYDRAULIC FLUIDS are Environmentally Acceptable Lubricants (EAL)s according to the definitions and requirements of the US EPA 2013 Vessel General Permit, as described in VGP Section 2.2.9



**Lubricants**

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# LUBRIPLATE® ENVIRONMENTALLY ACCEPTABLE LUBRICANTS (EAL)s FOR MARINE APPLICATIONS



Lubriplate is committed to providing you with the right lubrication protection for your vessel and other equipment affected by (VGP) Vessel General Permit regulations. Designed specifically for use in harsh marine conditions, these high performance, Environmentally Acceptable Lubricants (EAL)s deliver all the performance and protection you need, while maintaining compliance with regulations protecting the environment. Formulated to reduce their impact on the environment they Meet U.S. EPA Vessel General Permit (VGP) Requirements.



## VGP COMPLIANCE STATEMENT

LUBRIPLATE ATB BIOBASED EP-2 GREASE and BIO-SYNXTREME HF SERIES HYDRAULIC FLUIDS are Environmentally Acceptable Lubricants (EAL)s according to the definitions and requirements of the US EPA 2013 Vessel General Permit, as described in VGP Section 2.2.9



## LUBRIPLATE® ATB BIOBASED EP-2 GREASE SPECIFICATIONS

This Environmentally Acceptable Lubricant (EAL) was designed to outperform conventional products in a variety of marine applications. It has excellent water resistance, good oxidative stability and provides a high level of protection against rust and corrosion. It is excellent for all slow to medium speed bearings. It has exceptional high shear stability, excellent water resistance and outstanding load-carrying properties.

**APPLICATIONS:** Articulated Tug Barge (ATB) Notch Interface, Coupler Ram and Drive Screws, Above Deck Equipment, Rudder Shafts, Wire Rope, Port Equipment and Cranes, Barges, Oil Platforms, Water Treatment and Hydroelectric Facilities.

### ADVANTAGES:

- Meets U.S. EPA Vessel General Permit (VGP) Requirements.
- Passes U.S. EPA Static Sheen Test 1617.
- Passes U.S. EPA Acute Toxicity Test LC-50.
- Ultimately Biodegradable (Pw1) Base Fluid – 75.2%.
- Excellent Extreme Pressure / Anti-Wear Properties.
- Extremely Shear Stable.
- Good sealing properties to keep out water and dirt.
- Outstanding resistance to washout fresh and salt water.
- Tenacious and adhesive to increase stay-put properties.
- Outstanding pumpability.

PERFORMANCE PROPERTIES	TEST METHOD	ATB BIOBASED EP-2
Lubricant Type of Base	-	Lithium 12-Hydroxy Stearate
Worked Penetration	ASTM D-217	265 - 295
NLGI Grade	ASTM D-217	2
Dropping Point	ASTM D-566	385°F / 196°C
Timken EP Test: OK Load	ASTM D-2783	40 lbs.
Four Ball EP Test: OK Load	ASTM D-2783	250
Four Ball Wear Test: 40 kg, 75C, 1200 rpm 1hr	ASTM D-4172	0.44 mm
Base Oil Viscosity - SUS@100°F	ASTM D-88	500
Base Oil Viscosity - cSt@40°C / cSt@100°C	ASTM D-445	100 / 19
Base Fluid Biodegradability	ASTM D-5864	75.2% / Ultimate (Pw1)
Aquatic Toxicity	OECD 203	>100 mg/l
Corrosion Prevention	ASTM D-1743	1, 1, 1
Copper Corrosion	ASTM D-130	1a
Oxidation Stability	ASTM D-942	3 psi /100 hours
Water Washout (100°F)	ASTM D-1264	<1%
Lincoln Ventmeter @77°F / @30°F / @0°F	-	321 psi / 458 psi / 1,115 psi
PACKAGING AVAILABLE / PART NUMBER		
120 lb Lined Drum	-	Part No. L0342-039

# LUBRIPLATE® BIO-SYNXTREME HF SERIES HYDRAULIC FLUIDS SPECIFICATIONS

These high performance, zinc-free hydraulic fluids are designed for demanding industrial and marine (Vessel General Permit) applications requiring environmental sensitivity, fire resistance, and excellent anti-wear properties over wide temperature ranges. They are Polyalkylene Glycol (PAG) based fluids, that are anhydrous (water-free). LUBRIPLATE BIO-SYNXTREME Hydraulic Fluids do not break down to form sludge and they do not hydrolyze in the presence of water.

## ADVANTAGES:

- Meets U.S. EPA Vessel General Permit (VGP) Requirements.
- Advanced Synthetic Polyalkylene Glycol (PAG)-based fluids.
- Provides long service life and operating reliability, lower maintenance costs, and reduced overall downtime.
- Excellent Anti-Wear Performance - Rated as anti-wear (AW) fluids according to ASTM D7043 testing and FZG testing.
- High flash and fire points provide safety in high temperature applications.
- All Season Performance – High viscosity indices and low pour points, allowing year-round usage.
- Biodegradability – Readily biodegradable according to OECD 301F.
- Non-Sheening – Does not cause a sheen or discoloration on the surface of the water or adjoining shorelines.
- “Practically Non-Toxic” to fish and other aquatic wildlife according to the U.S. Fish and Wildlife Service hazard classification.

**COMPATIBILITY:** BIO-SYNXTREME HF fluids are not compatible with hydrocarbon-based hydraulic fluids. As with any fluid conversion, recognized industry procedures including system cleanup and flushing should be followed. Contact your representative for detailed conversion procedures. Compatible elastomers are: Viton, Kalrez, Silicone, Polysulfide, EPR, Butyl Rubber, Buna N, Fluoraz, EPDM, Natural Black Rubber, Natural Red Rubber and Aflas.

PERFORMANCE PROPERTIES	TEST METHOD	BIO-SYNXTREME HF-32	BIO-SYNXTREME HF-46	BIO-SYNXTREME HF-68
FZG Visual Gear Test, Stages Passed	ASTM D5182	12	12	12
Four Ball EP Test				
Load Wear Index		32.94	33.10	33.26
Last Non-seizure, 80 kg (mm scar)	ASTM D2783	0.40	0.40	0.39
Last seizure, 126 kg (mm scar)		2.75	2.60	2.53
Weld Load, kg		160	160	160
V104 Vane Pump Test (total mg wear)	ASTM D7043	<10	<10	<10
35 VQ Vickers Vane Pump Test		Pass	***	***
Individual Cartridge Wear, mg	M-2950-S	8,8		
Average Wear, mg		8		
Sonic Shear Stability				
Initial Viscosity @ 40°C (cSt)	ASTM D5621	36.8	47.1	68.9
Irradiated Viscosity @ 40°C (cSt)		36.9	47.0	69.2
VISCOSITY PROPERTIES				
Viscosity @ 40°C (cSt)		35.4	46.0	68.0
Viscosity @ 100°C (cSt)	ASTM D445	8.0	9.8	13.7
Viscosity @ 0°C (cSt)		294	390	614
Viscosity Index	ASTM D2270	194	200	209
FIRE PROPERTIES				
Flash Point – Cleveland Open Cup, °C	ASTM D92	271	312	288
Flash Point – Pensky Martens Closed Cup, °C	ASTM D93	218	223	None1
Fire Point, °C	ASTM D92	304	316	322
PHYSICAL - CHEMICAL PROPERTIES				
Specific Gravity @ 20°C	ASTM D1298	1.031	1.035	1.041
Foam Test – Sequence I, Initial Volume/ml		10/0	10/0	10/0
Foam Test – Sequence II, Initial Volume/ml	ASTM D892	10/0	10/0	10/0
Foam Test – Sequence III, Initial Volume/ml		10/0	10/0	10/0
Vapor Pressure (mm HG)	ASTM E1719	<0.01	<0.01	<0.01
Specific Heat (Cal/g/°C)	ASTM E1269	0.476	0.481	0.478
Pour Point, °C	ASTM D97	-59	-51	-51
Ash Content (%)	ASTM D482	0.011	0.008	0.008
Corrosion Protection (TORT)	ASTM D665A	Pass	Pass	Pass
Copper Strip Corrosion	ISO 2160	1b, shiny	1a, shiny	1a, shiny
Aging Behavior (Hrs)				
Mg KOH/g	DIN 51587	1.14	0.92	0.31
Hours		1,008	1,008	1,008
Coefficient of Expansion @ 20°C		0.00078	0.00080	0.00079
Coefficient of Expansion @ @ 55°C	ASTM D1903	0.00080	0.00078	0.00078
Weight, lbs/gal. (20°C)		8.57	8.57	8.58
ENVIRONMENTAL DATA				
Biodegradation 28 Day %		81%(Readily Biodegradable)	72%(Readily Biodegradable)	80%(Readily Biodegradable)
Static Sheen Test (15 minutes observation time)	CFR 435		Pass - No Sheen - No Oil Slick	
Toxicity Test - Fresh Water Species - Classification		“Practically Non-Toxic”	“Practically Non-Toxic”	“Practically Non-Toxic”
48 h EL50 (mg/L) with Water Flea (Daphnia magna)		750	430	170
96 h LL50 (mg/L) with Fathead minnow (Pimephales promelas)		*	297	*
Toxicity Test - Sea Water Species - Classification		“Practically Non-Toxic”	“Practically Non-Toxic”	“Practically Non-Toxic”
96 h LL50 (mg/L) with Mysid Shrimp (Mysidopsis bahia)		200	250	330
96 h LL50 (mg/L) with Sheepshead Minnow (Cyprinodon variegatus)		>1000	>1000	>1000
PACKAGING / PART NUMBER				
5 Gallon Pail		Part No. L1020-060	Part No. L1021-060	Part No. L1022-060
55 Gallon Drum		Part No. L1020-062	Part No. L1021-062	Part No. L1022-062

Toxicity Results for Aquatic Species: EL50 = Bio-Synxtreme loading rate (mg/L as formulated fluid) associated with effects on 50% of tested population. LL50 = Bio-Synxtreme loading rate (mg/L as formulated fluid) associated with lethality of 50% of tested population. \*Not tested. Bio-Synxtreme HF 32 and 68 are expected to have fathead minnow LL50 values similar to that of 46, based on similar results observed across these products for the other species tested.

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