

Lubmarine



**Lubrication
products for
your vessel**



TotalEnergies



Your Trusted Partner in Marine Lubrication

Serving the global maritime sector since 1952, today **Lubmarine delivers a wide range of pioneering and market leading lubricating solutions** that are used across the full spectrum of the maritime and power industries, including engines and auxiliary equipments.

By combining cutting-edge R&D, close OEM collaboration, and a global team of technical experts, Lubmarine helps operators meet the growing challenges of performance, efficiency and energy transition.

With a worldwide presence in over 100 countries and 1,000 ports, Lubmarine is a recognized global leader and innovator in marine lubricants and technical services.

We believe in always supporting our customers and are committed to helping operators manage their lubricants safely, and efficiently. Throughout the entire customer relationship, from lubricant selection to oil performance analysis, our technical experts streamline lubricant management.

With Lubmarine, you can focus on what really matters: **keeping your vessels running smoothly, on time, and optimizing operating costs.**

First class worldwide support where and when you need it

Lubmarine experts provide top-notch guidance and technical insights to help vessels operators to reach optimum performance.

Lubmarine solutions offer you the peace of mind you need to focus on delivering your cargo safely and on-time, with:

Expert support

including technical recommendations.

24/7 access to your data

with digital solutions.

Optimization of your maintenance program

thanks to actionable insights.



Discover more



Welcome to your Solutions Suite

All Lubmarine services are interconnected and complementary, providing customers with a seamless and comprehensive solution.

From oil analysis to training sessions, including vessel and equipment inspection, Lubmarine offers the highest level of support and service.

LUBINSIGHT

- Safe and fast onboard results to support decision-making.
- Collaborative approach with superintendents.

LUBDIAG

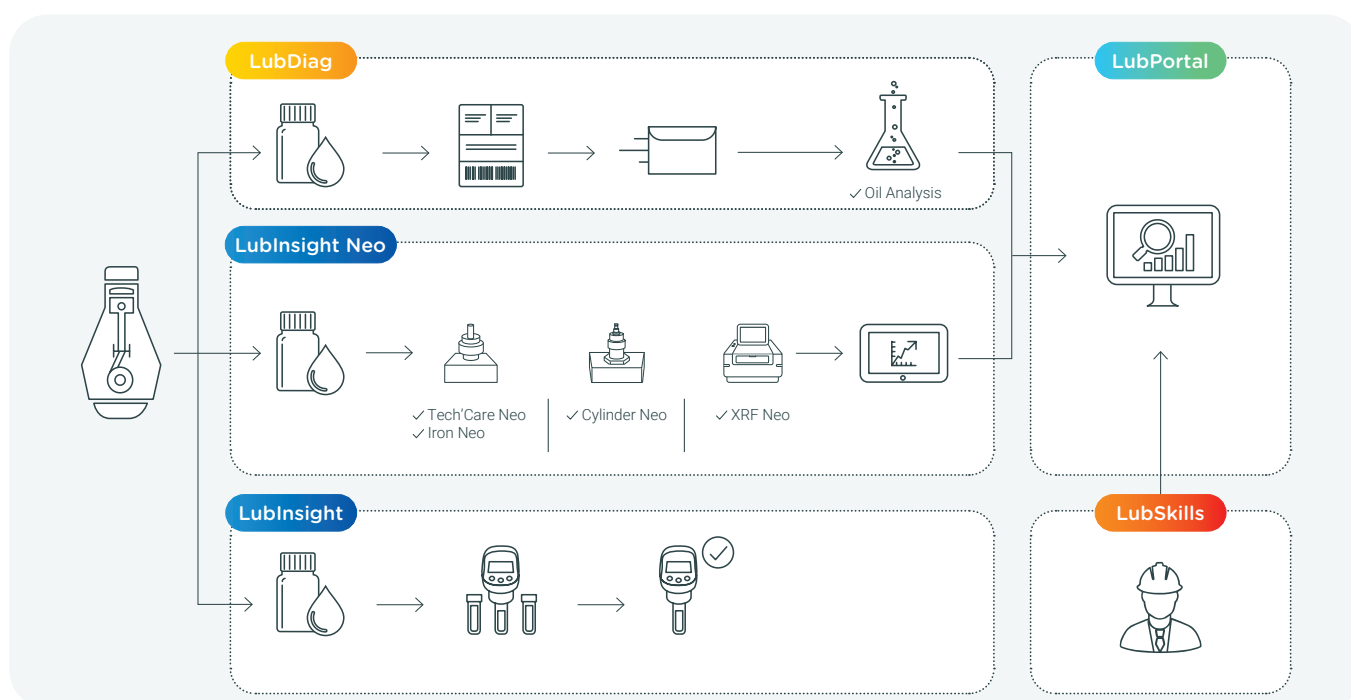
- Comprehensive oil monitoring program for efficient operations.
- Global network of laboratories for in-depth analysis.

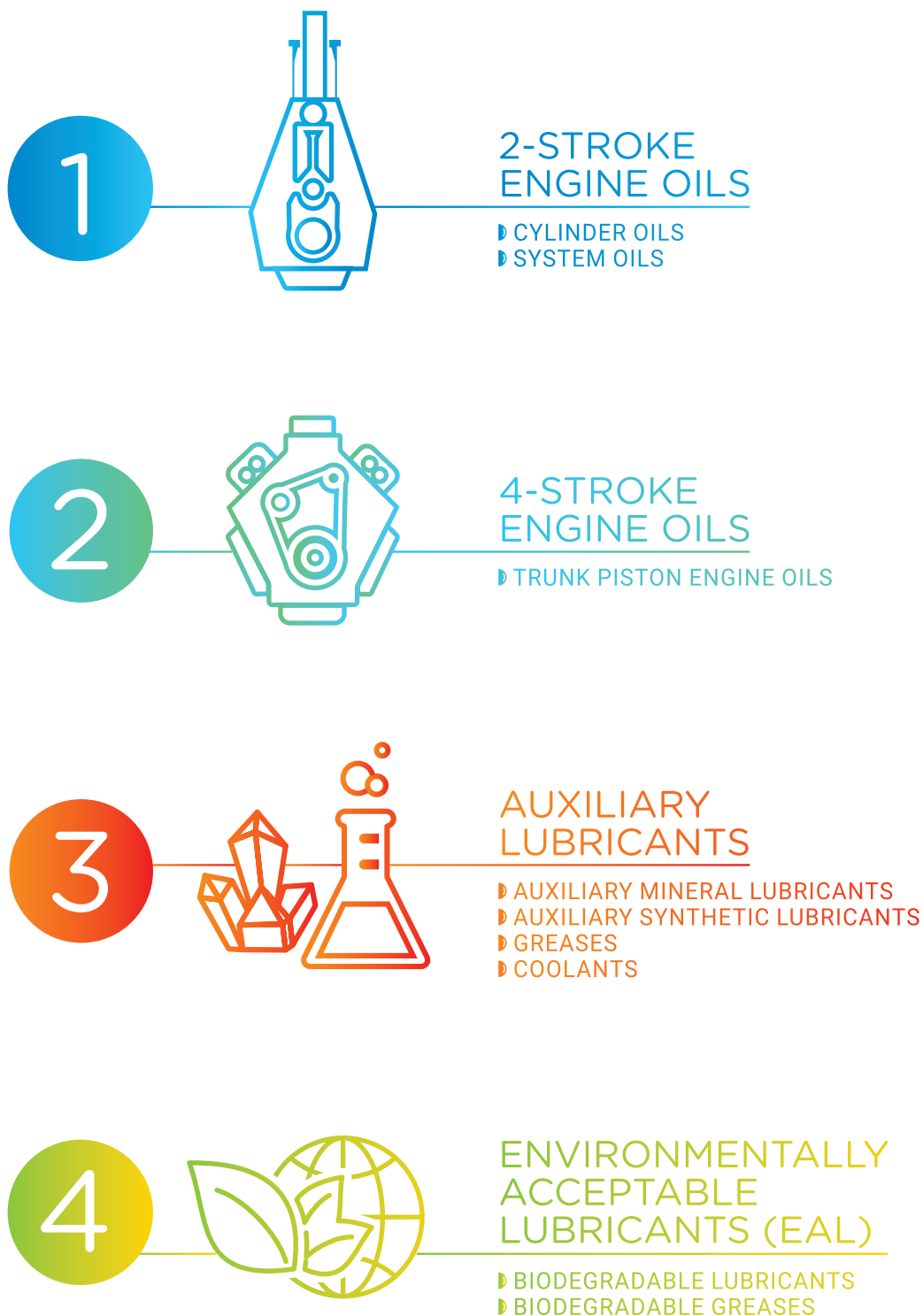
LUBSKILLS

- Field Engineers assistance for engine inspections and training.
- Expert insights for improved lubrication and equipment management.

LUBPORTAL

- Online platform to retrieve used oil analysis, engine reports and lubrication charts.







CYLINDER OILS

Lubricants	SAE or ISO	BN mg KOH/g	Density ^{(1) (2)} kg/m ³		Viscosity ⁽¹⁾ mm ² /s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
			15°C	20°C	100°C			

CYLINDER OILS		ASTM D 2896	ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	
Talusia HD 40	50	40	913	910	19.3	-6	≥230	Cylinder oil for two-stroke slow speed engines using low sulfur fuels (up to 0.5% sulfur content) for which a greater level of detergency is required. Approved as a Cat II oil by Everlence. Approved by WinGD for gas mode.
Talusia LS 40	50	40	920	917	19.3	-6	>230	Cylinder oil for two-stroke slow-speed engines using low sulfur fuels.
Talusia Universal	50	57	930	927	19.3	-6	>230	Cylinder oil for two-stroke slow-speed engines using both high and low sulfur fuels.
Talusia HR 70	50	70	940	937	19.3	-6	>230	Cylinder oil for two-stroke slow-speed engines using high sulfur residual fuels.
Talusia Universal 100	50	100	950	947	19.3	-6	>220	Cylinder oil for two-stroke slow-speed engines where more stringent and corrosive conditions are encountered in service.
Talusia HR 140	50	140	972	969	19.3	-6	>220	Cylinder oil for two-stroke slow-speed engines where more severe and corrosive conditions are encountered in service.



Lubricants	SAE or ISO	BN mg KOH/g	Density ^{(1) (2)} kg/m ³		Viscosity ⁽¹⁾ mm ² /s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
			15°C	20°C				

SYSTEM OILS	ASTM D 2896		ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	
Atlanta Marine D 3005	30	6	900	897	11.5	-6	>220	System oils for two-stroke slow-speed engines.



NAVIGATING THE ENERGY TRANSITION

Today's marine engine landscape is more diverse and more complex than ever, and vessel operators are facing the challenge of identifying the right lubrication approach for their vessels and equipment.

As part of TotalEnergies, which reaffirms its ambition to achieve carbon neutrality, together with Society, Lubmarine is **actively supporting the maritime industry's energy transition** through the continuous development and delivery of high-performance products and services.

Our research and development efforts focus on creating effective lubrication solutions that help customers **optimize their operations, maintain reliability and adapt to the adoption of alternative fuels.**

Backed by a global infrastructure network, we are wherever our customers need us, helping them address evolving challenges, enhance operational performance and support their transition objectives.



TRUNK PISTON ENGINE OILS

Lubricants	SAE or ISO	BN mg KOH/g	Density ^{(1) (2)} kg/m ³		Viscosity ⁽¹⁾ mm ² /s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
			15°C	20°C	100°C			

TRUNK PISTON ENGINE OILS	ASTM D 2896		ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	
Aurelia FE 4020	40	20	876	873	13.6	≤ -12	≥ 220	Oil for medium speed diesel engines running on low sulfur fuels or for dual fuel engines.
Aurelia FE 4030	40	30	884	881	13.6	≤ -12	≥ 220	Oils for medium speed engines operating on heavy fuel oil and providing reduced fuel consumption.
Aurelia FE 4040	40	40	892	889	13.6	≤ -12	≥ 220	
Aurelia NGX 40	40	7.3	886	883	13.9	-25	>230	Oil for gas engines & DF engines operating primarily on natural gas. Homologated by Wärtsila, Everllence and Bergen Engines.
Aurelia TI 3020	30	20	910	907	12	-9	>230	Oil for medium-speed diesel engines running on low sulfur heavy fuel oil or for dual fuel engines.
Aurelia TI 3030	30	30	910	907	12	-12	>230	Oils for medium-speed diesel engines running on high sulfur heavy fuel oil.
Aurelia TI 3040	30	40	910	907	12	-12	>230	
Aurelia TI 4020	40	20	910	907	14	-12	>230	Oil for medium-speed diesel engines running on low sulfur heavy fuel oil or for dual fuel engines.
Aurelia TI 4030	40	30	910	907	14	-9	>230	Oils for medium-speed diesel engines running on heavy fuel oil.
Aurelia TI 4040	40	40	910	907	14	-12	>230	
Aurelia TI 4055	40	55	920	917	14	-12	>230	Oil for medium-speed diesel engines running on high sulfur heavy fuel oil and with a low lubricating oil consumption.

TURNING LUBRICATION INTO A FUEL EFFICIENCY SOLUTION



Aurelia FE, a Fuel Economy trunk piston engine oil, has been formulated at the TotalEnergies Research Centre in Solaize (CREs) to address the maritime industry's increasing efficiency and decarbonization challenges, positioning lubrication as an active contributor to the fuel economy landscape.

Its unique formulation leverages advanced chemistry to optimize frictional behavior and engine cleanliness. Under standardized MARPOL E3 engine cycle test conditions, the product demonstrates fuel savings with a methodology validated by Bureau Veritas.

Designed as a drop-in solution, Aurelia FE illustrates how advanced lubricant formulation can contribute directly to fuel efficiency and related emissions reduction in modern maritime operations.

TRUNK PISTON ENGINE OILS

Lubricants	SAE or ISO	BN mg KOH/g	Density ^{(1) (2)} kg/m ³		Viscosity ⁽¹⁾ mm ² /s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
			15°C	20°C	100°C	(°C)	COC (°C)	

TRUNK PISTON ENGINE OILS		ASTM D 2896	ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	
Disola M 3012	30	12	900	897	12	-9	>220	Oil for medium-speed diesel engines running on distillate fuel oil (ISO 8217 type DMX). Meets API CF specification.
Disola M 3015	30	15	900	897	12	-9	>220	Oil for medium-speed diesel engines running on distillate fuel oil or MDO (ISO 8217 type DMX, DMA and DMZ). Meets API CF specification.
Disola M 4012	40	12	900	897	14.2	-9	>230	Oil for medium-speed diesel engines running on distillate fuel oil (ISO 8217 type DMX). Meets API CF specification.
Disola M 4015	40	15	900	897	14.2	-9	>230	Oil for medium-speed diesel engines running on distillate fuel oil or MDO (ISO 8217 type DMX, DMA and DMZ). Meets API CF specification.
Disola W	15W40	10	884	881	13.9	-21	>180	Oil for high-speed diesel engines. Meets API CI-4 and Caterpillar ECF-2 specifications.
Disola Long Life	10W40	10	867	864	14.2	-45	>230	Oil for high-speed diesel engines, homologated for Everlence 175D series engines.
Disola MT 40	40	13	887	884	13	-15	>220	Oil for high-speed diesel engines. Meets API CG-4 and MTU 2 specifications.
Rubia CF-2 40	40	7.1	890	887	14.5	-15	>220	Oil for lubrication of two-stroke Detroit Diesel engines. Meets API CF specification.
Rubia G 1300 40	40	13	896	893	15.1	-12	>220	Zinc and chlorine free engine oil suitable for the lubrication of EMD engines.



AUXILIARY MINERAL LUBRICANTS

Lubricants	SAE or ISO	Density ^{(1) (2)} kg/m³		Viscosity ⁽¹⁾ mm²/s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
		15°C	20°C	40°C			
HYDRAULIC OILS							
		ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	High VI hydraulic oils. Meet ISO 6743-4 and DIN 51524-3 HVLPLP specifications.
Visga 15	15	852	849	15	-15	>175	
Visga 22	22	861	858	22	-42	>175	
Visga 32	32	867	864	32	-33	>200	
Visga 46	46	873	870	46	-33	>210	
Visga 68	68	879	876	68	-30	>210	
Visga 100	100	887	884	100	-24	>210	
Visga 150	150	887	884	150	-21	>210	
GEAR OILS							
Epona Z 68	68	878	875	68	-18	>230	Extreme-pressure sulphophosphorous gear oils. Meet ISO 6743-6 (CKD), DIN 51517 Part 3 (CLP) specifications.
Epona Z 100	100	881	878	100	-18	>230	
Epona Z 150	150	885	882	150	-15	>230	
Epona Z 220	220	902	899	220	-15	>260	
Epona Z 320	320	898	985	320	-9	>260	
Epona Z 460	460	911	908	460	-9	>260	
COMPRESSOR OILS							
Dacnis 68	68	883	880	68	-21	>240	Oils for reciprocating air compressors. Meet DIN 51506 VD-L and ISO 6743-3 (DAG & DAB) specifications.
Dacnis 100	100	882	879	100	-24	>270	
Dacnis 150	150	889	886	150	-24	>280	
REFRIGERATING OILS							
Lunaria FR 32	32	903	900	32	-42	>180	Oils for refrigerating compressors, using CFC refrigerant gas. Meet ISO 6743-L specifications.
Lunaria FR 46	46	907	904	46	-39	>200	
Lunaria FR 68	68	887	884	68	-33	>205	
TURBINE OILS							
Preslia 32	32	872	869	32	-15	>215	Oils for turbines and turbochargers.
Preslia 46	46	881	878	46	-15	>230	
Preslia 68	68	881	878	68	-12	>240	
Preslia 100	100	887	884	100	-9	>250	
HEAT TRANSFER OILS							
Seriola 32	32	867	864	32	-15	>230	Oil for heat transfer.



COOLANTS

Coolants	Appearance	PH	Density		Cloud Point	Water Content % W/W	Inhibitor Content % W/W
			15°C	20°C			
COOLANT	VISUAL	ASTM D 1287	ASTM D 1122				
WT Supra	Clear Liquid	9.4	1.060	1.058	-15°C	68	32



AUXILIARY SYNTHETIC LUBRICANTS

Lubricants	SAE or ISO	Density ^{(1) (2)} kg/m ³		Viscosity ⁽¹⁾ mm ² /s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
		15°C	20°C	40°C	(°C)	COC (°C)	

GEAR OILS		ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	
Epona SA 220	220	854	851	220	-45	>230	Gear oils (PAO type). Meet ISO 6743-6 (CKD), DIN 51517 Part 3 (CLP) specifications.
Epona SA 320	320	857	854	320	-42	>230	

COMPRESSOR OILS							
Barelf CH 68	68	959	956	68	-36	>280	Oils (ester type) for turbochargers and reciprocating air compressors.
Barelf CH 100	100	957	954	110	-30	>270	
Barelf SM 46	46	839	836	46	-57	>260	Oils (PAO type) for turbochargers and rotary air compressors.
Barelf SM 68	68	842	839	68	-48	>260	

REFRIGERATING OILS							
Barelf AL 100	100	867	864	100	-33	>210	Oil (alkylbenzene type) for air compressors and refrigerating compressors using CFC and HCFC refrigerant gas (R22 etc.).
Planetelf ACD 32	32	985	982	32	-54	>250	
Planetelf ACD 46	46	972	969	46	-45	>250	Oils (polyolester type) for refrigerating compressors using HFC refrigerant gas (R134a etc.).
Planetelf ACD 68	68	967	964	68	-39	>250	
Planetelf ACD 100 FY	100	957	954	100	-33	>260	
Planetelf ACD 150 FY	150	992	989	150	-33	>260	
Planetelf ACD 220 FY	220	1015	1011	220	-33	>260	

GAS COMPRESSOR OILS							
Primeria LPG 150	150	1047	1043	150	-45	>270	Oil (polyglycol type) for LPG, LNG and chemical gas compressors.

Synthetic lubricants should not be mixed with mineral lubricants.
Synthetic lubricants with different base oils should not be mixed.



GREASES

Greases	NLGI	Density		Thickener	Temperature Range		Drop Point (°C)	Worked Penetration 25°C	APPLICATION
		15°C	20°C		Lower	Upper			

GREASES		ASTM D 217			IP 396		ASTM D 217		
Ceran AD Plus	0/1	1000	997	Calcium Sulfonate	-20	150	>250	320-350	Water resistant EP grease for wire ropes, open gears.
Ceran XM 100	1/2	1000	997	Calcium Sulfonate Complex	-30	180	>300	280-310	Water resistant, high temperature multipurpose EP greases.
Ceran XM 220	1/2	1000	997	Calcium Sulfonate Complex	-30	180	>300	280-310	
Multis EP 0	0	1000	997	Lithium/ Calcium	-25	120	>170	335-385	Multipurpose EP greases.
Multis EP 1	1	1000	997	Lithium/ Calcium	-30	120	>190	310-340	
Multis EP 2	2	1000	997	Lithium/ Calcium	-25	120	>185	265-295	
Multis MS 2	2	1000	997	Lithium/ Calcium	-25	130	>185	265-295	Multipurpose EP grease with MoS ₂ .



ENVIRONMENTALLY ACCEPTABLE LUBRICANTS (EAL)⁽³⁾

Lubricants	SAE or ISO	Density ^{(1) (2)} kg/m ³		Viscosity ⁽¹⁾ mm ² /s	Pour Point ⁽¹⁾ (°C)	Flash Point ⁽¹⁾ COC (°C)	APPLICATION
		15°C	20°C	40°C	(°C)	COC (°C)	

HYDRAULIC OILS		ISO 3675		ISO 3104	ISO 3016	ISO 2592 (or ASTM D 92)	Environmentally Acceptable Lubricant (EAL), US VGP-compliant hydraulic oil.
Biohydran TMP 32	32	908	905	32	-42	>270	
Biohydran TMP 46	46	917	914	46	-42	>280	
Biohydran TMP 68	68	927	924	68	-39	>300	
Biohydran TMP 100	100	927	924	100	-33	>300	

GEAR OILS							Environmentally Acceptable Lubricant (EAL), US VGP-compliant gear and bearing oil.
Carter Bio 68	68	947	944	68	-42	>290	
Carter Bio 100	100	964	961	100	-42	>280	
Carter Bio 150	150	885	882	150	-42	>280	
Carter Bio 220	220	901	898	220	-39	>280	
Carter Bio 320	320	898	895	320	-36	>290	

STERN TUBE OILS							Environmentally Acceptable Lubricant (EAL), US VGP-compliant stern tube oil. Premium lubricant for challenging applications.
Bioneptan HT 100	100	916	913	100	-30	>270	
Bioneptan 100	100	927	924	100	-33	>300	Environmentally Acceptable Lubricant (EAL), US VGP-compliant stern tube oil.
Bioneptan 150	150	957	954	150	-42	>280	
Bioneptan 220	220	962	959	220	-39	>290	

 EAL are synthetic lubricants and should not be mixed with mineral lubricants.
EAL should not be mixed with other synthetic lubricants.

The information contained in this document is indicative only and not legally binding for TotalEnergies Lubrifiants S.A. or any affiliate of the TotalEnergies Company. The listed products are subject to availability and/or change at any time and without notice. TotalEnergies Lubrifiants S.A. reserves the right to modify the information in case of any changes, including withdrawal, with regard to any of its products or any elements thereof.

For further information, please also refer to the Technical Data Sheets on lubmarine.totalenergies.com and the Safety Data Sheets on sds.totalms.total.com

(1) Typical values.

(2) The reference density for volume conversion for invoicing purposes is 15°C for BULK DELIVERIES and 20°C for ALL PACKAGE DELIVERIES.

(3) Environmentally Acceptable Lubricant (EAL) according to the definitions and requirements of the U.S. Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP).

ENVIRONMENTALLY ACCEPTABLE LUBRICANTS (EAL)⁽³⁾



BIODEGRADABLE GREASES

Greases	NLGI	Density		Thickener	Temperature Range		Drop Point (°C)	Worked Penetration 25°C	APPLICATION
		15°C	20°C		Lower	Upper			

GREASES		ASTM D 217			IP 396		ASTM D 217		
Bioadhesive Plus	0/1	1000	997	Calcium	-20	90	>145	310-340	EAL, US VGP-compliant grease for metal cables, wire ropes and winches.
Biomultis EP 0	0	1000	997	Lithium	-30	140	>160	335-385	EAL, US VGP-compliant extreme-pressure (EP) grease designed for the lubrication of rudder carrier bearings where an NLGI 0 EAL grease is requested.
Biomultis EP 1	1	1000	997	Lithium	-30	140	>160	310-340	EAL, US VGP-compliant, extreme-pressure (EP) grease designed for the lubrication of rudder carrier bearings where an NLGI 1 EAL grease is requested.
Biomultis EP 2	2	1000	997	Lithium	-30	140	>180	265-295	EAL, US VGP-compliant extreme-pressure (EP) grease designed for applications in environmentally sensitive conditions.
Bio OG +	0/1	1000	997	Calcium	-20	90	>150	330-360	EAL, US VGP-compliant extreme-pressure (EP) grease designed for the lubrication of open gears and chain working under water.

ENSURING VIDA COMPLIANCE ACROSS ALL APPLICATIONS

As environmental regulations evolve, vessel operators must balance compliance with operational performance. Lubmarine's Environmentally Acceptable Lubricants (EALs) are designed to meet stringent regulatory requirements. Compliant with VIDA and VGP regulations, our solutions combine biodegradability, low toxicity and non-bioaccumulation while delivering proven lubrication performance. Suitable for all oil-to-sea interfaces, including stern tubes, gear systems and deck equipment, our EAL range helps reduce environmental impact without compromising reliability.

COMMENTS

VISCOSITY

Viscosity is the property of a liquid to build up a resistance against the mutual shifting of two neighboring layers (internal friction).

Dynamic viscosity

$$[\text{Dimension: Pascal second} = \text{Pa}\cdot\text{s}] = \frac{\text{shearing stress}}{\text{shear rate}}$$

Kinematic viscosity

$$[\text{Dimension: m}^2/\text{s} = 10^6 \text{ mm}^2/\text{s}] = \frac{\text{dynamic viscosity}}{\text{density}}$$

(1 mm²/s = 10⁻⁶ m²/s = 1 cSt)

Under gravity conditions, kinematic viscosity is the ratio of dynamic viscosity and density.

SAE VISCOSITY CLASSES

Viscosity classes were originally introduced by the SAE (Society of Automotive Engineers) in the United States of America. In the meantime, they have been accepted by and introduced in most of the countries in the world for classifying engine and automotive transmission oil. It is the intention of this classification to refer only to the oil's different degree of viscosity and to avoid any reference as to its quality, field of application and additives.

SAE VISCOSITY CLASSES FOR ENGINE OILS ACCORDING TO J300 2015

SAE viscosity class	Maximum apparent viscosity in mPa.s at a temperature of (°C)	Maximum pump temperature of (°C)	Kin. viscosity at 100°C (mm ² /s) min./max.
OW	6200 at -35	-40	3.8 –
5W	6600 at -30	-35	3.8 –
10W	7000 at -25	-30	4.1 –
15W	7000 at -20	-25	5.6 –
20W	9500 at -15	-20	5.6 –
25W	13.000 at -10	-15	9.3 –
20			5.6 to <9.3
30			9.3 to <12.5
40			12.5 to <16.3
50			16.3 to <21.9
60			21.9 to <26.1

MULTIGRADE OIL

A multigrade oil is a lubricant of which the viscosity falls into one of the 'W' classes, and into a viscosity class not classified as 'W' at a temperature of 100°C.

ISO VISCOSITY CLASSES

The ISO VG values refer to the kinematic viscosity values at a test temperature of 40°C. The conversion of kinematic viscosity into dynamic viscosity is based on the average density values of different lubricating oils. Each viscosity class is designated by the integer achieved by rounding the numeric value of the average viscosity at 40°C that is expressed in mm²/s.

ISO viscosity class	Average viscosity at 40°C in mm ² /s (cSt)	Limits of kinematic viscosity at 40°C in mm ² /s (cSt)	
		Minimum	Maximum

ISO VG 2	2.2	1.98	2.42
ISO VG 3	3.2	2.88	3.52
ISO VG 5	4.6	4.14	5.06
ISO VG 7	6.8	6.12	7.48
ISO VG 10	10	9.00	11.0
ISO VG 15	15	13.5	16.5
ISO VG 22	22	19.8	24.2
ISO VG 32	32	28.8	35.2
ISO VG 46	46	41.4	50.6
ISO VG 68	68	61.2	74.8
ISO VG 100	100	90	110
ISO VG 150	150	135	165
ISO VG 220	220	198	242
ISO VG 320	320	288	352
ISO VG 460	460	414	506
ISO VG 680	680	612	748
ISO VG 1000	1000	900	1100
ISO VG 1500	1500	1350	1650

CONVERSION TABLES

VOLUME

To obtain	Imp. Gallon	Barrel (GB)	US Gallon	US Barrel	Liters	Cubic Meters
Imp. Gallon	1	0.02778	1.20094	0.028594	4.546	0.004546
Barrel (GB)	36	1	43.235	1.0295	163.656	0.163656
US Gallon	0.83268	0.02313	1	0.2381	3.7853	0.0037853
US Barrel	34.9726	0.9715	42	1	158.984	0.158984
Liters	0.219974	0.006104	0.26418	0.00629	1	0.001
Cubic Meters	219.974	6.1104	264.18	6.29	1000	1

WEIGHT

To obtain	Kilograms	Pounds	Metric Tons	Long Tons	Short Tons
Kilograms	1	2.2046	0.001	0.0009842	0.001102
Pounds	0.45359	1	0.00045359	0.00044643	0.0005
Metric Tons	1000	2204.6	1	0.98421	1.1023
Long Tons	1016.0	2240.0	1.016	1	1.120
Short Tons	907.18	2000	0.90718	0.89286	1

TEMPERATURE

$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5 / 9$	$^{\circ}\text{F} = (^{\circ}\text{C} \times 9 / 5) + 32$
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GLOSSARY

BN: Base Number, expressed in mg KOH/g*, is the full basicity reserve of a lubricating oil measured according to the ASTM D 2896 method. The Base Number does not give sufficient indication on the ability to neutralize the acids resulting from the combustion of the fuel oils.

Density: It is the quotient of mass by volume, usually expressed at 15°C. Density of mineral oils varies with the temperature according to the formula $d_t = d_{15} - 0,65 (t-15)$ (with t in °C).

Pour point: It is the lowest temperature at which oil can still flow without plugging.

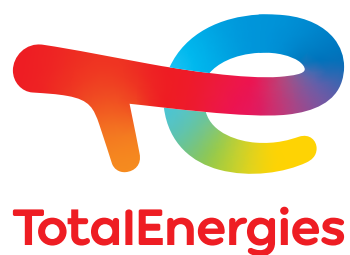
Flash point: It indicates the minimum temperature at which the vapor from a heated lubricant will ignite when exposed to an external ignition source.

Dropping point (for grease): It is the temperature at which a drop of oil released by the grease falls from the orifice of a test cup under prescribed test conditions.

Worked penetration (for grease): The term refers to the cone penetration** to be established immediately after subjecting the grease sample to 60 double cycles per minute in the grease kneading machine. The grease must be heated to a temperature of 25°C before the working.

*mg KOH/g: milligrams of potassium hydroxide per gram of oil.

**Penetration of a cone with a weight of 102.5g into a sample – measured in tenths millimeters.



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**LUBRICATION PRODUCTS FOR YOUR VESSEL
JULY 2026**

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products and services, please visit:
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