Lubmarine

PRODUCT LIST

TOTAL

Comments

Viscosity

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

Dynamic viscosity = $\frac{\text{shearing stress}}{\text{shear rate}}$

[Dimension: Pascal second = Pa•s]

Kinematic viscosity = $\frac{\text{dynamic viscosity}}{\text{density}}$

[Dimension: $m^2/s = 10^6 mm/s$] ($1 mm^2/s = 10^{-6} m^2/s = 1 cSt$)

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

SAE viscosity classes

Viscosity classes have originally been 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 Jan 2009

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.
0W	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	13000 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 the viscosity of which 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 mm^2/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

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 any indication on the ability to neutralise the acids resulting from the combustion of the fuel oils.

Density

Density is the quotient of mass by volume, usually expressed at 15°C. Density of mineral oils varies with the temperature accordingly to the formula dt = d15 - 0,65 (t-15) (with t in °C).

Pour point

Is the lowest temperature at which oil can still flow without plugging.

Flash point

The flash point indicates the minimum temperature at which the vapour from a heated lubricant will ignite when exposed to an external ignition source.

Drop point (for grease)

Is the temperature at which a sample of grease flows through the nipple opening under pre-determined conditions and drops to the bottom of a test pipe.

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 of millimetres.

Main lubricants

Lubricants	SAE or ISO	BN mgKOH/g	Density* kg/m³ 15°C	Density* kg/m³ 20°C	Viscosity mm²/s 40°C	Viscosity mm²/s 100°C	Pour Point (°C)	Flash Point COC (°C)	Application
Cylinder oils Methods		ASTM D 2896	ISO 3675		ISO 3104		ISO 3016	ISO 2592 (or ASTM D 92)	
Talusia Universal	50	57	930	927		19	-9	>230	Cylinder oil for slow-speed engines running on both high and low sulphur fuel oils.
Talusia LS 40	50	40	920	917		20	-9	>230	Cylinder oil for slow-speed engines running on low sulphur fuel oil.
Talusia HR 70	50	70	940	937		20	-9	>230	Cylinder oil for slow-speed engines running on high sulphur fuel oil.
System oils									
Atlanta Marine D 2005	20	6	890	887		8.8	-6	>230	Special system oil to be used to top up when the viscosity of the system oil in service is too high.
Atlanta Marine D 3005	30	6	890	887		11.5	-9	>220	System oils for slow-speed engines.
Atlanta Marine D 4005	40	6	890	887		14.7	-9	>230	
Trunk piston engine oils									
Aurelia TI 4020	40	20	910	907		14	-12	>230	Oil for medium-speed diesel engines running on low sulphur 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 sulphur heavy fuel oil.
Aurelia TI 4030	40	30	910	907		14	-12	>230	
Aurelia TI 3040	30	40	910	907		12	-9	>230	
Aurelia TI 4040	40	40	910	907		14	-9	>230	
Aurelia TI 4055	40	55	920	917		14	-9	>230	Oil for medium-speed diesel engines running on high sulphur heavy fuel oil and with a low lubricating oil consumption.
Disola M 3012	30	12	900	897		12	-9	>220	Oils for high and medium-speed diesel engines running on distillate fuel oil (ISO 8217 type DMX). Meet API CF specification.
Disola M 4012	40	12	900	897		14.2	-9	>230	
Disola M 3015	30	14	900	897		12	-9	>220	Oils for high and medium-speed diesel engines running on distillate fuel oil or MDO (ISO 8217 type DMX, DMA and DMZ). Meet API CF specification.
Disola M 4015	40	14	900	897		14.2	-9	>230	
Disola M 5015	50	14	900	897		19.7	-9	>240	
Disola M 3020	30	20	900	897		12	-9	>220	Oils for high and medium-speed diesel engines running on MDO (ISO 8217 type DMB). Meet API CF specification.
Disola M 4020	40	20	900	897		14	-9	>230	

Auxiliary mineral lubricants

Lubricants	SAE or ISO	BN mgKOH/g	Density* kg/m³ 15°C	Density* kg/m³ 20°C	Viscosity mm²/s 40°C	Viscosity mm²/s 100°C	Pour Point (°C)	Flash Point COC (°C)	Application
Circulating oil Methods		ASTM D 2896	ISO 3675		ISO 3104		ISO 3016	ISO 2592 (or ASTM D 92)	
Cirkan RO 460	460		900	897	429.5		-12	>300	Multi-purpose antioxidant oil.
Engine oils									
Disal CF 113F	40	14	900	897		15.5	-6	>220	Zinc free engine oil suitable for the lubrication of EMD engines.
Disola DD 30	30	>7.5	892	889		12	-18	>210	Oils for lubrication of 2-cycle Detroit Diesel engines. Meet API CF specification.
Disola DD 40	40	>7.5	896	893		14.3	-15	>230	
Disola MT 40	40	11	898	895		14.3	-18	>230	Oil for high-speed diesel engines. Meets API CG-4 and MTU 2 specifications.
Disola W	15W40	11	888	885		14.3	-24	>220	Oil for high-speed diesel engines. Meets API CH-4 and Caterpillar ECF-1-a specifications.
Caprano TDI 15W40	15W40	10	885	882		13.9	-30	>200	Premium multigrade oil for high-speed diesel engines. Meets API CI-4 and Caterpillar ECF-2 specifications.
Hydraulic oils									
Visga 15	15		855	852	14.7		-42	>160	High VI hydraulic oils. Meet ISO 6743-4 and DIN 51524-3 HVLP specifications.
Visga 22	22		864	861	22.4		-42	>180	
Visga 32	32		870	867	32.3		-39	>200	
Visga 46	46		876	873	46		-39	>210	
Visga 68	68		882	879	67.5		-39	>210	
Visga 100	100		886	883	100.8		-36	>220	
Visga 150	150		890	887	150		-30	>230	
Gear oils									
Epona Z 68	68		881	878	68.1		-24	>220	Extreme-pressure sulphophosphorous gear oils. Meet ISO 6743-6 (CKD), DIN 51517 Part 3 (CLP) specifications.
Epona Z 100	100		884	881	100.7		-21	>220	
Epona Z 150	150		892	889	153.4		-27	>230	
Epona Z 220	220		893	890	216.9		-21	>230	
Epona Z 320	320		901	898	319.1		-15	>230	
Epona Z 460	460		903	900	452.2		-12	>240	
Compressor oils									
Dacnis 68	68		885	882	68		-21	>250	Oils for reciprocating air compressors.
Dacnis 100	100		889	886	100		-6	>250	
Dacnis 150	150		892	889	150		-6	280	
Refrigerating oils									
Lunaria FR 32	32		906	903	30		-40	>165	Oils for refrigerating compressors, using CFC refrigerant gas.
Lunaria FR 46	46		910	907	46		-35	>170	
Lunaria FR 68	68		890	887	68		-34	>175	
Turbine oils									
Preslia 32	32		875	872	32		-12	>215	Oils for turbochargers.
Preslia 46	46		884	881	46		-9	>230	
Preslia 68	68		887	884	68		-9	>240	
Preslia 100	100		890	887	100		-9	>250	
Heat transfer oil									
Seriola ETA 32	32		870	867	32		-15	220	Oil for heat transfer.

*The reference density for volume conversion for invoicing purposes is 15°C for BULK DELIVERIES and 20°C for ALL PACKAGE DELIVERIES.
**All eco-friendly products meet the OECD 301 B standard.

Auxiliary synthetic lubricants

Lubricants	SAE or ISO	BN mgKOH/g	Density* kg/m³ 15°C	Density* kg/m³ 20°C	Viscosity mm²/s 40°C	Viscosity mm²/s 100°C	Pour Point (°C)	Flash Point COC (°C)	Application
Gear oils Methods		ASTM D 2896	ISO 3675		ISO 3104		ISO 3016	ISO 2592 (or ASTM D 92)	
Epona SA 220	220		857	854	220.1		-45	>250	Gear oils (PAO type). Meet ISO 6743-6 (CKD), DIN 51517 Part 3 (CLP) specifications.
Epona SA 320	320		860	857	313.8		-42	>260	
Compressor oils									
Barelf CH 68	68		962	959	68		<-42	255	Oils (diester type) for turbochargers and reciprocating air compressors.
Barelf CH 100	100		960	957	110		<-42	262	
Barelf SM 46	46		841	839	46		-45	>250	Oils (PAO type) for turbochargers and rotary air compressors.
Barelf SM 68	68		845	842	68		-42	>260	
Refrigerating oils									
Barelf AL 100	100		870	867	104		-33	>200	Oils (alkylbenzene type) for air compressors and refrigerating compressors using CFC and HCFC refrigerant gas (R22…).
Barelf AL 150	150		870	867	150		-30	>210	
Planetelf ACD 32	32		984	981	34.6		-54	250	Oils (polyolester type) for refrigerating compressors using HFC refrigerant gas (R134a…).
Planetelf ACD 68	68		962	959	69.5		-39	250	
Planetelf ACD 100 FY	100		960	957	101		-36	268	
Planetelf ACD 150 FY	150		995	992	150		-33	264	
Planetelf ACD 220 FY	220		1018	1015	220		-30	264	
Gas compressor oil									
Primeria LPG 150	150		1050	1047	141		-45	>260	Oil (polyglycol type) for LPG, LNG and chemical gas compressors.
Eco-friendly hydraulic oils**									
Biohydran TMP 32	32		913	910	32		-39	265	Biodegradable and non-toxic hydraulic oils.
Biohydran TMP 46	46		920	917	46		-39	285	
Biohydran TMP 68	68		935	932	68		-42	300	
Biohydran TMP 100	100		937	934	100		-42	>300	
Eco-friendly gear oils**									
Carter Bio 150	150		960	957	150		-30	240	Biodegradable and non-toxic oils for gears and bearings lubrication.
Carter Bio 220	220		960	957	220		-27	240	
Carter Bio 320	320		964	961	320		-24	250	
Eco-friendly stern tube oils**									
Bioneptan 100	100		937	934	100		-40	>250	Biodegradable and non-toxic oils for stern tubes.
Bioneptan 150	150		960	957	150		-32	>250	
Bioneptan 220	220		960	957	220		-28	>250	

Greases

Greases	NLGI grade	Thickener	Temperature range (°C)	Drop Point (°C)	Worked penetration at 25°C	Application
Methods	ASTM D 217			IP 396	ASTM D 217	
Ceran AD Plus	0	Calcium Sulphonate Complex	-25 to 150	>250	330–360	Water resistant EP grease for wire ropes, open gears.
Ceran WR1	1	Calcium Sulphonate Complex	-25 to 180	>300	310–340	Water resistant, multipurpose EP greases.
Ceran WR2	2	Calcium Sulphonate Complex	-25 to 180	>300	265–295	
Multis EP 0	0	Lithium / Calcium	-25 to 120	>170	355–385	Multipurpose EP greases.
Multis EP 1	1	Lithium / Calcium	-25 to 120	>190	310–340	
Multis EP 2	2	Lithium / Calcium	-25 to 120	>185	265–295	
Multis MS 2	2	Lithium / Calcium	-25 to 130	>185	265–295	Multipurpose EP grease with MoS2.
Eco-friendly greases**						
Bio Adhesive Plus	1	Calcium	20–90	>145	310–340	Biodegradable and non-toxic grease for metal cables, wire ropes and winches.
Biomultis SEP2	2	Lithium / Calcium	-35 to 150	>190	265–295	Biodegradable and non-toxic multipurpose EP grease.

Conversion tables

VOLUME

To obtain	Imp. Gallon	Barrel (GB)	US Gallon	US Barrel	Litres	Cubic Metres
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
Litres	0.219974	0.006104	0.26418	0.00629	1	0.001
Cubic Metres	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

°C = (°F – 32) x 5 / 9	°F = (°C x 9 / 5) + 32

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Global Technology, Local Service

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