

# Mineral and Synthetic Lubricants Summary

## Mineral Lubricants

Application	Product Name	TBN mg KOH/g	Viscosity Grade		Pour Point C°	Specific Gravity	Product Characteristics/Applications
			SAE	ISO			
Slow-Speed Cylinder Oils	Mobilgard™ 525	25	50	–	-9	0.909	This premium-quality cylinder oil is designed for slow-speed engines operating on 0.10 percent sulphur fuels. It enables vessel operators to meet 2015 ECA sulphur requirements without compromising on engine protection and performance.
	Mobilgard™ 560 VS	60	50	–	-20	0.922	This product delivers outstanding performance for engines operating under extreme conditions and burning fuel with sulphur levels as low as 0.5 percent and as high as 4 percent.
	Mobilgard™ 570	70	50	–	-9	0.937	This premium quality, extra-high performance marine diesel engine cylinder oil provides maximum protection from adhesive and corrosive wear at the higher operating temperatures and pressures of today's modern slow speed engines.
	Mobilgard™ 5100	100	50	–	-24	0.953	This premium quality, extra-high performance marine diesel engine cylinder oil is designed to help combat the effects of cold corrosion on liner walls. It offers outstanding performance at the elevated peak firing pressures and liner temperatures found in modern marine two-stroke engines. MAN Diesel & Turbo recommends 50 SAE, 100 BN cylinder oil for Mark 8.1 and later engine designs when burning high sulphur residual fuel.
Slow-Speed System Oil	Mobilgard™ 300 C	9	30	–	-24	0.867	This premium quality system oil is specially formulated to provide superior engine cleanliness, better wear protection and longer oil life when compared with conventional system oils.
Medium-Speed Engine Oils	Mobilgard™ 450 NC	13	40	–	-6	0.897	These non-zinc, non-chlorine lubricants are specifically formulated to meet requirements of EMD engines using distillate fuels.
	Mobilgard™ 410 NC	10	40	–	-18	0.894	This advanced lubricant was developed to help optimise the performance of engines that meet Tier IV emission requirements.
	Mobilgard™ 312 Mobilgard™ 412	15 15	30 40	– –	-9 -9	0.896 0.899	These high-performance diesel engine oils for trunk piston engines operating on low-sulphur distillate fuels provide excellent resistance to oxidation and viscosity increase over a long period of service, superior water separating properties and excellent corrosion protection.
	Mobilgard™ ADL 30 Mobilgard™ ADL 40	12 12	30 40	– –	-30 -21	0.889 0.892	These high-performance increased dispersancy engine oils for high BMEP medium- and high-speed diesel engines operating on distillate and MDO fuels provide increased resistance to cylinder liner lacquer formation in severe service applications, and assist in sludge and deposit removal.

Medium-Speed Engine Oils (continued on next page)

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## Mineral Lubricants (continued)

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Medium-Speed Engine Oils <i>(continued)</i>	Mobil Delvac™ 1630	12	30	–	-30	0.889	These extra-high performance diesel engine oils provide exceptional performance in both modern diesel engines as well as older models. They provide increased resistance to cylinder liner lacquer formation in severe service applications, and assist in sludge and deposit removal.
	Mobil Delvac™ 1640	12	40	–	-21	0.892	
	Mobilgard™ M330	30	30	–	-6	0.907	These extra-high performance engine oils for the most severe residual-fuelled medium-speed diesel applications provide outstanding residual fuel compatibility, excellent high temperature oxidation and thermal stability, low volatility, high load carrying properties and corrosion protection.
	Mobilgard™ M430	30	40	–	-6	0.907	
	Mobilgard™ M440	40	40	–	-6	0.915	
Mobilgard™ M50	50	40	–	-6	0.922		
High-Speed Engine Oils	Mobil Delvac MX™	9	15W-40	–	-30	0.879	These extra-high performance multi-grade diesel engine oils help extend engine life in some of the most severe applications whilst delivering outstanding performance in high-output, low-emission engines. Fully backwards compatible, the oils will also deliver the same exceptional performance in older conventional engines.
	Mobil Delvac MX™ F2	12	15W-40	–	-30	0.879	
	Mobil Delvac™ 1300 Super	10.5	15W-40	–	-30	0.876	
	Mobil Delvac™ CNG/LNG	6.4	15W-40	–	-27	0.871	This high performance heavy duty engine oil is formulated specifically for spark ignited CNG and LNG fueled engines. It provides excellent performance in the challenging operating environments presented by CNG (Compressed Natural Gas) and LNG (Liquefied Natural Gas) and offers extended drain interval capability.
Hydraulic Oils	Mobil DTE 10 Excel™ 15	–	–	15	-54	0.8375	These high-performance anti-wear hydraulic diesel oils are specifically designed to meet the needs of modern, high-pressure, marine hydraulic systems.
	Mobil DTE 10 Excel™ 22	–	–	22	-54	0.8418	
	Mobil DTE 10 Excel™ 32	–	–	32	-54	0.8468	
	Mobil DTE 10 Excel™ 46	–	–	46	-45	0.8502	
	Mobil DTE 10 Excel™ 68	–	–	68	-39	0.8626	
	Mobil DTE 10 Excel™ 100	–	–	100	-33	0.8773	
	Mobil DTE 10 Excel™ 150	–	–	150	-30	0.8821	
Circulating Oils	Mobil DTE™ Oil Light	–	–	32	-18	0.850	These premium-performance circulating lubricants are designed for marine applications where long lubricant service life is required.
	Mobil DTE™ Oil Medium	–	–	46	-15	0.860	
	Mobil DTE™ Oil Heavy Medium	–	–	68	-15	0.870	
	Mobil DTE™ Oil Heavy	–	–	100	-15	0.880	
	Mobil Vacuoline™ 528	–	–	150	-21	0.890	These high-performance heavy-duty circulating oils are designed for lubrication of circulation systems of marine gearboxes, hydraulic systems, plus a wide variety of ancillary equipment.
	Mobil Vacuoline™ 533	–	–	220	-15	0.890	
Gear Oils	Mobilgear™ 600 XP 68	–	–	68	-27	0.880	These extra-high performance gear oils for enclosed gear applications provide maximum wear and corrosion protection whilst maintaining compatibility with common gearbox seal materials.
	Mobilgear™ 600 XP 100	–	–	100	-24	0.880	
	Mobilgear™ 600 XP 150	–	–	150	-24	0.890	
	Mobilgear™ 600 XP 220	–	–	220	-24	0.890	
	Mobilgear™ 600 XP 320	–	–	320	-24	0.900	
	Mobilgear™ 600 XP 460	–	–	460	-15	0.900	
Refrigeration Oil	Mobil Gargoyle™ Arctic Oil 300	–	–	68	-42	0.910	This high-performance mineral oil for reciprocating refrigeration compressors has a low pour point and excellent fluidity at very low temperatures by virtue of being almost wax-free.

## Mineral Lubricants (continued)

Application	Product Name	TBN mg KOH/g	Viscosity Grade		Pour Point C°	Specific Gravity	Product Characteristics/Applications
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Air Compressor Oil	Mobil Rarus™ 427	–	–	100	–	0.879	This premium-performance ashless air compressor lubricant provides exceptional equipment protection and reliability for single, two or multi-stage compressors operating under mild to severe conditions. The oil is not intended for breathing apparatus compressors.
Cedervall-type Stern Tube Lubricant	Mobil Stern Tube Lubricant™	–	–	–	10, max	0.915	This high-performance, high viscosity lubricant is for Cedervall-type stern tube bearings used in ships and for certain bearings of ships' fin stabilizers. It provides effective rust protection in the presence of seawater and is resistant to water-washing so that corrosion protection is maintained for extended periods under severe operating conditions.
Wire Ropes & Chains	Mobilarma™ 798						This product forms a grease-like film that protects wire ropes from corrosion tendencies of salt spray and moisture-laden atmospheres. It is effective in extremes of temperature that may be encountered at sea and protects against mild acids.
Grease	Mobilgrease™ XHP Series						This extra-high performance NLGI grade 2 grease is for a wide variety of applications and severe operating conditions. It was designed to outperform conventional products by applying leading edge, proprietary, lithium complex manufacturing technology. It is an ideal choice for severe operating conditions including high temperature, water contamination, high loads and shock loading, and extended re-lubrication operations.
Open Gear Systems	Mobiltac™ 375 NC						This extra-high performance non-chlorinated, diluent-type lubricant for slow-moving, heavily loaded open gears adheres strongly to gear teeth and other machine elements to resist excessive throw-off. It resists rain, snow and water-washing.
Heat Transfer Oil	Mobiltherm™ 605						This high-performance product for closed indirect heating installations is resistant to thermal cracking and chemical oxidation. It can be pumped readily at both start-up and operating temperatures. The oil is thermally stable and capable of an extremely long service life without deposit formation or viscosity increase.

## Synthetic Lubricants

Application	Product Name	TBN mg KOH/g	Viscosity Grade		Pour Point C°	Specific Gravity	Product Characteristics/Applications
			SAE	ISO			
VGP Approved Hydraulic Oils	Mobil SHC Aware™ H 32	–	–	32	-30	–	These high-performance, anti-wear hydraulic oils for modern high-pressure hydraulic systems meet or exceed the U.S. Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for “environmentally acceptable lubricants.” The products’ excellent wide temperature-range performance is above and beyond the capabilities of non-synthetic environmentally acceptable oils.
	Mobil SHC Aware™ H 46	–	–	46	-30	–	
	Mobil SHC Aware™ H 68	–	–	68	-30	–	
VGP Approved Stern Tube Oils	Mobil SHC Aware™ ST 100	–	–	100	-24	–	These high-performance, emulsifying stern tube oils for marine stern tube systems meet or exceed the U.S. Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for “environmentally acceptable lubricants.” The products provide effective rust protection in the presence of seawater and the lubricating film is resistant to water washing so that corrosion protection is maintained for extended periods under severe operating conditions.
	Mobil SHC Aware™ ST 220	–	–	220	-12	–	
VGP Approved Grease	Mobil SHC Aware™ Grease EP 2	–	–	150	–	–	This high-performance synthetic grease for environmentally sensitive applications meets the requirements of the U.S. Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP). The grease is readily biodegradable and virtually non-toxic, and is formulated based on biodegradable saturated ester-base oils and a lithium/calcium soap thickener. It does not emulsify and has excellent water wash and salt water corrosion resistance.
VGP Approved Gear Oils	Mobil SHC Aware™ Gear 68	–	–	68	-36	–	These high performance, anti-wear gear oils are for use in marine applications and meet the U.S. Environmental Protection Agency (EPA) 2013 Vessel General Permit (VGP) guidelines for “environmentally acceptable lubricants”. They provide excellent wear protection for gears and bearings and safeguard equipment from rust and corrosion.
	Mobil SHC Aware™ Gear 100	–	–	100	-36	–	
	Mobil SHC Aware™ Gear 150	–	–	150	-30	–	
Medium-Speed Engine Oil	Mobilgard™ 1 SHC	15	40	–	-54	0.872	This supreme-performance, synthetic diesel engine oil is recommended for use as a crankcase lubricant in medium- and high-speed marine diesel engines in severe service. It is especially suited to the needs of high-power concentration engines where thermal stress and loading on the lubricant are severe, and for applications involving low-temperatures, frequent start-up, rapid loading following rapid start-up, and abrupt shutdown after high-speed operations.
High-Speed Engine Oils	Mobil Delvac 1™ SHC	16	5W-40	–	-54	0.860	This supreme performance, synthetic diesel engine oil provides excellent lubrication, including long drain capability and long engine life, for diesel engines operating in some of the most severe marine applications.
	Mobil Delvac 1™	12	5W-40	–	-45	0.854	This fully synthetic supreme performance heavy-duty diesel engine oil helps extend engine life whilst providing long drain capability and potential fuel economy for modern diesel engines operating in some of the most severe marine applications.
	Mobil Delvac 1™ LE 5W-30	10	5W-30	–	-51	0.855	This synthetic, heavy-duty oil offers excellent wear protection for modern low emission diesel engines.
	Mobil Delvac 1™ ESP	10.1	5W-40	–	-48	0.85	This fully synthetic supreme performance heavy duty diesel engine oil helps extend engine life while providing long drain capability and potential fuel economy for modern diesel engines operating in severe applications.

## Synthetic Lubricants (continued)

Application	Product Name	TBN mg KOH/g	Viscosity Grade		Pour Point C°	Specific Gravity	Product Characteristics/Applications
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Air Compressor and Turbocharger Oils	Mobil Rarus™ 824	–	–	32	-54	–	These ultra-high performance synthetic oils are for use in severe-duty reciprocating air compressors. The products' outstanding oxidation and thermal stability help to make them ideal for use in applications where high temperatures are encountered and extended oil drains are desired.
	Mobil Rarus™ 827	–	–	100	-36	–	
	Mobil Rarus™ 829	–	–	150	-40	–	
	Mobil SHC™ Rarus 32	–	–	32	-42	0.8779	These supreme-performance oils are primarily intended for the lubrication of severe-duty rotary screw and vane air compressors. The products' excellent wear protection and outstanding resistance to oxidation and thermal degradation are greatly superior to mineral oils.  Mobil SHC Rarus 68 is approved by ABB Turbo Systems for oil-change intervals that are five times beyond those permitted with standard mineral oils.
Mobil SHC™ Rarus 46	–	–	46	-42	0.8676		
Mobil SHC™ Rarus 68	–	–	68	-39	0.865		
	Mobil Rarus SHC™ 1026	–	–	68	-45	0.856	Mobil Rarus SHC 1026 is approved by ABB Turbo Systems for oil-change intervals that are five times beyond those permitted with standard mineral oils.
Gas Compressor Oil	Mobil™ Gas Compressor Oil	–	–	–	-36	1.056	This high-performance, synthetic gas compressor lubricant is primarily intended for use in gas compressors for hydrocarbon and chemical gases where the crankcases and bearings operate in a gas filled atmosphere. It is particularly suitable for marine service on vessels carrying liquefied gas cargoes.
Refrigeration Compressor Oils	Mobil Gargoyle™ Arctic SHC 226E	–	–	68	-50	0.830	For reciprocating and rotary refrigeration compressors. Wax-free, high V.I. Reduced deposits due to high-temperature stability.
	Mobil Gargoyle™ Arctic SHC 230	–	–	220	-39	0.850	
	Mobil EAL Arctic™ 32	–	–	32	-48	0.980	These high-performance, fully-synthetic Environmental Awareness Lubricants (EAL) are designed specifically for refrigeration compressors and systems using ozone-friendly HFC refrigerants.
	Mobil EAL Arctic™ 46	–	–	46	-42	0.970	
	Mobil EAL Arctic™ 68	–	–	68	-36	0.960	
	Mobil EAL Arctic™ 100	–	–	100	-30	0.960	
Mobil EAL Arctic™ 220	–	–	220	-21	0.960		
Mobil Zerice™ S 68	–	–	68	-27	–	These premium-quality synthetic refrigeration compressor lubricants have superior miscibility with R22, R502 and R12. The products can be used in temperature applications down to -60°C.	
Mobil Zerice™ S 100	–	–	100	-27	–		
Gear Oils	Mobil SHC™ 626	–	–	68	-48	0.860	These optimum-performance synthetic oils for gears and bearings provide outstanding performance in extreme operating conditions at high and low temperatures – well beyond the capabilities of standard mineral oils. The products' balanced formulation also provides exceptional resistance to rust and corrosion, excellent demulsibility, and superb foam control and air-release properties, all of which help to ensure problem-free operation.
	Mobil SHC™ 629	–	–	150	-45	0.860	
	Mobil SHC™ 630	–	–	220	-42	0.870	
	Mobil SHC™ 632	–	–	320	-40	0.870	
	Mobil SHC™ 634	–	–	460	-40	0.870	
	Mobil SHC™ Gear 150	–	–	150	-54	0.860	
	Mobil SHC™ Gear 220	–	–	220	-45	0.860	
	Mobil SHC™ Gear 320	–	–	320	-48	0.860	
	Mobilgear SHC™ MT 68	–	–	68	-51	0.855	This premium-performance, fully synthetic marine gear oil is designed to provide optimum equipment protection and oil life even under extreme conditions. It is recommended for enclosed marine gear drives, including steel-on-steel spur, helical and bevel gears.

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Hydraulic Oils	Mobil SHC™ 524	–	–	32	-56	0.852	These optimum-performance synthetic oils for vane, piston, and gear pumps are designed to provide excellent wear protection in a wide range of temperatures. Exhibiting outstanding oxidation and shear stability, excellent rust and corrosion protection, demulsibility, and keep-clean performance, the oils help extend the service life of machine components.
	Mobil SHC™ 525	–	–	46	-54	0.851	
	Mobil SHC™ 526	–	–	68	-53	0.853	
Gas Turbine Oil	Mobil Jet™ Oil II	–	–	–	-59	1.0035	This aircraft-type gas turbine lubricant is approved against the Standard Performance (STD) classification of U.S. Military Specification MIL-PRF-23699. It is recommended for aircraft-type gas turbine engines used in marine applications.
Grease	Mobilith SHC™ 100 Mobilith SHC™ 460						These supreme-performance greases are designed for a wide variety of applications at extremes of temperature. The products' lithium complex thickener contribute excellent adhesion, structural stability and resistance to water.

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