LUBRICANTS PRODUCT CATALOGUE

TEBOIL

Even more comprehensive service

Teboil is a full-service oil company whose product range includes lubricants as well as traffic fuels, light and heavy fuel oil and liquified petroleum gas. In addition to the products presented in this catalogue, you can now enjoy an even more comprehensive range of lubricants and chemicals from Teboil for your specific needs.

High-quality Teboil engine and transmission oils for professional repair shops servicing passenger cars. The product selection covers a wide range of brand-specific performance requirements for the latest car models. Teboil products sold in Finland are manufactured in Austria and Finland.

Teboil engine oil additives are an easy way to boost vehicle performance and improve reliability.

Oils and coolant solutions which are mixed with water for metal-working machining equipment.

Finnish oil expertise

Robust experience

Teboil lubricants hold a strong and well-established position on the Finnish market. Lubricants have been part of our company's product range almost from the very beginning, and our own production started in Helsinki in 1963. Today, Teboil lubricants are manufactured in a modern production facility located in Hamina.

Continuous development

We are engaged in continuous research and development in cooperation with our customers and additive, vehicle, and machinery manufacturers to develop new, improved and more efficient lubricants.

Our northern climate sets special challenges for lubricants, especially in the winter period. From the very beginning, the objective of our development work has been to introduce to the market high-performance lubricants especially suitable for the Finnish environment.

Each production batch is tested in a laboratory before it is delivered to the customer. This ensures that all batches of products leaving our Hamina facility meet the quality requirements set for them.

The lubricant production and laboratory activities have been granted the ISO 9001:2015 and IATF 16949:2016 quality certificattion and 14001:2015 environment certification, as well as ISO 45001:2018 occupational health and safety certification. The laboratory activities are accredited by the FINAS Finnish Accreditation Service (T242 Testing Laboratory) according to the SFS-EN ISO/IEC 17025:2017 accreditation standard.

Extensive range

Teboil provides a wide range of lubricants for cars, machinery and industrial applications. We are continuously developing our product range to meet the needs of our customers and the requirements of technological developments. Light Teboil Diamond R 5W-30 is a new product in our range of engine oils for passenger cars, specifically designed to meet the requirements of new Renault engines.

Teboil Fluid TO-4 Synthetic SAE 50, specially designed for heavy-duty machines operating in varying temperature conditions, has been added to our range of heavy-duty engine oils. This type of oil is used, for example, in Komatsu and Caterpillar machines.

Teboil grease portfolio has been expanded by Teboil HD-M5 N1 and Arctic M5 Grease, which are both designed for extremely heavy duty conditions in mining machines.

Towards the future

In addition to environmental considerations, the continuous evolution of technological development creates new challenges for lubricants. Higher performance requirements and new equipment manufacturers' classifications are key drivers for our product development. Technological development will lead to an increased need for new products. In addition, there will be an increased cyclical need for the continuous development of the current product range. As a result, our laboratory at the lubricant production facility as well as customer orientation are the cornerstones of our business.

We will meet future requirements with our strong knowledge of the lubricants industry and our solid local expertise, and by continuing to tailor our product range to meet the needs of our customers. It is not enough for us to keep our customers' wheels spinning. We want to be the best partner who keeps them spinning in the most efficient way.

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BASE OILS

Lubricants consist of base oils and additives. The application of the lubricant determines the properties required and, further, the type of base oils and additives to be used to achieve the best results. Different applications require various properties, and therefore different lubricants are needed to meet the machinery and equipment requirements.

BASE OIL TYPES

Mineral oils

Mineral oils are made of crude oil with the help of complex refining processes. High-quality mineral oils have reliable and balanced properties. Good properties are, for example, gentle to gasket materials and characterised by good solubility of additives. Under normal operating temperatures and conditions, the lubricating properties of mineral oils are sufficient and adequate as long as the suitable viscosity is chosen.

However, it is difficult, or even impossible, to produce a mineral oil lubricant performing excellently under cold conditions and providing sufficient lubrication under higher operating temperatures as well.

Synthetic oils

Synthetic base oils allow better properties compared to mineral oils for the lubricants. They are refined to a greater extent than mineral oils. The hydrocarbon compounds of the resulting lubricants are of more equal quality and size as compared to mineral oils. However, synthetic oil as such does not guarantee quality. To ensure good quality, the components must be selected very carefully and their ratios optimised.

The following properties can be achieved with synthetic oils:

- Excellent low-temperature performance, such as easy cold starting and good lubrication in cold conditions
- Excellent high-temperature performance, such as good Oxidation stability, low volatility and low oil consumption

Synthetic base oils available at the most favourable price are hydrocracked/hydrogen cracked base oils. These base oils are produced from crude oil by long distillation processes and are characterised by more even distribution of hydrocarbon compounds as compared to ordinary mineral oils, which also leads to more balanced properties.

Polyalphaolefine (PAO) is a synthetic base oil commonly used in transmission and engine oils, for example. The production process of PAO is especially long and com-

plex, but the resulting hydrocarbon compounds are exactly as desired.

Synthetic esters are usually used In addition with other base oils. Synthetic esters are very expensive and characterised by excellent cold and heat resistance, so they can be used for further improvement of lubricants' temperature-resistance properties.

Biodegradable oils

Biodegradable oils are usually made from synthetic esters or vegetable oils. Oils made from synthetic esters have excellent cold and heat resistance properties and an inherently high viscosity index. Mixing biodegradable oils with ordinary mineral oils is not recommended. When mixing biodegradable oils from different producers, it is essnetial to know which base oils they contain. Oils made from synthetic esters are generally suitable for blending, but vegetable oil-based oils should not be mixed with oils made of synthetic esters.

LUBRICANTS – GLOSSARY

Density and specific gravity

Density of a substance is its weight divided by volume [kg/m^3]. Specific gravity is the relation between the weight of a substance volume and corresponding weight of a similar water volume. Density and specific gravity are properties depending on temperature.

Viscosity

There are several viscosity units. Lubricating oils are generally measured with kinematic viscosity. Its basic unit is Stoke [St], which corresponds to the SI unit of square metre per second [m^2/s]. The most commonly used units when discussing lubricants are centiStokes [cSt] in the SI system, which is defined as square millimetre per second [mm^2/s].

Viscosity index

Viscosity index, abbreviated VI, describes the dependence of oil viscosity on temperature change. The greater the VI value, the less the oil's viscosity changes as the temperature varies.

Pour point

Pour point is defined as the lowest temperature at which the oil has not yet lost its ability to flow at the tilt of the test tube in which it is cooled. The pour point of the oil reflects a moment of an increase of oil viscosity as a result of a decrease in temperature, or by paraffin crystallisation together with the increase of viscosity to such an extent that the oil becomes solid.

Flash point

When oil is heated, vapours are generated that can be briefly ignited with open flame. The temperature at which ignition of vapours occurs is called the flash point.

Neutralisation value

Lubricants contain acidic and/or alkaline substances from base oil, additives or oxidation due to use. These substances are analysed in laboratory as Total Base Number (TBN) or Total Acid Number (TAN). Neutralisation value indicates the amount of alkaline/acidic substance that is required to neutralise the oil. Neutralisation value is indicated as [mg KOH/g] (milligrams of potassium hydroxide per oil gram).

SAPS

SAPS is an acronym, and it stands for Sulphated Ash, Phosphorus, and Sulphur. In large quantities, SAPS compounds can be harmful to exhaust after-treatment equipment.

ADDITIVES

Oxidation inhibitors

Oxidation is a chain reaction accelerated both by former oxidation products and impurities in lubricating oils. Oxidation inhibitors stop the oxidation reaction and block the catalytic effect of metallic surfaces.

Detergent and dispersant additives

Detergents remove dirt and dispersant binds combustion products that are insoluble in the oil, such as sludge, soot and oxidation products. In this way, dirt is removed from the engine when the oil is changed.

Anti-corrosion additives

These additives form an anti-corrosion film on metallic surfaces.

Anti-wear additives

These additives form a chemical film preventing metal-to-metal contact on the lubricated surfaces. Anti-wear additives are important in places where the loads are high and the speeds are low.

Extreme pressure (EP) or EP additives

Together with metallic surfaces, they form a chemical film that effectively prevents shearing. The purpose of EP additives is to increase the load capacity of lubricating oil. Transmission oils typically contain significant amounts of EP additives.

Anti-foaming additives

They prevent the oil from foaming by decreasing the surface tension, thereby helping the air bubbles to break more easily.

Pour point depressants

They prevent wax crystals formed by a drop in temperature from bonding together so that the crystallised wax cannot prevent the oil from moving.

Viscosity index improvers

Viscosity index (VI) improvers are macromolecular polymers soluble in lubricating oil that prevent the oil from thinning when temperature rises. VI improvers are important in oils that operate under greatly varying temperature conditions.

ENGINE OIL HAS SEVERAL FUNCTIONS:

- Minimises friction and wear
- Cools engine components
- Acts as a sealant for compression rings and cylinder wall area
- Neutralises combustion residues
- Keeps the engine clean

ENGINE OIL

The main function of engine oil is to keep the moving surfaces of the engine separate, thus minimising friction losses and engine wear. Oil composition must be designed to work seamlessly with the mechanical structure of the engine and be compatible with the structural and sealing materials used in the engine. It must also have good oxidation resistance and the ability to withstand high temperatures. Exhaust emission control systems also influence the design of engine oil composition.

Different technical solutions used in engines affect the properties required of the oil and, therefore, its composition. Various classification systems have been developed to describe the properties of engine oils. In addition to viscosity grades, the most common classification systems are API and ACEA. Additionally, various engine manufacturers develop their own performance classifications.

WHY DO PASSENGER AND HEAVY DUTY VEHICLES REQUIRE DIFFERENT OILS?

- In light vehicles' engines, temperatures in the compression ring area are typically higher than in heavy-duty ones. As a result, heat resistance is more important in oils for light vehicles.
- Passenger cars accumulate a relatively high number of cold starts in relation to the number of kilometres driven, and are often driven short distances. If the engine oil does not get properly heated throughout, there is a risk of what is known as engine cold sludge. Light duty vehicle oil must be able to prevent this phenomenon.
- Engines of heavy-duty vehicles burn a lot of fuel per kilometre, which also leads to a lot of oil-contaminating combustion residues. This is why the oil's cleaning properties are so important.

SAE VISCOSITY GRADES

Viscosity measures flowing characteristics of oil without regard to its other performance characteristics. Viscosity of engine oils is expressed in SAE (Society of Automotive Engineers) grades. Most of the engine oils on sale today are multi-grade oils, where viscosity is expressed as a two-part number, such as 5W-30. The number and letter combination before the hyphen indicates that the oil is suitable for low temperatures (Winter), and the number after the hyphen indicates viscosity at a high temperature of 100°C.

There are also the so-called single-grade oils, such as Teboil Power D SAE 30 in SAE 30, which have viscosity grade determined only at high temperature. These oils are nowadays mainly used in certain gearboxes and specific applications.

When determining the W grade, viscosity measurement is based on Cold Crankcase Simulator (CCS) testing. On the other hand, pumping limit temperature describes the lowest temperature at which the engine's oil pump is capable of transferring the oil in the lubricating system. It can be considered as the lowest safe temperature for cold starting. At the same time, the W classes also have a requirement for the minimum viscosity at 100°C.

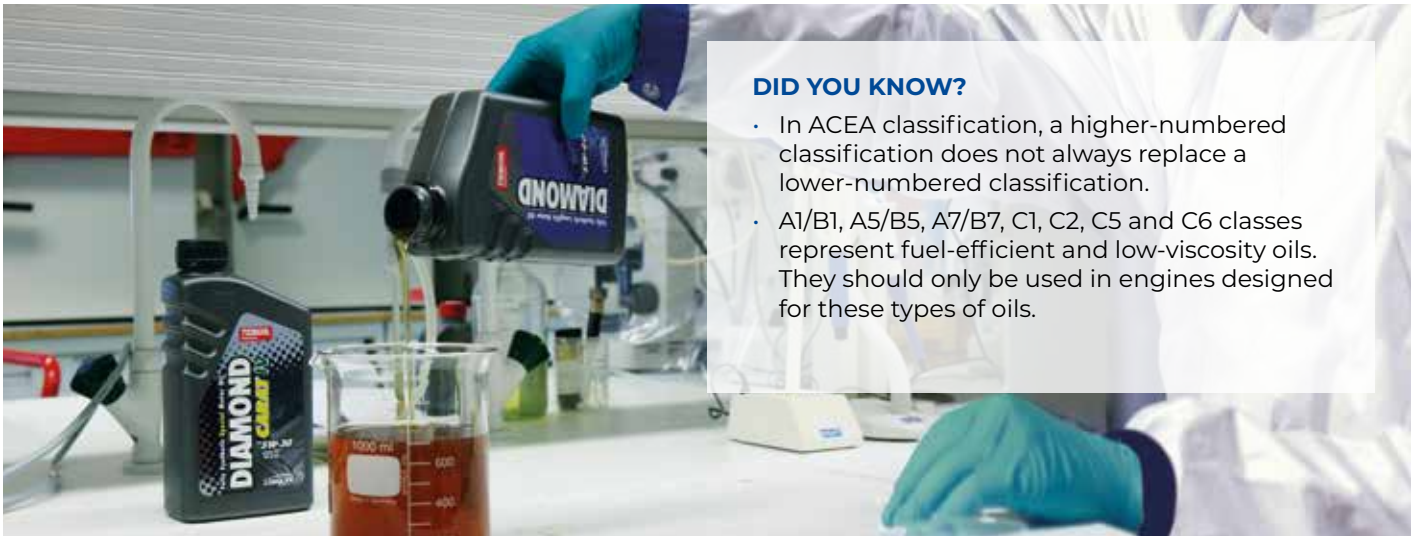
Minimum and maximum viscosity values at 100°C are specified for each category. The classification also includes a minimum value for HTHS (High Temperature High Shear Rate) viscosity. The HTHS viscosity is measured using a special measuring device in which a shearing force is applied to the oil at 150°C. This test measures the viscosity stability of the oil under extreme heat conditions.

SAE-class	CCS viscosity cP/°C	Pumping limit temperature, °C	Viscosity cSt/100°C min	max	HTHS cP***
0 W	6200/-35	-40	3.8	–	
5 W	6600/-30	-35	3.8	–	
10 W	7000/-25	-30	4.1	–	
15 W	7000/-20	-25	5.6	–	
20 W	9500/-15	-20	5.6	–	
25 W	13000/-10	-15	9.3	–	
8			4.0	< 6.1	1.7
12			5.0	< 7.1	2.0
16			6.1	< 8.2	2.3
20			6.9	< 9.3	2.6
30			9.3	< 12.5	2.9
40			12.5	< 16.3	3.5*
40			12.5	< 16.3	3.7**
50			16.3	< 21.9	3.7
60			21.9	< 26.1	3.7

*) Viscosity classes SAE 0W-40, 5W-40 and 10W-40.
**) Viscosity classes SAE 15W-40, 20W-40, 25W-40 and 40.
***) Minimum viscosity at 150°C in the HTHS test.

DID YOU KNOW?

- In the past, high heat viscosity of oil was considered beneficial because high viscosity effectively means a thicker lubricating film.
- However, modern cars have moved to lower viscosity oils because the flowing oil reduces internal friction losses in the engine, which in turn reduces fuel consumption and CO2 emissions.
- Modern engine materials and manufacturing techniques, together with advanced lubricant technology, allow the use of more fluid oils without compromising lubrication protection.
- New oils with low viscosity and fuel-saving properties should not be used in older engines.



DID YOU KNOW?

- In ACEA classification, a higher-numbered classification does not always replace a lower-numbered classification.
- A1/B1, A5/B5, A7/B7, C1, C2, C5 and C6 classes represent fuel-efficient and low-viscosity oils. They should only be used in engines designed for these types of oils.

ACEA CLASSIFICATION

The European Automobile Manufacturers' Association, ACEA, has developed a classification for engine oils that is better suited for modern vehicles and operating conditions typical for Europe. The ACEA classification divided engine oils into three main categories according to engine types: petrol engine oils (A), light-vehicle diesel engine oils (B) and heavy-duty diesel engine oils (E).

In 2004, the A and B categories were merged into a single A/B category. In addition, the new C category was introduced for light vehicle petrol and diesel engines with various exhaust gas recirculation and purification systems. C class oils are specifically designed for vehicles with modern emission control systems. These oils are so-called Low/Mid SAPS oils and contain lower levels of sulphur, phosphor, and sulphate ash as compared to conventional oils.

Light vehicle petrol and diesel engine oils

A1/B1 Fuel economy oils (low friction and low viscosity) for petrol and diesel engines of light vehicles. A1/B1 category oils are not allowed in some engines. Suitability must be checked in the vehicle's owner manual.

A2/B2 Designed for normal use and normal oil drain intervals. This classification is mainly found in older vehicles. May be replaced by A3/B3 and A3/B4 class oils.

A3/B3 Oils designed for petrol and diesel engines of light vehicles for which engine manufacturers have specified extended oil drain intervals.

A3/B4 The category is otherwise similar to A3/B3 class, but with additional requirements for direct injection diesel engines. It can be used in vehicles with A3/B3 requirements.

A5/B5 Low friction and low viscosity oils for extended drain intervals.

A7/B7 Low-friction and low-viscosity oils for extended drain intervals. Compared to the A5/B5 category, this class contains additional requirements for wear protection, turbocharger cleanliness and the ability to prevent premature ignition at low speeds.

C1 Thin fuel economy oils that comply with especially demanding Low SAPS limits.

C2 Thin fuel economy oils that comply with demanding Mid SAPS limits.

C3 Mid SAPS oils with the same SAPS level as in C2 but less demanding fuel economy requirement.

C4 Low SAPS oils that comply with especially demanding Low SAPS limits. The fuel economy requirement is equivalent to C3.

C5 Especially thin fuel economy oils that comply with demanding Mid-SAPS limits.

C6 Low-friction and low-viscosity Mid-SAPS oils for extended drain intervals. Compared to the C5 category, this class contains additional requirements for wear protection, turbocharger cleanliness and the ability to prevent premature ignition at low speeds.

Heavy-duty diesel engine oils

E4 Special oils for extended oil drain intervals for Euro 1–5 engines from most manufacturers. Not suitable for engines with particulate filters without specific instructions from the engine manufacturer.

E6 Low SAPS oil for heavy-duty engines and extended oil drain intervals. Specifically designed for European Euro 6 diesel engines with demanding exhaust after treatment systems.

E7 Especially high-performance long-cycle diesel engine oil for a wide range of diesel engines complying with Euro 1–5 requirements.

E9 Mid SAPS heavy-duty oil suitable for many Euro 6 diesel engines with demanding exhaust after treatment systems.

API SERVICE RATING OF ENGINE OILS

The API service rating of engine oils has been established and is being developed by the American Petroleum Institute (API), the American Society for Testing and Materials (ASTM), and SAE.

It determines the limit values for different parameters (such as piston cleanliness, piston rings wear) using a variety of test engines.

The API service rating of engine oils is divided into two categories: categories starting with the letter S for petrol engine oils, and categories starting with the letter C for diesel engine oils. In 2016, the new F category has been added including fuel economy oils designed for new diesel engines.

Petrol engine oils

SC, SD, SE, SF, SG and SH are old classifications that may be found in older vehicles.

SJ 1996 Introduced to meet the increasingly stringent emission and performance requirements established for engines.

SL 2001 Developed to satisfy the following requirements: improved fuel economy, better protection for catalys ers and other emission-reducing components, and the possibility of extended oil drain intervals. New tests and test limits are significantly more demand ing as compared to the class SJ.

SM 2005 Introduced to improve anti-wear protection for engines, retention of cold resistance properties over the service life and better resistance to oxidation.

SN Introduced in 2010, with stricter limit values concern ing e.g. piston cleanliness, sludge control and seal compatibility.

SP Introduced in 2020, with specific requirements on the oil's ability to prevent LSPI and distribution chain wear. Other requirements include keeping the engine and turbocharger clean, keeping the emission control system in good condition, and to be compatible with E85 fuels.

Diesel Engine Oils

CB, CC, CD, CE and CF are old classifications that may be found in older vehicles.

CF-4 Introduced in 1990, typical for supercharged diesel engines under heavy loads.

CF-2 Otherwise the same as CF-4, but for two-stroke cycle diesel engines.

CG-4 IIntroduced in 1995, meeting the requirements established for American heavy-duty diesel engines.

CH-4 A class for heavy-duty vehicle engines meeting the 1998 emission standards and designed to run on sulphur-free or low-sulphur diesel fuel.

CI-4 Introduced in 2002 for low-emission engines designed to comply with the 2004 exhaust emission standards. Intended especially for engines with exhaust gas recirculation (EGR).

CJ-4 Introduced in 2006, meeting the requirements of some (mainly American) low-emission diesel engines used for road transport purposes since 2007. Intended especially for engines running on low-sulphur fuel and possibly equipped with novel exhaust gas post-processing systems.

CK-4 Introduced in 2016. The classification continues to increase the requirements, especially for emission control systems.

Low-viscosity diesel engine oils

FA-4 New classification for thin fuel-efficient oils. The oil is suitable for use in certain engines manufactured in 2017 and beyond, which are designed to use low-viscosity oil. The composition of the oils helps the exhaust gas after treatment systems to maintain their performance.

DID YOU KNOW?

- API classification categories are backward compatible, except FA-4
- If CH-4, is required, the vehicle can use CJ-4 class oil.
- If SJ is required, then SM grade oil may be used.

2-stroke engine oils

The performance level of 2-stroke engine oils is determined by API service rating based on laboratory and engine testing. The 2-stroke oils are divided into four different API rating categories as follows:

API-TA For 2-stroke engines of mopeds, lawnmowers and other similar machines

API-TB For engines of small-power engines of motorcycles and scooters

API-TC For lubrication of 2-stroke engines used onshore in demanding conditions. It may also be used when API-TA or API-TB oil is required.

API-TD Specifically for lubrication of 2-stroke outboard engines

NOTE! API-TC and API-TD ratings are mutually exclusive, i.e. one cannot be replaced with the other.

Other classification of 2-stroke engine oil

JASO Japanese engine manufacturer's classification, with particular emphasis on reduced smoke generation or pumping characteristics of oils. JASO requirement levels are: FA, FB, FC and FD (the latter being the most stringent).

NMMA Outboard engine manufacturers' special classification. The most common classification level in the outboard engine manufacturers' recommendations is TC-W3 oils. In this classification, special attention has been paid to maintaining the cleanliness of the engine.

TRANSMISSION AND GEAR OILS

The main function of transmission oils is to minimise wear. The oil must also have the right friction properties so that, for example, synchronisers work properly and transmission changes are smooth. Contact between gears generates shear forces, and the oil must be able to reduce it. Transmission oil must also hold excellent anti-wear and pressure resistance properties. The need for pressure resistance properties is emphasised in hypoid traction gears, where there are both high surface pressures and sliding contact between teeth. Oil must also reduce the noise and vibrations generated by the movement of the gears.

DID YOU KNOW?

- Transmission and gear oils reduce wear.
- Oils must withstand the shear force generated between the gear teeth.
- The hypoid gear has both high surface pressures and a sliding contact, which requires effective additional pressure-resistant oil.
- Optimised frictional properties are a prerequisite for smooth synchronisation.

SAE viscosity grades of transmission oils

Viscosity of transmission and gear oils is expressed in SAE grades, which, like engine oils, are divided into two categories. The letter W after the number indicates that the oil viscosity has been determined under low temperatures. The viscosity must remain below 150,000 centipoise at temperatures indicated in the chart provided and is also required to meet the specified minimum requirements at 100°C. Viscosity limits for other SAE grades have been specified at 100°C.

The chart below provides viscosity limits for each category. It is important to note that viscosity grades of transmission oils are different from those of engine oils.

SAE class	Maximum temperature corresponding to 150,000 cP:n viscosity	Viscosity cSt 100°C Min/Max
70 W	-55	4,1 / -
75 W	-40	4,1 /-
80 W	-26	7,0 / -
85 W	-12	11,0 / -
65		3,8 / <5,0
70		5,0 / <6,5
75		6,5 / <8,5
80		8,5 / <11,0
85		11,0 /<13,5
90		13,5 /<18,5
110		18,5 /<24,0
140		24,0 /<32,5
190		32,5 /<41,0
250		41,0 /-

DID YOU KNOW?

- SAE viscosity grades for transmission and gear oils are determined by different criteria than for engine oils.
- If a gearbox requires GL-4 class oil, it cannot be substituted with GL-5 class oil unless specifically permitted by the gearbox manufacturer.

API SERVICE RATING

GL-1 Transmission oil that does not contain extreme pressure (EP) additives. Used in transmissions where sliding speeds of gears are low.

GL-4 Contains relatively high amount of EP additives, used in most vehicles with manual transmissions.

GL-5 Oils with a great amount of EP additives for heavy-duty applications. Used in most modern vehicles and construction machinery with hypoid gears where high speeds, high temperatures and shock peak loads are present.

FRICTION-LOCKED TRACTION GEARS

Vehicles with limited slip gears typically require oils with special additives to ensure smooth operation of the unit. Gear oils with such additives are usually marked with LS or Limited Slip (e.g. Teboil Hypoid LS 80W-90).

AUTOMATIC TRANSMISSION OILS

Today, there are several types of gearboxes that, from the driver's point of view, are similar to an automatic gearbox — there is no clutch pedal, and the gears are started by selecting the D position. Choosing the right oil may be difficult due to various brand-specific classifications.

Automatic transmission with torque converter

Most commonly, an automatic transmission refers to a structure with a torque converter followed by a gearing transmission. In these gearboxes, automatic transmission fluid (ATF) lubricates the clutches, gears and bearings of the gearbox and, just like hydraulic fluid, transmits the torque and power from the engine through the torque converter to the gearbox itself. It also acts as a gearbox coolant. It is essential for the operation of automatic transmissions that the friction behaviour of the oil remains as designed throughout the oil's service life.

Most automatic transmissions use DEXRON® OEM specifications in general. These oil classes are backward compatible, i.e. a newer class can replace an earlier, older class. Dexron III may replace the earlier Dexron II class. As a general rule, current European and Japanese automatic transmissions typically require ZF or Aisin Warner (JWS) rated transmission oils in addition to the car manufacturer's own brand-specific grades.

These oils also typically exceed most Dexron requirements due to higher performance requirements. Fully synthetic Teboil Fluid S from our range is an automatic transmission oil recommended for use in automatic transmissions from a wide variety of automotive manufacturers, with performance exceeding the requirements of various automatic transmission manufacturers.

Other types of automatic transmissions

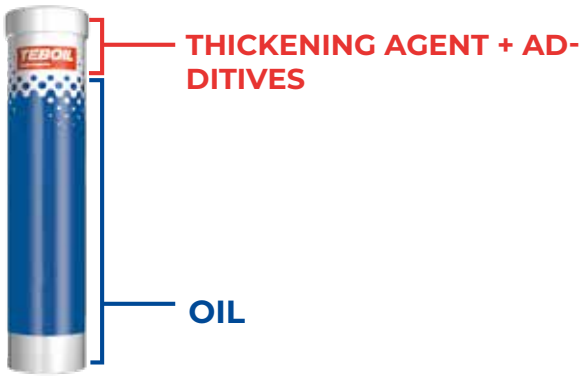
Dual-clutch transmissions (DSG, DCT) and variator-based CVT transmissions have become especially popular in passenger cars. Variator-based and dual-clutch transmissions have a different technical operating principle from traditional automatic transmissions and often require special oils that differ from traditional automatic transmission oils.

The fourth category is automated transmissions that are similar in basic design to manual transmissions, but come with automated clutch and shifting mechanics. These transmissions often use oils similar to those used in manual transmissions. These types are often referred to as robotic transmissions. These transmissions are very common in commercial vehicles.

LUBRICATION GREASES

Lubrication grease is a lubricant consisting of three main components: base oil, thickening agent, and additives. It is therefore not a thick oil, but a solid or semi-liquid formulation with a special additive. Additives are often used to improve the properties of the grease. They may be dissolved in the grease as liquids or added as solid lubricants such as graphite.

Lubrication grease = oil (80–90 %) + thickening agent + additives



Thickening agents

- Metal soaps, e.g. lithium (70 % of all manufactured soaps), calcium and sodium
- Complex mixtures of the above metals, the most common of which is lithium complex
- Inorganic thickening agents, such as bentonite clay and silica gel
- Synthetic thickening agents, such as polyurea and PTFE

Base oil

In lubrication greases, as in lubricating oils, both synthetic and mineral-based oils are used. Base oil in combination with the thickening agent determine the rheological properties of the lubrication grease. (Rheology = study of the flow of matter.)

Additives

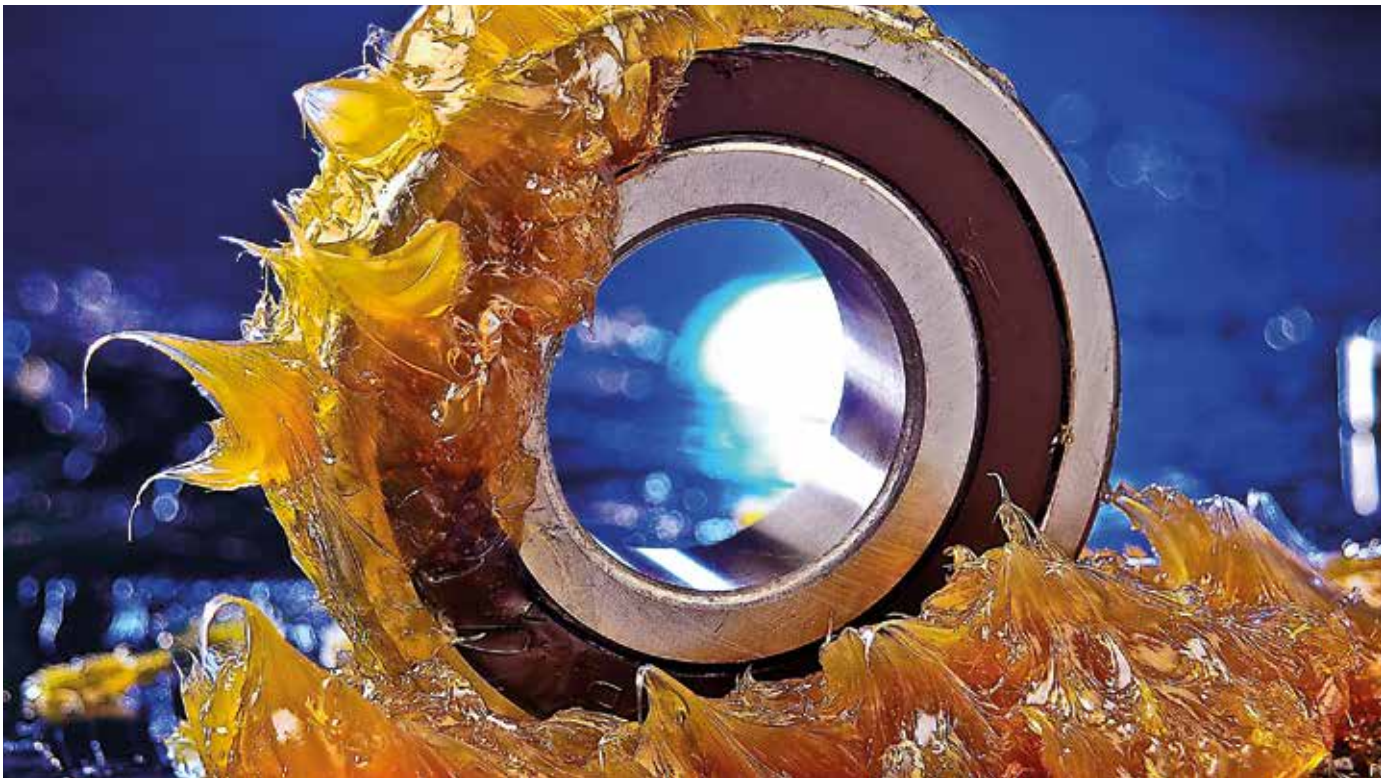
In greases, additives are used for improvement of their properties. In addition to liquids, solid lubricants such as molybdenum disulphide (MoS_2) and graphite are sometimes added to greases.

Characteristics and analysing

The hardness, or penetration, of greases is determined according to NLGI (National Lubricating Grease Institute) ratings. The measuring is carried out with a special device, where a cone is allowed to sink for five seconds into grease at a temperature of +25 degrees. The penetration depth is measured and expressed in 1/10 mm.

In most cases, a point is made whether it is “worked" or “non-worked” penetration. The difference between these values indicates how well the grease can bear mechanical load. The smaller the difference, the more the grease is resistant to mechanical stress.

On the basis of penetration, greases are divided into NLGI classes ranging from 000 to 6. The greater the number indicating the class, the harder is the grease. Typically, NLGI class 2 greases are used for bearings and pivots.



Dropping point

The temperature at which oil begins to separate from thickening agent.

Lubricating properties

The lubricating properties and load-bearing capacity of grease are equally dependent on the thickness of the base oil and the behaviour of the thickening agent in boundary lubrication conditions. Anti-wear and EP properties are measured by the following known tests, for example:

- SKF bearing tests, e.g. SKF R2F
  (includes, among other things, determination of the grease's highest allowed operating temperature)
- Timken EP test
- Four-ball test
- Almen EP test

Pumpability

High pumpability is an essential feature for central lubrication systems, especially in cold conditions. The grease must withstand loads caused by central lubrication without separation of the oil from the thickening agent. For example, Safematic has developed a grease pumping test to determine the lowest operating temperature of each grease. SKF (Safematic) updates and publishes a catalogue of tested greases.

Corrosion resistance

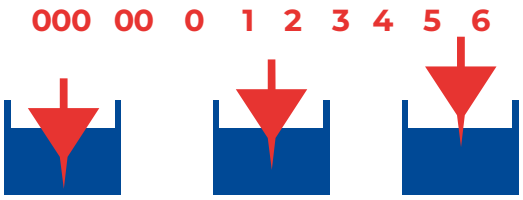
For example, SKF Emcor test, where the grease's ability to prevent bearing wear surfaces from corrosion in the presence of water.

Water resistance

The Water Wash Out Test is used to assess how well the grease remains on the lubrication target in the presence of flowing water. The result is the percentage of washed-out grease.

NLGI hardness ratings

NLGI number	Penetration 1/10 mm
000	450-475
00	400-430
0	355-385
1	310-340
2	265-295
3	220-250
4	175-205
5	130-160
6	85-115



Miscibility according to the thickener

	Lithium	Lithium-Complex	Calcium	Calcium-complex	Bentonite Microgel	Sodium	Calcium-sulphonate-complex
Lithium	✔	✔	✔	—	—	—	✔
Lithium-complex	✔	✔	✔	✔	—	—	✔
Calcium	✔	✔	✔	—	✔	—	✔
Calcium-complex	—	✔	—	✔	—	—	—
Bentonite Microgel	—	—	✔	—	✔	—	—
Sodium	—	—	—	—	—	✔	—
Calcium-sulphonate-complex	✔	✔	✔	—	—	—	✔

✔ = suitable — = not suitable

Miscibility table of the grease is indicative

DID YOU KNOW?

- Solid lubricating additives, e.g. molybdenum disulphide and graphite contained in lubricating greases, are generally not suitable for use in rolling bearings. Greases containing solid lubricating additives are suitable for various types of sliding surfaces, ball joints of shoulder pins and pin bearings.

HYDRAULIC OILS

In a hydraulic system, the basic function of oil is to transmit pressure, force and motion from the pump to the cylinder. At the same time, however, oil has many other functions. It lubricates system components and protects them against corrosion and rust. It also balances temperature differences in the system.

Required properties of hydraulic oils

- Correct viscosity
  - sufficiently thin at start-up temperature
  - sufficiently thick at operating temperature
- Stable viscosity
- Anti-wear properties
- Anti-corrosion properties
- Good water separation
- Non-foaming and good deaeration
- Oxidation resistance properties
- Gasket-friendliness

Choosing the right hydraulic oil

The right choice of oil can make a significant difference to the reliability and lifetime of your equipment. Different hydraulic systems and operating conditions place different demands on the oil. If the equipment is operated continuously in several shifts, the oil's properties are more important for shear resistance, as is often the case in industrial machinery. On the other hand, for example, vehicle-mounted load lifters are often used intermittently. It is then important that the oil retains its liquid form even at cold temperatures.

The correct viscosity is, therefore, the starting point for the selection of hydraulic oils. Therefore, the most important criterion in the selection of hydraulic oils is correct viscosity.

Optimum viscosity

In order to prevent cavitation and ensure minimal flow resistance, the oil's viscosity should be as low as possible, but at the same time high enough to ensure pump lubrication.

Minimum and maximum viscosity

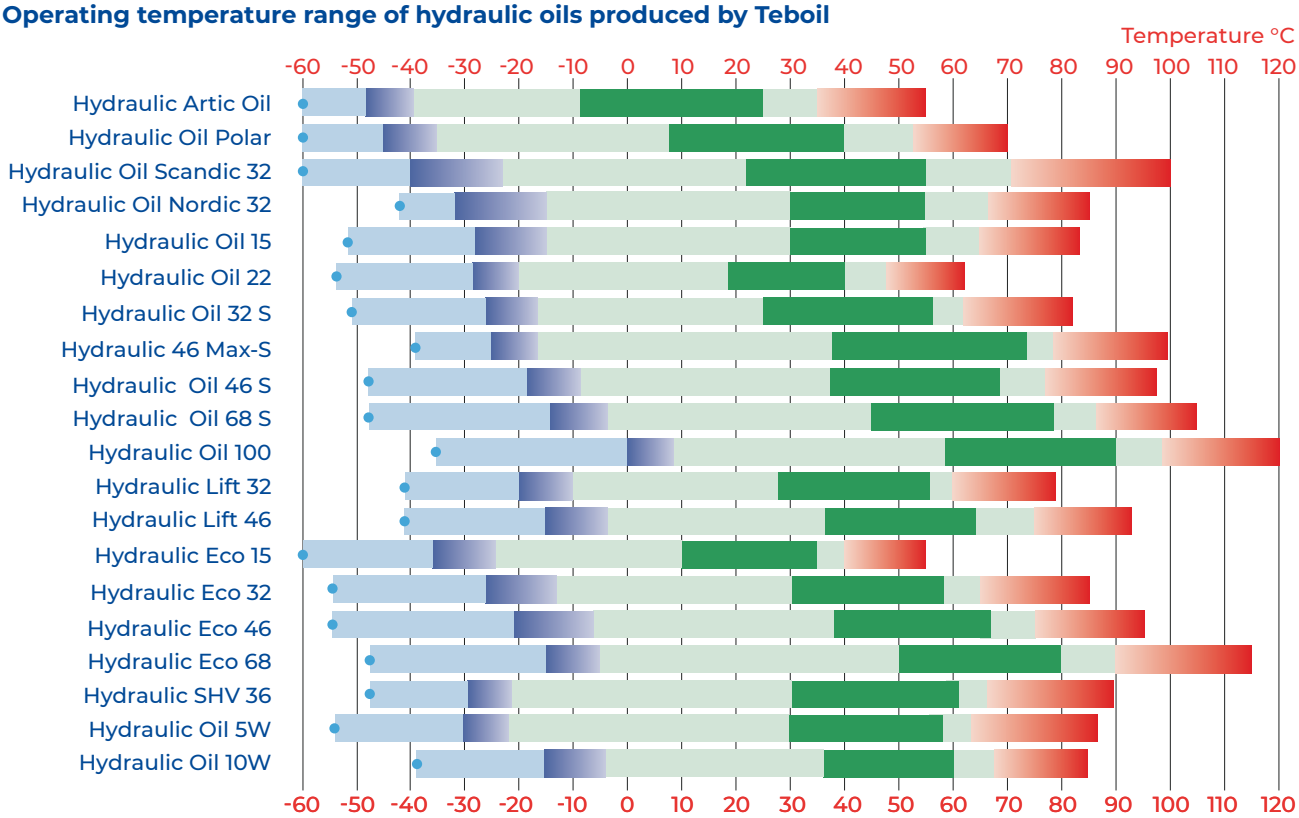
As the oil heats up, the minimum viscosity allowed for the system may be reached. Viscosity at its minimum is so low that the oil film between moving surfaces reduces critically and metal begins to scrub metal, accelerating wear and tear.

At low temperatures, the oil thickens and the maximum viscosity of the system may be reached, which means that the pump can no longer pump the oil.

Typical viscosity limit values

	Highest start-up viscosity at operating [mm²/s]	Minimum viscosity temperature [mm²/s]
Piston pumps	500–1000	10–15
Vane pumps	500–1000	10–20
Gear pumps	800–1600	10–20

Operating temperature range of hydraulic oils produced by Teboil



- Pour point
- Minimum outdoor temperature range — Ambient temperature range at which the oil is still fluid
- Minimum starting temperature — Viscosity 500–1600 mm²/s: pump can be started carefully without load
- Optimum operating temperature — Viscosity 20–50 mm²/s ideal operating conditions
- Maximum operating temperature — Viscosity 10–20 mm²/s: pump can only be used temporarily and for short periods of time

Note: These values are guideline only. Please refer to the manufacturers' manuals for more detailed instructions.

ISO VG viscosity classification

ISO 3448 classification is used for hydraulic and industrial oils. The classification consists of 18 viscosity categories. The numerical value (2–1500) indicates the kinematic viscosity of the oil at 40°C in centiStokes mm²/s (cSt). The lowest allowed variation limit of viscosity is 10 % of the nominal value of each grade.

Teboil's hydraulic and lubricating oils are designed to meet the requirements of the latest technology. Our product development is based on the latest knowledge of lubrication technology. The names of Teboil's hydraulic and lubricating oils include a number that indicates the ISO VG viscosity grade of the product.

ISO VG class	Average viscosity in mm²/s /40°C, variation limits ± 10%
ISO VG 2	2,2
ISO VG 3	3,2
ISO VG 5	4,6
ISO VG 7	6,8
ISO VG 10	10
ISO VG 15	15
ISO VG 22	22
ISO VG 32	32
ISO VG 46	46
ISO VG 68	68
ISO VG 100	100
ISO VG 150	150
ISO VG 220	220
ISO VG 320	320
ISO VG 460	460
ISO VG 680	680
ISO VG 1000	1000
ISO VG 1500	1500

- ISO VG classification indicates viscosity at 40°C.
- When choosing an oil for outdoor use, pay attention to the viscosity index and pour point.

Classifications

In addition to the correct viscosity, equipment manufacturers also require other classifications that determine the oil's performance. The most typical classifications are DIN 51524 and SS 15 54 34.

DIN 51524 Part 2 (HLP) applies to hydraulic oils with additives designed for modern high-pressure hydraulic systems with insignificant temperature fluctuations. They are typically used in industrial hydraulic systems operating indoors.

DIN 51524 Part 3 (HVLP) applies to hydraulic oils with additives designed for modern high-pressure hydraulic systems operating under varying temperature conditions. The oil's viscosity index must be 140 or higher. They are typically used in hydraulic systems in mobile equipment.

SS 15 54 34 is a Swedish standard for hydraulic oils that takes into account the corrosion resistance properties of the oil, the oil's performance in wet conditions (hydrolytic stability), as well as its cold temperature properties and possible biodegradability.

For example: SS 155434 AAV environmentally acceptable

A = Highest requirements for oxidation resistance (B and C indicate lower requirements for oxidation resistance)

A = Highest requirements for hydrolytic stability (lower requirements for hydrolytic stability in B and C)

V = Meets the cold temperature requirement limits set by the classification (M indicates no limits for cold temperature requirement)

Environmentally acceptable = meets the biodegradability requirements of the classification.

Special applications of hydraulic oils

Engine oil is generally not recommended for use in hydraulics systems since, as compared to hydraulic oils, it has poor water separation properties. In addition, single grade engine oils have a narrow operating temperature range and most multi-grade engine oils contain viscosity index improvement additives not designed for hydraulic use.

However, some equipment manufacturers recommend the use of engine oil-based fluids in their hydraulic systems. There are special hydraulic oils for this purpose marked similarly to engine oils (Teboil Hydraulic Oil 5W and 10W), but, unlike ordinary engine oils, they have better performance characteristics within a wide temperature range and low shearing.

In agricultural vehicles and some other types of machinery, it is typical that the same oil is used not only in the hydraulic system but also in the mechanical transmission and final drive. In such equipment, the so-called UTTO (Universal Tractor Transmission Oil) is often used. Products from Teboil 's Wetol range are specifically designed for such machines. In slightly older agricultural vehicles, it is also possible to use STOU (Super Tractor Oil Universal) type oil in the hydraulic system, such as those from the Teboil Monitra range.

Some applications may require biodegradable hydraulic oils, for example, for environmental reasons. Teboil Hydraulic Eco oils are made from synthetic esters, therefore they hold excellent technical properties. Vegetable oil-based oils are also available on the market, but with substantially reduced technical properties. It should also be noted that it is not recommended to blend vegetable oil-based oils with other oils.

Cleanliness, applications and storage

Cleanliness of the hydraulic fluid is vital for the hydraulic system. According to manufacturers, more than 70 % of the equipment damage is caused by impurities. Hydraulic systems should always be filled by pumping, not pouring. This way, possible impurities that may have accumulated on top of the container are kept out of the system. The filling should be carried out through a filter, as the purity of the oil in the container is rarely sufficient for demanding equipment.

Lubricant packages should be stored so as to prevent ingress of impurities and water. Barrels, for example, are best stored on their side or upside down. This prevents water from accumulating on top of the barrel and being sucked through the plug by any temperature and pressure fluctuations. Storage instructions apply to all lubricants.

STORAGE AND HANDLING OF LUBRICANTS

Lubricant packages should be stored so as to prevent ingress of impurities and water. Barrels, for example, are best stored on their side or upside down. This prevents water from accumulating on top of the barrel and being sucked through the plug by any temperature and pressure fluctuations.

It is recommended that lubricating greases are stored at temperatures above 0°C. When transporting and storing oils, it is necessary to adhere to the environmental protection principles and instructions/regulations by officials.

Disposal of oil waste

Used oil is hazardous waste that should be delivered to a hazardous waste facility for proper treatment. Under any circumstances used lubricants should not be discharged into the environment or the sewage system. Used lubrication oils can be classified as follows:

- clear waste oils, including hydraulic, transmission and gear lubrication oils
- black waste oils, engine oils
- water-based waste oils with a water content of more than 10 %
- vegetable oils
- other residual petroleum products, including machining fluids.

Different types of used lubrication oils can be used in different ways, which is why they should be collected separately. This will help promote the recovery of waste oil and reduce our own waste bill from used oil waste. In Finland, there are several companies specialising in the collection of used lubrication oils, which take care of their further use and disposal in accordance with regulations from the environmental authorities.

Used barrels that are in good condition can usually be re-used, provided that they are adequately cleaned and prepared. Barrel repair facilities accept barrels containing oil residues. Any barrels that cannot be repaired and do not contain hazardous substance residues should be delivered to a scrapping facility local government authorities offer advice on matters concerning the treatment of oil residues.

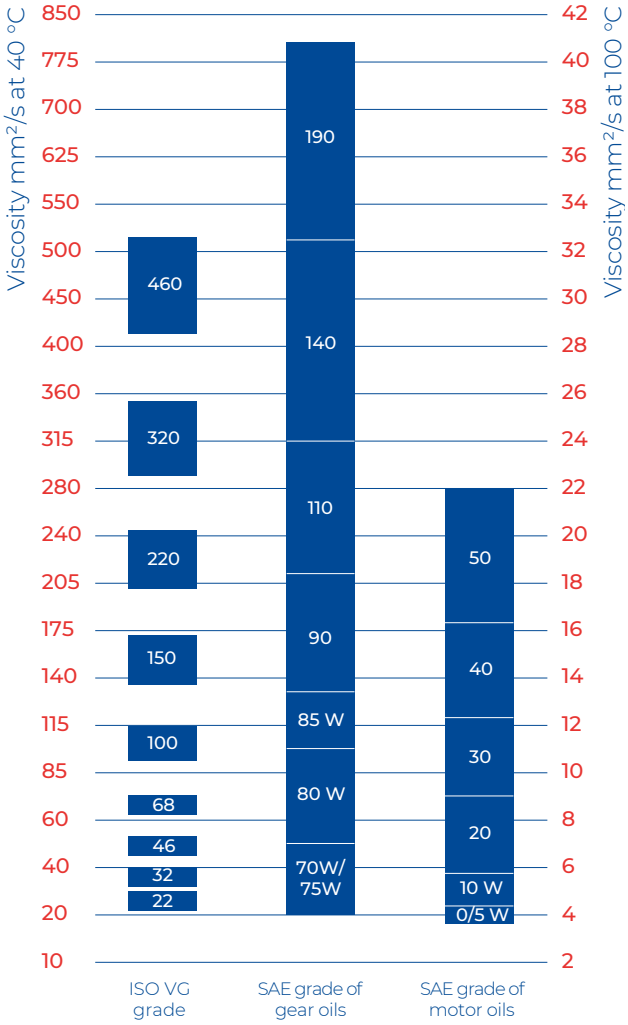
Reference charts of viscosity values

Reference chart of viscosity values

mm²/s (cSt)	°E	SUS	R.I.
2	1,12	32,6	30,4
4	1,31	39,2	35,3
6	1,48	45,6	40,6
8	1,65	52,1	46,1
10	1,83	58,9	51,9
12	2,02	66,0	58,0
14	2,22	73,6	64,5
16	2,34	81,3	71,2
18	2,65	89,4	78,1
20	2,88	97,8	85,2
24	3,3	115	100
28	3,8	133	116
32	4,3	150	131
36	4,8	168	147
40	5,4	186	164
44	5,9	204	180
48	6,4	223	196
52	6,9	241	212
56	7,4	260	228
60	8,0	278	244
65	8,6	301	265
70	9,3	324	285
75	9,9	348	305
80	10,6	371	325
85	11,2	394	345
90	11,9	417	366
95	12,6	440	386
100	13,2	464	406
110	14,5	510	447
120	15,8	556	487

mm²/s (cSt)	°E	SUS	R.I.
130	17,2	603	528
140	18,5	649	568
150	19,8	695	609
160	21,1	742	650
170	22,4	788	690
180	23,8	834	731
190	25,1	881	771
200	26,4	927	812
220	29,0	1020	893
240	31,7	1112	974
260	34,3	1205	1056
280	37,0	1298	1137
300	39,6	1390	1218
340	44,9	1576	1380
380	50,2	1761	1543
420	55,4	1947	1705
460	60,7	2132	1868
500	66,0	2317	2030
540	71,3	2503	2192
580	76,6	2688	2355
620	81,8	2874	2517
660	87,1	3059	2680
700	92,4	3245	2842
750	99,0	3476	3045
800	105,6	3708	3248
850	112,2	3940	3451
900	118,8	4172	3654
950	125,4	4403	3857
1000	132,0	4635	4060

Viscosity value comparison diagram



mm²/s = kinematic viscosity (=centistoke cSt)

°E=Engler degree

SUS= Saybold Universal second

R.I. = Redwood 1 second

N.B. Viscosities must always be compared at the same temperature.

Viscosity-temperature diagram

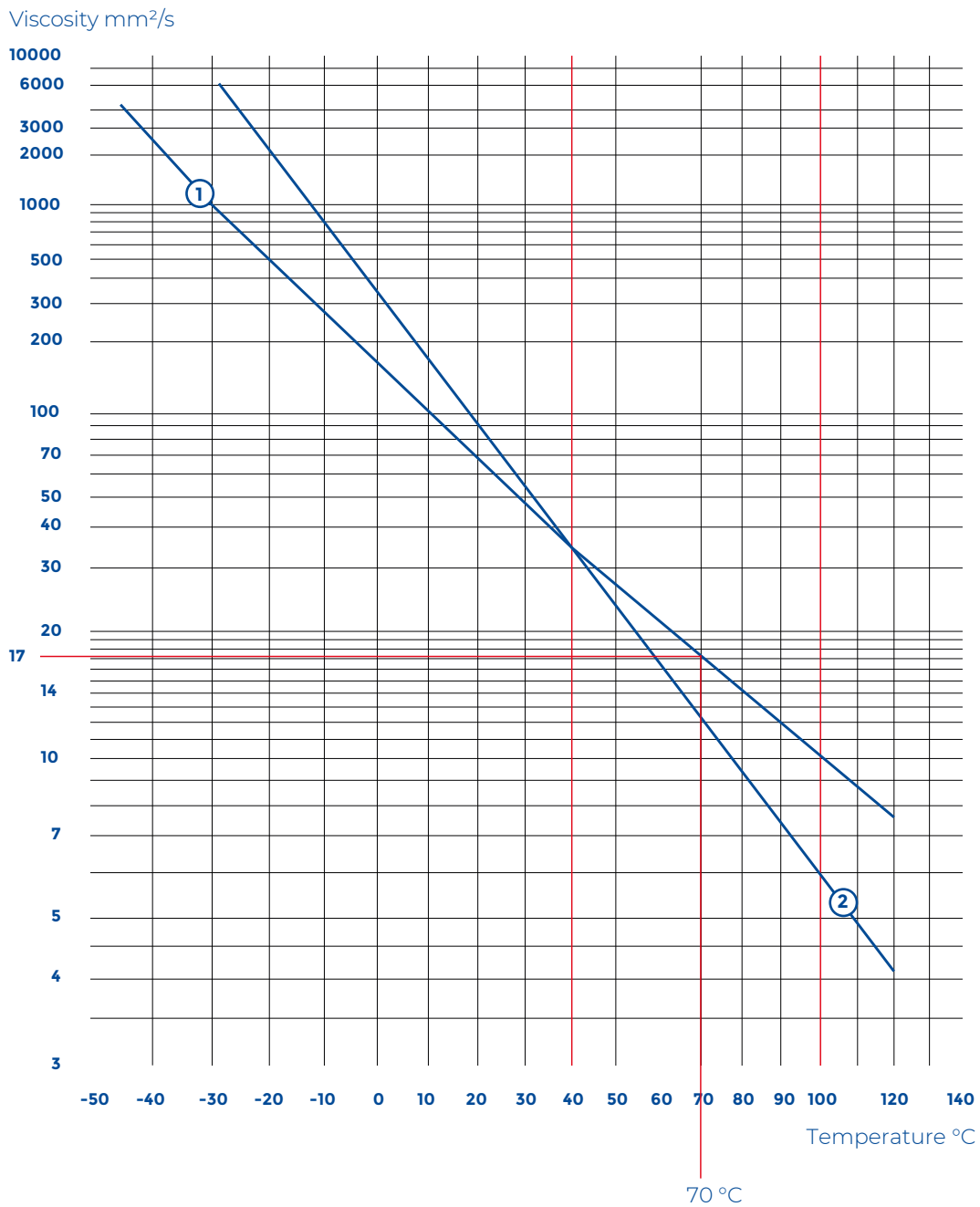
How to use the diagram:

The diagram can be used to determine the viscosity of the oil at different temperatures. Viscosities of the oil at two different temperatures are marked in the diagram. The line crossing the points describes the change of viscosity according to the temperature. Viscosity of the oil at any temperature can thus be estimated. In general, viscosity diagrams use 40°C and 100°C , which can also be found in the technical charts of this catalogue.

Example of using the diagram:

Teboil Hydraulic Oil Scandic 32 (1):

- viscosity at 40°C is 34 cSt
- viscosity at 100°C is 10 cSt
- the graph shows viscosity of the oil at 70°C
- viscosity of any oil at the desired temperature can be determined in a similar way



Exemplary graphs:

(1) Teboil Hydraulic Oil Scandic 32, viscosity index 305
(2) Teboil Hydraulic Oil Lift 32, viscosity index 147

TEBOIL LUBRICANT PACKAGES

Teboil lubricants come in a variety of different packaging. The product number contains six digits, the first four indicating the product and the last two indicating the size of the packaging.

Small packages are supplied by the batch of sales.

Package size	250 ml	500 ml	1l	4l	400 g	410 ml
Package code	60	10	52	54	62	30
Quantity sold (pcs)	12	12	12	4	12	12

Larger packages can be ordered individually. Barrels are filled at the lubricant production facility according to the specific weight of the product based on either 170 kg or 180 kg, resulting in a barrel of approximately 200 litres. Various products are also available in bulk deliveries by tanker truck to a dedicated tank in any part of Finland.

Package size	10l	20l	20l	170 kg	180 kg	1000l
Package code	21	22	23	45	44	49

Innovative packaging for engine oil for professional use

Some products in our Teboil Diamond range are available in innovative packaging. It comes as an inner bag equipped with a dispensing tap underneath the cardboard shell. When empty, the plastic inner bag can be easily removed, and the cardboard shell can be recycled.

Tap packaging also comes with a shelving solution developed for smooth and space-saving storage of packaging and measuring jugs in the repair shops.

100%
Recyclable packaging

90%
Less plastic

90%
Savings in waste costs

ENGINE OILS FOR CARS AND VANS

Teboil Diamond Carat FE 0W-20

A fully synthetic fuel economy engine oil developed for engines requiring especially low-viscosity oil. Typical applications include: petrol and diesel engines produced by Volvo since 2014, as well as certain Toyota models. Especially low viscosity reduces internal friction in the engine, enabling better fuel economy and lower CO_2 emissions. High-quality base oils and additives provide the engine with effective protection against wear and tear. Please check your vehicle's owner manual to confirm suitability.

SAE	Product No.	1l	4l	20l	-200l
0W-20	**0303**	52	54	23	45

Specifications: ACEA C5; Volvo VCC RBS0-2AE; Suitable for use: API SL, SN, ILSAC GF-5

Teboil Diamond Carat 0W-30

A high-quality, fully synthetic fuel economy engine oil for demanding year-round use. It reduces friction and provides excellent engine protection. This type of ACEA A5/B5 engine oil is a requirement for many Volvo engines manufactured between 2005-2013. It is also an excellent choice for many engines from other manufacturers that require this type of viscosity and ACEA A5/B5 specification. Please check your vehicle's owner manual to confirm suitability.

SAE	Product No.	1l	4l	-200l
0W-30	**0301**	52	54	45

Specifications: ACEA A5/B5; API SL/CF

Teboil Diamond Carat III 5W-30

Premium fully synthetic engine oil for low-emission engines. Diamond Carat III meets the latest requirements for engine oils from various car manufacturers. It is recommended for use in Audi, Volkswagen, Škoda and Seat engines. It retains its properties even in case of MB and BMW extended oil change intervals.

SAE	Product No.	1l	4l	20l	-200l
5W-30	**0307**	52	54	23	45

Specifications: ACEA C3; API SN; VW 504.00/507.00; BMW LL-04; MB 229.31, 229.51; Suitable for use: ACEA A3/B4, C2

Teboil Diamond Carat IV 5W-30

A fully synthetic oil especially developed for Nissan, Renault, Dacia and Mitsubishi engines. Advanced additive technology protects the engine and particle filter as well as allows for extended oil drain intervals. This oil is also an excellent choice for other engines requiring ACEA C4 specification class.

SAE	Product No.	1l	4l	20l	-200l
5W-30	**0308**	52	54	23	45

Specifications: ACEA C4; Renault RN 0720; MB 226.51, 229.51

Teboil Diamond Carat V 0W-20

Top quality, fully synthetic, fuel-saving engine oil, especially developed for the latest generations of Volkswagen, Audi, Škoda, Seat and Porsche engines. It can also be used in other vehicles where an engine oil according to ACEA C5 in combination with a viscosity class of SAE 0W-20 is required.
The advanced additive technology in combination with polyalphaolefin (PAO) as a base oil guarantees the best possible performance over the entire maintenance interval.

SAE	Product No.	1l	4l
0W-20	**0310**	52	54

Specifications: VW 508.00/509.00; Porsche C 20; ACEA C5

Teboil Diamond R 5W-30

A high-quality fully synthetic engine oil, especially developed for newer Renault high-performance petrol and diesel engines, which require the specification RN17. It is also suitable for engines from other manufacturers that require ACEA C3 specification. It can be used in engines with RN 0700/0710 performance oil, recommended by the car manufacturer.

SAE	Product No.	20l
5W-30	**0325**	23

Specifications: Renault RN17; ACEA C3

Teboil Diamond Eco-B 5W-20

A fully synthetic, fuel economy and energy-conserving oil especially developed for Ford EcoBoost engines, that require the Ford M2C948-B. It is also suitable for use in engines from many other manufacturers that require an ACEA C5- or API SN-SAE 5W-20 engine oil.

SAE	Product No.	1l	4l
5W-20	**0305**	52	54

Specifications: API SN, SM, SL; ACEA C5; ILSAC GF-5; Ford WSS-M2C948-B; STJLR.03.5004; Fiat 9.55535-CR1

Teboil Diamond FS 5W-30

A fully synthetic engine oil with reliable lubrication, developed especially for engines manufactured by Ford. Advanced additive technology protects effectively the engine against wear and tear, while tailored viscosity properties allow lower fuel consumption.

SAE	Product No.	1l	4l	~200l
5W-30	**0306**	52	54	45

Specifications: ACEA A5/B5, A1/B1; API SL/CF; Ford WSS-M2C913-D, 913-C, 913-B, 913-A; Renault RN 0700

Teboil Diamond 5W-30

A high-performance, fully synthetic engine oil for modern engines where the use of 5W-30 viscosity grade oil is recommended. It provides excellent wear protection even under challenging operating conditions as well as long drain intervals. It is intended for use in petrol and diesel engines in accordance with their specifications, especially in the most powerful petrol engines from BMW and Mercedes-Benz.

SAE	Product No.	1l	4l	~200l
5W-30	**0304**	52	54	45

Specifications: ACEA A3/B4; API SL/CF; GM-LL-A/B-025; BMW LL-01; MB 229.3, 229.5; VW 502.00/505.00

Teboil Diamond Diesel 5W-40

A fully synthetic engine oil with excellent cleaning properties, tailored for diesel engines of all ages in passenger vehicles. The oil retains its optimum lubricating properties even under heavy driving conditions and is perfectly suitable for diesel engines with pump unit injectors and many engines with particle filter and catalytic converter.

SAE	Product No.	1l	4l	10l	-200l
5W-40	**0312**	52	54	21	45

Specifications: ACEA C3; API SN, SM/CF; BMW LL-04; MB 229.31, 229.51; VW 505.00/505.01; Ford M2C917-A; Suitable for use: ACEA A3/B4; dexos 2

Teboil Diamond Plus 0W-40

A fully synthetic engine oil for petrol and diesel engines in cars and vans operating in the most demanding climatic conditions. Excellent cold resistance properties (0W) ensure safe starts on frosty mornings. It retains its properties even in case of extended oil drain intervals and is suitable for various engines with modern particle filters and catalytic converters. Owing to its SAE 0W-40 viscosity class, Diamond Plus ensures immediate oil flow in the engine even in Arctic weather conditions and reliable lubrication even under extremely high temperatures and under heavy load.

SAE	Product No.	1l	4l	-200l
0W-40	**0315**	52	54	45

Specifications: ACEA C3; API SN, SM/CF; BMW LL-04; MB 229.31; VW 502.00/505.00; Suitable for use: ACEA A3/B4, dexos 2

Teboil Diamond 5W-40

Versatile fully synthetic engine oil for extreme and demanding use in car and van engines. It provides excellent engine protection from start-up, maintaining its lubrication and protective properties even in case of extended oil drain intervals. The most comprehensive performance ratings in its class ensure suitability for engines from various car manufacturers.

SAE	Product No.	1l	4l	20l	-200l
5W-40	**0318**	52	54	22	45

Specifications: ACEA C3; API SN, SM/CF; BMW LL-04; MB 229.31; VW 502.00/ 505.00; Suitable for use: ACEA A3/B4; dexos 2

Teboil Diamond eXtreme 10W-60

A highly refined, fully synthetic special oil for high-powered, four-stroke engines. Diamond eXtreme is the right choice for the protection against extreme temperatures, friction and wear. Its properties are tailored for racing or street use requiring extreme performance. Due to its higher temperature viscosity, Diamond eXtreme copes better with fuel dilutions and high temperatures than conventional engine oils. Enhanced additives protect the engine from wear even under the most extreme conditions.

SAE	Product No.	4l
10W-60	**0309**	54

Specifications: API SN, SL/CF; Suitable for use: ACEA A3/B4; BMW-, Porsche-, VW- and MB-performance level

For detailed information and specifications, please refer to the manufacturer's user manual.

Teboil Gold S 5W-40

A high-quality, synthetic engine oil for demanding all-year-round use. It is suitable for most petrol and diesel engines of cars and vans. Gold S 5W-40 is also an excellent choice for older engines.

SAE	Product No.	1l	4l	20l	-200l
5W-40	**0316**	52	54	22	45

Specifications: API SN, SL/CF; ACEA A3/B4; BMW LL-98, LL-01; MB 229.3, 229.5; GM-LL-A/B-025; VW 502.00/ 505.00; Renault RN 0700/0710

Teboil Silver 10W-40

A semi-synthetic engine oil for cars and vans. It is also an excellent choice for older cars. This oil may be used in cars with catalytic converters. It is especially good for recreational vehicles and classic cars.

SAE	Product No.	1l	4l	-200l
10W-40	**0323**	52	54	44

Specifications: ACEA A3/B4; API SL/CF; BMW LL-98; MB 229.1; VW 502.00/505.00

Teboil Silver Classic GT-S 20W-50

Teboil Silver Classic GT-S 20W-50 is a high-performance engine oil for recreational vehicles and racing cars. Additives with excellent anti-wear properties and thicker base oil provide reliable protection even under harsh conditions. An additive that expands the seals help to prevent oil leaks. It is also an excellent choice for air-cooled engines as well as in motorcycle engines and their wet-clutch transmission.

SAE	Product No.	4l
20W-50	**0324**	54

Specifications: API SH, SG/CF; JASO MA

Teboil Moniaste 10W-30 ja 15W-40

Teboil Moniaste is mainly intended for petrol and diesel engines in older cars and vans without catalytic converters. Due to its thick base oil, Moniaste 15W-40 is especially suitable for engines with increased oil consumption and summer operations.

SAE	Product No.	1l	4l
10W-30	**0326**	52	54
15W-40	**0328**	52	54

Specifications: API SF/CD

HEAVY-DUTY LUBRICATING OILS

DID YOU KNOW?

Heavy-duty engine oils are characterised by their ability to neutralise combustion residues, as engines consume a lot of fuel.

Teboil Super XLD EEV

Fully synthetic, high-quality and high-performance diesel engine oils for heavy duty operation, with the goal of maximum performance reliability. These oils are designed especially for the Euro 6 and 5 engines of Volvo, MAN and Mercedes-Benz, but they are also suitable for many other brands equipped with exhaust gas after treatment systems. SAE 5W-30 oil helps reduce fuel consumption and environmental impact.

SAE	Product No.	20l	-200l	1000l
5W-30	**0373**	22	45	49
10W-40	**0348**	22	45	49

Specifications: API CJ-4, CI-4; ACEA E6, E7, E9; MAN M3677 (5W-30), M3477; Volvo VDS-4, VDS-3; MB 228.51, 228.31; JASO DH-2; CAT ECF-3; Renault RLD-3; Scania LA, LDF-4 (5W-30); Iveco 18-1804 TLS E6 (5W-30) / E9 (10W-40); Cummins CES 20081; Mack EO-O Premium Plus; MTU Type 3.1; Deutz DQC IV-10 LA

Teboil Super XLD-3

A fully synthetic diesel engine oil especially developed for extended drain intervals of Scania's Euro 6 diesel engines. Thanks to its comprehensive properties, it is also suitable for engines from many other manufacturers. Due to its highly effective additives, this oil protects the engine against wear and tear while ensuring engine cleanliness, preventing the formation of sludge deposits from increased soot loads.

Specifications: API CF; ACEA E4, E7; Scania LDF-3, LDF-2; MB 228.5; MAN M3277; Volvo VDS-3; Renault RXD, RLD-2; Deutz DQC IV-05/10; MTU Type 3

SAE	Product No.	20l	-200l	1000l
10W-40	**0370**	22	45	49

Teboil Super HPD ECV

High-quality engine oils for heavy-duty diesel engines from a wide range of manufacturers. These oils are designed to be compatible with the latest exhaust gas post-processing systems. They provide highly reliable protection against engine wear. They are also an excellent choice for older generation engines.

SAE	Product No.	20l	-200l	1000l
5W-40	**0302**	22	45	-
10W-40	**0343**	22	45	49
15W-40	**0369**	22	44	49

Specifications:: API CK-4, CJ-4, CI-4 plus, CH-4; ACEA E9, E7; Volvo VDS-4.5, VDS-4, VDS-3; MB 228.31; MAN M3575; CAT ECF-3, -2, -1a; Renault RLD-4, RLD-3; Cummins CES 20081, 20086; JASO DH-2; MACK EO-O Premium Plus, MACK EOS-4.5

Teboil Super HPD

Teboil Super HPD oils for heavy-duty, high-performance diesel engines provide excellent protection against bore polish and wear of moving parts. Their ability to keep the engine clean ensures reliable lubrication even with long oil change intervals.

SAE	Product No.	10l	20l	-200l	1000l
10W-30	**0364**	21	22	44	–
15W-40	**0365**	21	22	44	49
10W-40	**0362**	–	22	45	49

Specifications:: API CI-4, CH-4, CG-4, CF-4; ACEA A3/B4, E7; MB 228.3; MAN M3275; Volvo VDS-3, VDS-2; CAT ECF-2, -1a; Global DHD-1; Renault RVI RLD; JASO DH-1; MTU 2; Cummins CES 20071, -2, -6, -7, -8

Teboil Power Plus

High-performance diesel engine oils for heavy-duty vehicles for demanding all-year-round use. These oils comprehensively meet the requirements of the slightly older transport and agricultural vehicles, and reliably protect the engine against wear while providing lubrication throughout the oil change interval.

SAE	Product No.	10l	20l	-200l	1000l
10W-30	**0342**	21	22	44	49
15W-40	**0350**	21	22	44	49

Specifications: API CH-4, SJ; ACEA A3/B3, E7; MB 228.3; Volvo VDS-2; MAN M3275; Cummins CES 20076; MTU Type 2

Teboil Power D

SAE 10W-30 and 15W-40

Engine oils for year-round use in heavy-duty diesel engines – an excellent choice if there is no need to meet the latest specifications.

Specifications: API CG-4, SJ/CF; ACEA A3/B2, E2; MB 228.1; Volvo VDS; Mack EO-L

SAE 10W, 20W-20, 30 and 40

Heavy-duty diesel engine oils for applications that require the use of single-grade engine oil. These oils may be used e.g. in 2-stroke diesel engines, hydraulic and transmission systems where the manufacturer recommends the use of single-grade engine oil.

Specifications: API CG-4, CF-4, CF-2, CF, SG; ACEA E2; MB 228.0; MIL-L-2104E; Allison C4

SAE	Product No.	20l	-200l	1000l
10W-30	**0371**	22	44	-
15W-40	**0372**	22	44	-
10W	**0337**	22	44	49
20W-20	**0339**	-	44	-
30	**0340**	22	44	-
40	**0338**	22	44	-

UNIVERSAL OILS FOR AGRICULTURAL MACHINES

Teboil Monitra Super

Teboil Monitra Super 10W-40 is a high-performance multi-purpose oil for farming machines (STOU) that provides reliable lubrication within a wide temperature range and helps reduce oil consumption. It is suitable for a wide range of farming machinery engines, transmissions, gear units and hydraulic systems, including various CVT transmissions. Because of carefully designed friction properties, Monitra Super 10W-40 is also suitable for various power take-off clutches and wet brakes.

Specifications: API CG-4, CF-4, CF/SF; GL-4/GL-5; ACEA E2; Massey Ferguson M1127, M1135, M1139, M1144, M1145; Case-IH MS 1207; Ford M2C 86A, 134C/D, 159B; John Deere J20A/C, J27; Allison C4; CAT TO-2; ZF 06B/C/R; 07B; MIL-L-2104D

SAE	Product No.	10l	20l	-200l	1000l
10W-40	**0346**	21	22	44	49

Teboil Monitra Plus 10W-30

A multi-purpose oil for farming machines (STOU). It is suitable for farming machinery engines, transmissions, gear units and hydraulic systems. It is also compatible for a wide range of wet brakes.

Specifications: API CG-4, CF-4, CF/SF; ACEA E3; GL-4/GL-5; Massey Ferguson M1127, M1135, M1144; Case-IH MS 1207; Ford New Holland M2C 86A, 134C/D, 159B; John Deere J20A/C, J27; Allison C4; CAT TO-2; ZF TE-ML 06, 07; MIL-L-2104 D

SAE	Product No.	10l	20l	-200l
10W-30	**0345**	21	22	44

TWO-STROKE ENGINE OILS

Teboil 2T Bike

Teboil 2T Bike is a fully synthetic oil developed for powerful two-stroke engines. It is ideal for lubricating air-cooled and water-cooled two-stroke engines operating at high temperatures. 2T Bike provides the engine with excellent protection against wear and has superior low-smoke properties. It is suitable for premix and autolube systems.

Product No.	1l	4l
0351	52	54

Specifications: API TC; JASO FD; ISO-L-EGD; ISO GD++; Husqvarna; Piaggio Hexagon

Teboil 2T Snow

Teboil 2T Snow is a fully synthetic engine oil developed especially for snowmobile engines. 2T Snow is also perfectly suitable for other two-stroke engines operating in cold climate conditions. Excellent cold resistance properties and high-quality, efficient additives ensure reliable lubrication in extreme conditions. 2T Snow is also suitable for both premix and autolube systems, provides excellent protection against wear and has good low-smoke properties.

Product No.	1l	4l	20l
0352	52	54	22

Specifications: API TC; JASO FD; ISO-L-EGD; ISO GD++; Rotax 253

Teboil 2T Power Mix

Teboil 2T Power Mix is a high-quality semi-synthetic 2-stroke engine oil for scooters, mopeds, chain saws and many other 2T engines. It provides reliable protection against engine wear, burns cleanly and helps keep pistons, exhaust ports and spark plugs clean. Suitable for both premix and autolube systems.

Product No.	1l	4l
0357	52	54

Specifications: API TC; JASO FD; ISO-L-EGD

Teboil 2T Mix

Teboil 2T Mix is a two-stroke engine oil for older 2T engines. It is suitable for both premix and autolube lubrication of mopeds, snowmobiles, chain saws, gardening machinery, and other machines with two-stroke engines. For two-stroke engines with catalytic converters, we recommend the use of Teboil 2T Bike, 2T Power Mix and 2T Snow oils.

Product No.	1l	4l	20l
0354	52	54	22

Specifications: API TC

Teboil 2T Special Outboard

Teboil 2T Special Outboard is a special two-stroke engine oil for modern outboard engines. The oil contains ashless additives. This is especially important because the carbon deposit formation is lower compared to regular two-stroke engine oils. This is especially important for engines that run in low temperatures due to efficient cold water cooling. 2T Special Outboard effectively keeps the engine's pistons, exhaust ports and spark plugs clean and provides good protection against engine wear and corrosion.

Product No.	1l	4l
0356	52	54

Specifications: API TD; NMMA: TC-W3

DID YOU KNOW THIS ABOUT TWO STROKE OILS?

- Due to cold water cooling, outboardsengines run cooler than many other engines. Designed for outboard operation, 2T oil burns without scaling at lower temperatures.
- Oil designed for two-stroke outboards is not recommended for land-based engines.

FOUR-STROKE ENGINE OILS

Teboil 4T SuperBike Oil 15W-50

Teboil 4T SuperBike Oil is a special fully synthetic engine oil for 4-stroke motorbikes and other small 4-stroke engines. It has excellent high-temperature performance and stable viscosity. The oil's friction and pressure resistance properties are carefully determined to suit the gearboxes and wet clutches. It maintains the properties that protect the engine from wear and improve the performance of the clutch even in the most demanding conditions throughout the entire oil change interval. 4T SuperBike Oil is also suitable for most gearboxes on two-stroke engine motorbikes.

Specifications: API SL, SJ, SH; JASO MA; API GL-1

SAE	Product No.	1l	4l
15W-50	**0330**	52	54

Teboil 4T Special Motorboat 10W-40

Teboil 4T Special Motorboat is a special oil designed for 4-stroke engines of boats and other water vehicles. It meets both the NMMA FC-W special classification for petrol outboard engines as well as the petrol and diesel engine classifications required for more common inboard engines. The properties have been optimised to take into account the different types of load conditions, wet operating conditions, the exceptional construction of marine engines and the protection requirements of long winter storage. 4T Special Motorboat is an excellent choice for inboard and outboard engines of boats.

Specifications: API SL/CF, CH-4, CG-4; NMMA FC-W; Volvo VDS-2

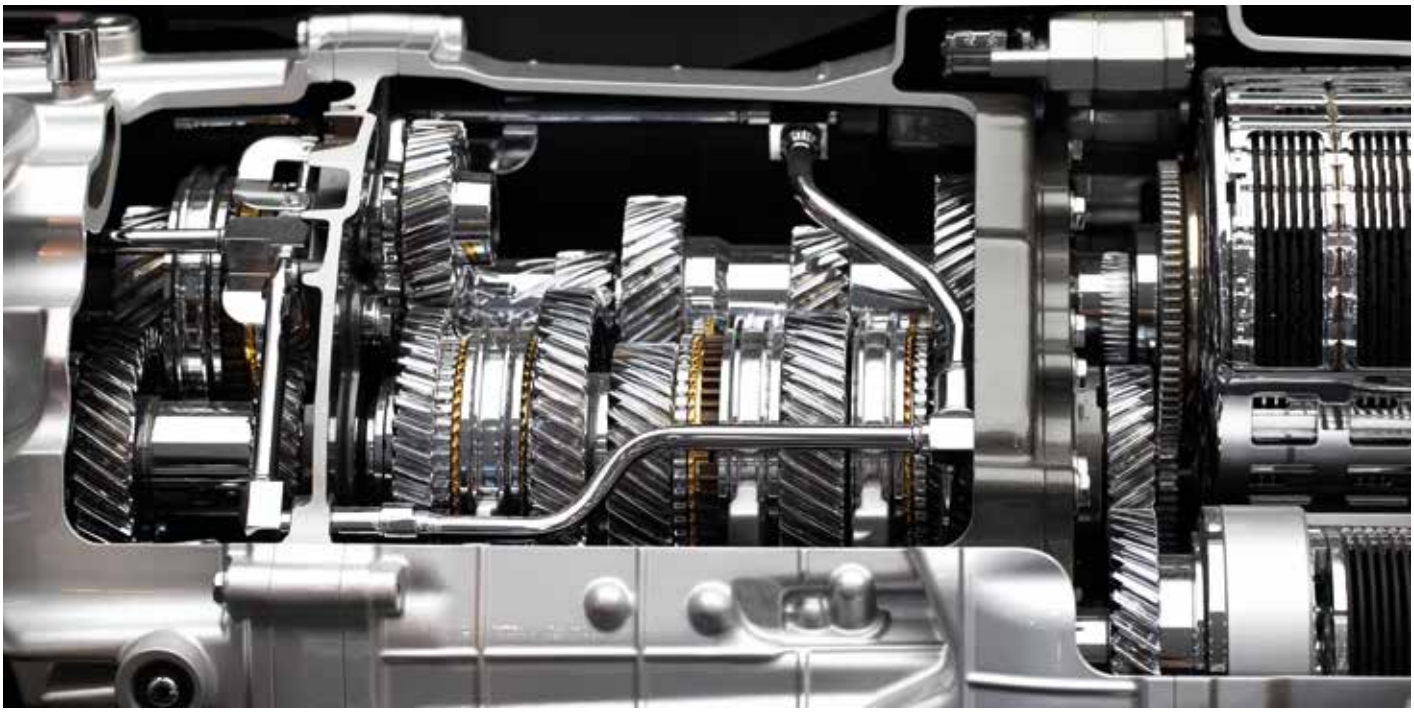
SAE	Product No.	1l	4l
10W-40	**0313**	52	54

Teboil Small Engine Oil

Teboil small machine oil is a special oil for small 4-stroke engines. Typical applications include engines of lawnmowers, cutters, shredders and small aggregates.

Specifications: API SJ, SF

SAE	Product No.	1l
30	**0334**	52



TRANSMISSION AND GEAR OIL FOR BOATS

Teboil Outboard Gear

Outboard Gear is a special gear oil for lubricating drive units in boats and outboard engines. It performs excellently in both fresh and salt water environments. The oil has excellent water separation and corrosion inhibitions properties.

SAE	Product No.	250 ml	500 ml
90	**0431**	60	10

Specifications: API GL-4

API GL-4 TRANSMISSION AND GEAR OILS

Teboil Gear MTF-V 75W-80

Gear Oil MTF-V is a premium fully synthetic GL-4 category transmission oil for heavy-duty use and extended oil change intervals. The oil provides effective protection against transmission wear even in high temperatures and under heavy loads. Typical applications include Volvo transmissions in heavy-duty vehicles.

Specifications: API GL-4; Volvo 97307; MAN 341 Type Z4; ZF TE-ML 01L, 02L, 16K

SAE	Product No.	20l	-200l
75W-80	**0408**	22	45

Teboil Syncrogear 75W-80

Syncrogear 75W-80 is a fully synthetic API GL-4 category transmission oil especially designed for manual transmissions in modern cars and vans. It is also suitable for certain automatic transmissions. Thanks to its excellent flowing properties, the oil helps to reduce fuel consumption by reducing power losses in the transmission. At the same time, it provides reliable lubrication to the transmission under varying operating temperatures.

Specifications: API GL-4; ZF-TE-ML 08

SAE	Product No.	1l	20l
75W-80	**0410**	52	22

Teboil EP 75W-90

A fully synthetic high-performance transmission oil for both normal and heavy-duty application. Powerful anti-wear and pressure resistance properties protect the transmission under heavy loads and demanding driving conditions. Excellent low-temperature performance reduces transmission power losses, helping to improve fuel economy.

Specifications: API GL-4, MT-1; MIL-L-2105; MAN 341 Type Z2, ML; ZF TE-ML 08

SAE	Product No.	1l	20l	-200l
75W-90	**0405**	52	22	45

Teboil EP 80W-90

A high-quality multi-grade oil for manual transmissions requiring the use of GL-4 category oils. This oil contains efficient additives against gear abrasion, oil oxidation and foaming.

Specifications: API GL-4; MIL-L-2105; MB 235.1; MAN 341 Type E1; ZF TE-ML 06L, 08, 16A, 17A, 19A

SAE	Product No.	1l	20l	-200l
80W-90	**0414**	52	22	44

API GL-5 TRANSMISSION AND DIFFERENTIAL OILS

Teboil Hypoid 75W-90

Highly versatile, fully synthetic transmission and gear oil for light and heavy machinery. Thanks to its special additive composition, the oil can be used both for transmissions requiring API GL-4 category oils and for gearboxes requiring GL-5 category oils. This oil provides excellent protection against wear under all load and temperature conditions. Optimised viscosity properties reduce transmission power loss and help improve fuel economy.

SAE	Product No.	1l	20l	-200l	1000l
75W-90	**0417**	52	22	45	49

Specifications: API GL-4/5, MT-1; MIL-PRF-2105E; SAE J2360; MAN 341 Type E3, Z2, 342 Type M3; Scania STO 1:0; Volvo 97312; ZF TE-ML 02B, 05A, 12L, 12N, 16F, 17B, 19C, 21A

Teboil Hypoid 80W-90

A high-performance transmission and gear oil for heavy-duty use and variable conditions. Its lubrication and anti-wear performance is excellent under any conditions.

SAE	Product No.	1l	20l	-200l	1000l
80W-90	**0423**	52	22	45	49

Specifications: API GL-5; MIL-L-2105D; ZF TE-ML 02B, 05A, 12L, 12M, 16B, 17H, 19B, 21A

Teboil Hypoid 75W-140

A high-quality fully synthetic transmission and gear oil for heavy-duty machinery. It is intended for use in demanding and difficult conditions. Due to its wide viscosity range, the oil provides excellent protection against wear under all load and temperature conditions. Excellent low-temperature performance decreases transmission power losses and helps improve fuel economy.

Specifications: API GL-5, MT-1; MIL-PRF-2105E; Scania STO 1:0; ZF TE-ML 05B, 12B, 16F, 19C, 21B

SAE	Product No.	20l	-200l
75W-140	**0416**	22	45

Teboil Hypoid 80W-140

A high-quality semi-synthetic transmission and gear oil for heavy machinery. Typical applications include final drives and hub reduction gears of vehicles used under very heavy conditions.

SAE	Product No.	20l	-200l
80W-140	**0418**	22	44

Specifications: API GL-5; MIL-L-2105D; Scania STO 1:0; ZF TE-ML 05A, 12M, 16C, 21A

Teboil Hypoid LS 80W-90

A high-quality special oil for lubrication of the gears of limited-slip differentials. This oil is suitable for use in a wide range of different limited-slip designs e.g. cone and discs.

SAE	Product No.	1l	20l	-200l
80W-90	**0419**	52	22	44

Specifications: API GL-5 LS; MIL-L-2105D; ZF-TE-ML 05C, 12C, 21C

AUTOMATIC TRANSMISSION OILS

Teboil Fluid ES-Max

A high-quality fully synthetic heavy-duty automatic transmission oil for heavy-duty machinery and the most demanding conditions. Designed to meet the extended oil change intervals requirements of various transmission manufacturers. Fully synthetic base oils and top-quality additives ensure smooth operation of automatic transmissions at varying temperatures.

Specifications: Dexron IIIH; ZF TE-ML 02F, 04D, 09, 11A/B, 14C, 16M, 20C; Ford Mercon, Mercon V; Allison C4, TES-295, TES-389; Voith H55.6336.xx; MB 236.6; MAN 339 Type V2, Z2, Z3; Volvo 97341

Product No.	-200l
0463	45

Teboil Fluid S

A high-quality, fully synthetic automatic transmission fluid of the Dexron type, with the most comprehensive brand-specific performance ratings in its class. Suitable for use in new types of automatic transmissions from a wide range of manufacturers. Thanks to its high-quality base oils and additives, the oil has class-leading high and low temperature performance, ensuring smooth and reliable operation of transmissions at varying operating conditions.

Product No.	1l	4l	-200l
0464	52	54	45

Specifications: GM Dexron II, IID, IIIG, IIIH; Ford Mercon, Mercon V; Audi/VW G-055-025-A2 (TL52025), G-052-162-A1 (TL52162), G-052-990 (TL52990); BMW: ETL-7045E, ETL-8072B, LA2634, LT71141; Chrysler ATF +3, +4, Mopar AS68RC; Ford FNR5; AW-1; Honda Z-1; Hyundai SP-II/III; Jatco 3100 PL085; JWS 3309, 3324, 3314, 3317; Kia SP-II/III, Red-1; Mazda ATF-M II, MV; MB 236.1, -2, -5, -6, -9, -10, -11, -12, -14 (NAG 1); Mitsubishi SP-II/III, ATF-J2; Nissan N402, Matic-/D/J/K, Matic-S; Subaru ATF, ATF-HP; Suzuki 3317, 3314; Toyota T-II/III/IV, WS

Teboil Fluid E

A semi-synthetic Dexron III-type automatic transmission fluid for both light and heavy-duty equipment. This oil maintains its balanced friction properties even under heavy loads and at high temperatures. It is an excellent choice for automatic transmissions, torque converters and other applications where an ATF oil is recommended.

Product No.	1l	20l	-200l
0461	52	22	45

Specifications: Dexron IIIH; Ford Mercon; MB 236.1, -2, -5; MAN 339 Type Z1, V1,V2; Allison C4, TES-389; ZF TE-ML 02F, 03D, 04D, 05L, 09, 11A/B, 14A, 17C, 21L; CAT TO-2; Voith 55.6335

Teboil Fluid D

A high-quality automatic transmission oil intended mainly for older vehicles. It is a conventional Dexron II-type ATF Oil with reliable friction and anti-wear properties for heavy-duty use.

Product No.	1l	20l	~200l	1000l
0466	52	22	45	49

Specifications: Dexron IID; Allison C4; ZF TE-ML 04D, 09, 14A; ATF Type A, Suffix A; CAT TO-2; Ford M2C-138-CJ, M2C-166-H; MB 236.2

SPECIAL TRANSMISSION AND GEAR OILS

Teboil Wetol

The Wetol range of oils are transmission and gear oils especially designed for tractors and machinery with wet brakes. They are perfectly suitable for machines using the same oil in gearbox, transmission and hydraulic systems. The special properties of the oils have been carefully designed to provide anti-wear properties of the transmission and smooth and silent operation of wet brakes.

	SAE	Product No.	20l	~200l	1000l
WETOL	**80; 15W-30**	**0428**	22	44	-
WETOL W	**80W; 5W-30**	**0429**	22	45	49

Specifications: API GL-4; Allison C4; CAT TO-2; Case NH-410B, MAT 3505, 3509, 3525; Case IH B6, MS 1206, 1207; Ford ESN-M2C 86B/C, 134D, FNHA-2-C-200.00; John Deere J20C; Kubota UDT Fluid; MF CMS M1110, 1127 A/B, 1141 (80), 1135 (80), 1143, 1145; VCE WB 101; ZF TE-ML 05F, 06K, 17E; Valtra G2-08; Powerfluid 821 XL (80W)

Teboil Wetol Syntrac

Fully synthetic Teboil Syntrac is a high-quality special transmission oil for various newer tractors and machinery. The oil has been especially designed to meet the requirements of the newer Volvo vehicles. Its excellent flow properties ensure lubrication in highly varying weather conditions for all-year-round use. It also reduces transmission losses and improves fuel economy. The additive includes friction properties required by wet brake systems, as well as provides effective protection against wear in heavy-duty operation. The oil reliably maintains its performance over extended drain intervals.

SAE	Product No.	20l	~200l
75W-80; 5W-20	**0430**	22	45

Specifications: API GL-4; VCE WB 102; Allison C4; CAT TO-2; Case NH MAT 3505; Case MS 1207, 1209, 1210; John Deere J20D, 21A; MF CMS M 127 A/B, 1143, 1145; ZF TE-ML 03E, 06K

Teboil Fluid TO-4 Synthetic SAE 50

TO-4 is a synthetic transmission and gear oil for heavy-duty CAT machinery. The product is designed for use in low temperatures and extremely demanding conditions where the properties of conventional SAE 50 oils are not sufficient. Teboil Fluid TO-4 Synthetic SAE 50 also meets the requirements for Allison C4 and Komatsu MicroClutch vehicles.

Specifications: CAT TO-4; Allison C4; Komatsu MicroClutch

SAE	Product No.	~200l
50	**0437**	44

Teboil Fluid TO-4

TO-4 transmission and gear oil for heavy-duty CAT machinery. Optimised friction modifier additives ensure smooth and efficient operation of wet brakes. Typical examples of use include a wide range of Caterpillar and Komatsu machines.

Specifications: CAT TO-4; Allison C4; Komatsu; ZF TE-ML 03C, 07F (SAE 30)

SAE	Product No.	20l	~200l	1000l
10W	**0433**	22	44	49
30	**0434**	22	44	49
50	**0435**	-	44	49

Teboil Fluid FD-1

Teboil Fluid FD-1 is a transmission and gear oil made for heavy earthmoving and construction vehicles requiring CAT FD-1 type of oil. Typical uses include mining and construction machines manufactured by Caterpillar.

Specification: CAT FD-1

SAE	Product No.	~200l	1000l
50	**0435**	44	49

Teboil Hydraulic Oil WB 46

Teboil Hydraulic Oil WB 46 is a special hydraulic oil with friction modifier for systems where the hydraulic oil also circulates in wet brake systems. Such systems are found, for example, in various harbour equipment.

Product No.	~200l	1000l
0603	45	49

HYDRAULIC OILS FOR MOBILE EQUIPMENT

Teboil Hydraulic Oil S (32, 46, 68)

High-quality hydraulic oils for hydraulic systems operating under varying temperatures. Typical applications are heavy-duty machinery and other hydraulic systems requiring extremely high performance.

Specifications: DIN 51524 part 3 (HVLP); SS 155434 AAV; Eaton Vickers I-286-S, M-2950-S; Cincinnati Machine P-68 (32S), P-69 (68S), P-70 (46S); Parker Hannifin (Denison) HF-0, HF-1, HF-2

	Product No.	1l	20l	-200l	1000l	ISO VG class	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
32S	**0647**	52	22	45	49	**32**	32	7.1	200	-54	220
46S	**0634**	-	22	45	49	**46**	46	9.3	200	-48	225
68S	**0640**	-	22	45	49	**68**	68	11.0	156	-48	235

Teboil Hydraulic Lift

High-quality oils for hydraulic systems of mobile machinery operating at varying temperature conditions. The oil provides effective protection against wear and corrosion to the system.

Specifications: DIN 51524 part 3 (HVLP); Eaton I-286-S, M-2950-S

	Product No.	20l	-200l	1000l	ISO VG class	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
LIFT 32	**0646**	22	45	49	**32**	31	6.2	145	-48	220
LIFT 46	**0635**	22	45	49	**46**	46	7.9	141	-42	225

Teboil Hydraulic Oil

Teboil hydraulic oils are suitable for hydraulic systems operating under varying temperatures. They provide effective protection against wear and corrosion to the systems.

Specifications: DIN 51524 part 3 (HVLP); Eaton I-286-S, M-2950-S

ISO VG class	Product No.	20l	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
15	**0632**	22	45	-	15	3.7	146	-66	175
22	**0638**	22	45	49	22	4.8	150	-54	175
100	**0642**	-	45	-	100	13.7	138	-39	200

Teboil Hydraulic 46 Max-S

A top-quality zinc-free special hydraulic oil for extremely heavy-duty use. Thanks to its high viscosity index and extremely low shearing, the oil has exceptional performance at both high and low temperatures. The oil effectively protects systems against wear and increases the reliability of the equipment. Optimal viscosity properties improve the efficiency and fuel economy of the machines and reduce CO2 emissions. Typical applications include hydraulic systems for mobile equipment operating in demanding conditions, such as in forestry and earth moving equipment.

Specifications: SS 155434 AAV; DIN 51524 part 3 (HVLP); Eaton Vickers I-286-S, M2950-S; Cincinnati Machine P-70; Parker Hannifin HF-0, HF-1, HF-2

ISO VG class	Product No.	20l	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
46	**0643**	22	45	49	46	10.3	215	-41	185

Teboil Hydraulic Oil Scandic 32

Special hydraulic oil that is well suited for high-pressure hydraulic systems operating in extremely low temperatures and highly variable temperature conditions. The oil is made from specially refined base oils and effective additives that protect hydraulic systems against wear and corrosion. It also reduces the need for heating in cold Arctic conditions. Typical applications include various crane systems, timber loaders and personnel lifts, as well as truck hydraulics.

Specifications: ISO 11158 HV; Eaton Vickers I-286-S, M-2950-S; Cincinnati Machine P-68; DIN 51524 part 3 (HVLP) technical performance

ISO VG class	Product No.	20l	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
32	**0631**	22	45	49	34	10.1	305	-62	>135

Teboil Hydraulic Oil Nordic

A high-quality special hydraulic oil for heavy-duty use and demanding conditions. This oil has a high viscosity index and maintains its cold-flowing properties even under extremely demanding conditions. It, therefore, improves the efficiency and performance of hydraulic systems while reducing fuel consumption and CO2 emissions. Typical uses include earth-moving and forestry machinery operating in extreme Nordic climates.

Specifications: DIN 51524 part 3 (HVLP); Eaton I-286-S3, M-2950-S; ISO 20763

ISO VG class	Product No.	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
32	**0644**	45	49	32	7.6	220	-42	185

Teboil Hydraulic Oil Polar

A hydraulic oil for systems operating within a wide range of temperatures. Typical applications are systems requiring accuracy and reliability even at very low temperatures without any warming-up. Such applications include vehicles with tailgate lifts and various vessel deck hydraulic systems, as well as personnel lifts.

Specifications: Eaton Vickers I-286-S, M-2950-S

ISO VG class	Product No.	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
22	**0644**	45	22	7.5	375	-62	>135

Teboil Hydraulic Arctic Oil

A high-performance hydraulic oil for various operating conditions. Typical applications include vehicles with tailgate lifts and trailers operating without any warming-up.

Specifications: Eaton Vickers I-286-S, M-2950-S

ISO VG class	Product No.	20l	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
15	**0633**	22	45	15	5.5	375	-65	>135

Teboil Hydraulic SHV 36

A fully synthetic zinc-free hydraulic oil designed for heavy-duty hydraulic systems that require a wide range of operating temperatures. Typical uses include groundwork and forestry machinery, truck hydraulics, port equipment and vessel deck hydraulics.

Specifications: SS155434 AAV; DIN 51524 part 3 (HVLP); Eaton Vickers I-286-S, M-2950-S

Product No.	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
0627	45	36	7.9	185	-48	255

Teboil Hydraulic Oil 5W and 10W

Special oils for the hydraulic systems of machinery requiring the use of engine oil. Typical uses include hydraulic systems in Caterpillar machines (for detailed information and specifications, please refer to the manufacturer's user manual). Zinc content exceeds 1,000 ppm.

Specifications: API CF

SAE	ISO VG class	Product No.	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
5W	**32**	**0629**	45	49	33	6.7	165	-52	230
10W	**46**	**0630**	44	49	44	7.0	120	-39	235

BIODEGRADABLE HYDRAULIC OILS

Teboil Hydraulic Eco 15, 32 and 46

Biodegradable hydraulic oils manufactured from synthetic esters. Their excellent cold-flowing properties enable a risk-free start even at extremely low temperatures. High viscosity index and very low shearing ensure reliable lubrication even at high operating temperatures. They are especially suitable for demanding high-pressure systems in groundwater, coastal and park areas.
Biodegradability exceeds 70% (OECD 301 B).

Specifications: SS 155434 AAV Environmentally acceptable; ISO 15380 L-HEES

ISO VG class	Product No.	20l	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
15	**0621**	-	44	15	4.0	165	-59	200
32	**0623**	22	44	33	7.2	185	-54	200
46	**0624**	22	44	43	8.6	185	-54	200

CHAIN SAW OILS

Teboil Chain saw Oils

Teboil Chain saw Oil is a chain oil for chain saws made of mineral oil and adhesion-improving additives.

Product No.	1l	4l
0673	52	54

Teboil MoTo T and MoTo K

Teboil MoTo is a chain oils made of pure mineral oil. MoTo is especially suitable for multifunctional machines. It is also very suitable for lubricating industrial conveyor chains. The product is available in both winter (T) and summer (K) modifications.

	Product No.	ISO VG class	10l	~200l	1000l
MOTO T	**0672**	**46**	21	44	49
MOTO K	**0671**	**100**	21	44	49

Teboil Biochain

Teboil Biochain products are made from vegetable oils and high-quality additives. These oils are suitable for lubricating chains and flanges of forestry machines and chain saws. They are also ideal for lubricating various types of industrial conveyor chains. The Biochain range of products has good anti-wear and adhesion properties and provides effective lubrication to chain pivots. As these products are vegetable oil-based, they are biodegradable and non-toxic.
Choose viscosity according to the operating conditions and needs: 46 for winter use or when fluid viscosity is otherwise desired. 100 for summer use or when a thicker oil is otherwise desired.

	Product No.	1000l
46	**0674**	49
100	**0675**	49

DID YOU KNOW?

- A thick base oil provides good load carrying capacity, but increases internal friction at high speeds.
- Grease made of thinner base oil is suitable for fast rotating bearings and has better pumpability properties.

MULTI-PURPOSE GREASES

Teboil MultiPurpose Grease

Multi-purpose bearing grease for automotive and industrial use.

Specifications: DIN 51502 K2K-30; ISO 6743 ISO L-XCCEA2

Prod. No.	400 g	18kg	50kg	180 kg	Thick-ener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Temperature range °C
0504	62	41	42	44	Lithium	2	180	110	- 30 ... 120 Max 130°C

Teboil MultiPurpose EP and EP 0

High-quality greases with Extreme pressure (EP) additive and lithium as a thickener. These greases are ideal for lubricating wheel bearings in automotive use. Also an excellent choice as a multipurpose grease. MultiPurpose EP 0 is especially suitable for low temperatures, central lubrication systems and gearboxes.

Specifications: DIN 51502 KP0K-30 (EP 0); ISO 6743 ISO-L-XCCFB0 (EP 0); DIN 51502 KP2K-30 (EP); ISO 6743 ISO-L-XCCIB2 (EP)

	Prod. No.	400 g	18kg	50kg	180 kg	Thick-ener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
EP	**0505**	62	41	42	44	Lithium	2	180	200	- 30 ... 120 Max 140°C
EP 0	**0510**	-	41	-	44	Lithium	0	> 160	200	- 30 ... 120 Max 130°C

BEARING GREASES FOR HIGH SPEEDS

Teboil MultiPurpose Extra

This product is designed for high-speed rolling bearings. Extreme pressure additives of the grease, based on bismuth technology, ensure effective lubrication. Typical applications are, for example, industrial blowers.

Specifications: DIN 51502 KP2K-35; ISO 6743 ISO-L-XCCHB2

Prod. No.	50kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0507	42	44	Lithium	2	185	55	- 35 ... 110 Max 125°C

Teboil EM Grease 102 X

Lithium complex-based special grease optimised for the lubrication requirements of industrial electric motors. It is also perfectly suitable for use as a multi-purpose grease covering a wide range of operating temperatures.

Specifications: DIN 51502 KP2N-30; ISO 6743 ISO-L-XCDHB2

Product No.

Prod. No.	400 g	18kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0521	42	44	Lithium-complex	2	> 260	100	- 30 ... 140 Max 220°C

GREASES FOR USE AT HIGH TEMPERATURES AND UNDER HEAVY LOADS

Teboil Special CSX Grease

Special lubricating grease made with a calcium sulfonate complex thickener. The thickener gives excellent load carrying capacity, making it suitable for heavily loaded applications. The grease has a very good mechanical stability and it retains properties even in demanding weather conditions. The most typical applications are earthmoving, agricultural and mining machinery. Also asphalt pavers and many other heavy-duty equipment, as well as marine applications.

Specifications: DIN 51502: KP2N-30; ISO 12924: L-XC(F)DIB2

Prod. No.	400 g	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0522	62	Calcium-sulphonate-complex	2	> 280	290	- 30 ... 140 Max 180°C

Teboil MultiPurpose HT

High-quality special grease for industrial and automotive sliding and roller bearings operating under heavy load and at varying temperatures. Typical applications are bearings operating at high temperatures, e.g. wheel bearings of heavy-duty vehicles. Also an excellent choice for multi-purpose use.

Specifications: DIN 51502 KP2N-30; ISO 6743 ISO-L-XCDIB2; Volvo 97720

Prod. No.	400 g	18kg	50kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0506	62	41	42	44	Lithium-complex	2	> 260	200	- 30 ... 150 Max 220°C

Teboil Grease HL 520

Lithium complex grease based on thick base oil, resistant to high temperatures. It is intended for lubrication of industrial journal and roller bearings operating under heavy load and at extremely high temperatures. It also has excellent mechanical stability. Typical applications are for example pellet presses. Also an excellent choice for multi-purpose grease.

Specifications: DIN 51502 KP2N-30; ISO 6743 ISO-L-XC(F)DIB2

Product No.	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0546	44	Lithium-complex	2	> 260	800	- 20 ... 140 Max 220°C

Teboil Syntec Grease

A high-performance synthetic lubricating grease for the most demanding applications. Effective additives and excellent mechanical resistance make it a reliable choice for bearings operating under heavy load and at high and/or low temperatures.

Specifications: DIN 51502 KPH-C2N-40; ISO 6743 ISO-L-XDDIB2

Prod. No.	400 g	18kg	50kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0525	62	41	42	44	Lithium	2	> 260	160	- 40 ... 150 Max 220°C

CENTRAL LUBRICATION GREASES

Teboil Universal CLS and CLS-1

Extreme pressure additives containing central lubricating greases with excellent lubricating properties under humid and demanding conditions. The softer, semi-liquid formulation of Universal CLS makes it more suitable for low temperatures and grease-lubricated gears.

Specifications: DIN 51502 KP00G-35 (CLS); ISO 6743 ISO-L-XCBIB00 (CLS); DIN 51502 KP0.5G-35 (CLS-1); ISO 6743 ISO-L-XCBIB0.5 (CLS-1)

	Prod. No.	18kg	50kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
CLS-1	**0530**	41	42	44	Lithium-complex	0.5	230	145	- 30 ... 120 Max 130°C
CLS	**0501**	41	42	44	Lithium-complex	00	170	110	- 35 ... 100 Max 120°C

Teboil Universal M

Chassis greases containing molybdenum disulphide (MoS_2) for lubrication of e.g. king pins, ball joints and bearing journals.

Specifications: DIN 51502 KF2K-30; ISO 6743 ISO-L-XC-CHA2

Prod. No.	400 g	18kg	50kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0500	62	41	42	44	Lithium	2	180	145	- 30 ... 120 Max 130°C

Teboil HD-M Grease

Heavy-duty lubricating grease containing molybdenum disulphide for heavy-duty and groundwork machinery. Typical applications include earthmoving and mining equipment when maximum reliability under extremely heavy and severe conditions is required.

Specifications: DIN 51502 KP-F2N-20; ISO 6743 ISO-L-XBDIB2

Prod. No.	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0516	44	Lithium-complex	2	> 280	320	- 20 ... 150 Max 200°C

Teboil HD-M5 N1 Grease

Lubricating greases with a very strong molybdenum disulphide additive (5%) for heavy-duty and earth moving machinery, formulated with a thick base oil and lithium complex thickener. Typical applications include earthmoving and mining equipment when maximum reliability under extremely heavy and severe conditions is required. Typical lubrication applications include king pins, ball joints, stud bearings as well as slow-rotating and heavily loaded bearings. Molybdenum disulphide is excellent for impact-like loads, preventing harmful metal-to-metal contact and protecting equipment from wear. The thick base oil, polymers and lithium complexing agent give the grease exceptionally good water resistance properties.

Specifications: DIN 51502: KPF2K-20; ISO 12924: L-XB(F)CHB2

Prod. No.	18kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0551	41	44	Lithium-complex	1	> 240	500	- 20 ... 140 Max 190°C

Teboil Arctic M5 Grease

Heavy-duty lubricating grease containing molybdenum disulphide for heavy-duty and groundwork machinery. Typical applications include earthmoving and mining equipment when maximum reliability under extremely heavy and severe conditions is required.

Specifications: DIN 51502 OGF-P0G-50; ISO 12924: L-XE(F)BIB0

Prod. No.	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0520	44	Calcium/ Lithium-complex	0	> 230	45	- 50 ... 90 Max 110°C

Teboil Solid 0 and 2

Water-free calcium greases for heavily loaded, slowly running journal and roller bearings, especially in humid conditions. These greases have excellent adhesion, water-resisting and load-carrying characteristics. They are an excellent choice for lubricating automotive and machinery joints and chassis bearings. Because it is easier to pump, Solid 0 is more suitable for winter use and central lubrication systems as compared to Solid 2.

Specifications: DIN 51502 KP0E-30 (Solid 0); ISO 6743 ISO-L-XCBFB0 (Solid 0); DIN 51502 KP2K-20 (Solid 2); ISO 6743 ISO-L-XBCIB2 (Solid 2)

	Prod. No.	400 g	18kg	50kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Temperature range°C
SOLID 2	**0550**	62	41	42	44	Calcium	2	145	800	- 20 ... 120 Max 130°C
SOLID 0	**0548**	62	41	42	44	Calcium	0	> 120	800	- 30 ... 90 Max 100°C

GEAR AND CHAIN GREASES

Teboil Gear Grease XHP

Special grease with efficient EP additives for lubricating heavily loaded open gears and chains that operate in a wide range of temperatures. Short-term temperature peaks up to 240°C are permissible. Typical applications include swing gears of working machines, chains, steel ropes and various sliding surfaces. Gear Grease XHP is also ideal for lubricating journal and roller bearings operating in hot and/or heavy-duty conditions.

Specifications: DIN 51502 KPGOG0.5N-30; ISO 6743 ISO-L-XCDIB0.5

Prod. No.	400 g	18kg	50kg	180 kg	410 ml	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0514	62	41	42	44	30	Calcium/ Lithium-complex	0.5	> 260	800	- 30 ... 140 Max 180°C
0518	-	-	-	44	-	Calcium/ Lithium-complex	1.5	> 260	500	-20 ... 140

Teboil Gear Grease MDS

Grease for open gears, steel ropes and chains based on inorganic thickening agent. Gear Grease MDS contains lubricants that effectively prevent shearing, such as graphite. Typical lubrication applications include extremely heavily loaded, slow-moving equipment and/or equipment exposed for vibration. For example, hydraulic hammers require this type of grease.

Specifications: DIN 51502 KPFMOG0.5N-10; ISO 6743 ISO-L-XADIB0.5

Prod. No.	400 g	18kg	180 kg	Thickener	NLGI	Drop point, °C	Base oil viscosity at mm²/s @40°C	Range of use temperature °C
0517	62	41	44	Bentonite	0.5	N/A	2100	- 10 ... 150 Max 180°C

HYDRAULIC AND CIRCULATION OILS

Teboil Larita Oil

Carefully selected additives and base oils make Teboil Larita Oil suitable for use in demanding industrial high-pressure hydraulic systems and circulation oil systems. This oil features highly effective additives against wear, corrosion, oxidation and foaming.

Specifications: DIN 51524-2 (HLP); Vickers I-286-S; M-2950-S; Denison HF-0, HF-1, HF-2; Cincinnati Machine P-68 (ISO VG 32); P-69 (ISO VG 68) ja P-70 (ISO VG 46); DIN 51517- 2 (CL) (ISO VG 150 ja 320)

ISO VG class	Product No.	20l	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
10	**0652**	22	45	-	10	2.7	110	-51	170
22	**0665**	22	45	-	22	4.2	90	-40	190
32	**0654**	22	45	49	32	5.3	105	-39	210
46	**0655**	22	45	49	46	6.9	105	-36	230
68	**0656**	22	45	49	68	8.8	100	-33	240
100	**0658**	22	45	-	100	11.0	95	-15	250
150	**0661**	22	45	-	150	14.0	90	-15	230
320	**0663**	-	45	-	320	23.0	90	-9	260

Teboil Pressure Oil

Industrial EP gear oil for heavily loaded gears. This oil provides excellent protection against wear, oxidation and corrosion.

Specifications: DIN 51517-3 (CLP); ISO 12925-1 type CKD; AGMA 9005-E02 (EP); AIST 224 (US Steel 224) SEB 181226; Siemens MD (Flender) revision 13

ISO VG class	Product No.	20l	200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
68	**0441**	22	44	-	68	9.1	110	-27	220
100	**0440**	22	44	-	100	11.4	100	-27	240
150	**0442**	22	44	49	150	15.0	100	-21	240
220	**0443**	22	44	49	220	18.0	90	-18	250
320	**0444**	22	44	-	320	23.0	90	-15	270
460	**0445**	22	44	-	460	29.0	90	-12	290

Teboil Sypres

A fully synthetic gear and circulation oil with pressure resistance (EP) additive. This oil is used in industrial heavy-duty gearboxes operating under heavy load, at low and high temperature conditions. The Sypres range of oils contains highly effective additives against oxidation, corrosion and wear. Thanks to the synthetic base oils, they perform very well even at extremely low and high temperatures.

Specifications: DIN 51517-3 (CLP); ISO 12925-1 type CKD; AGMA 9005-E02 (EP); AIST 224 (US Steel 224); SEB 181226; Siemens MD (Flender) revision 13

ISO VG class	Product No.	20l	200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
68	**0481**	22	44	-	68	11.0	158	-51	220
100	**0482**	22	44	-	100	15.0	155	-51	210
150	**0483**	22	44	49	150	20.0	155	-48	210
220	**0484**	22	44	49	220	26.0	150	-45	210
320	**0485**	22	44	-	320	33.0	150	-42	200
460	**0486**	22	44	-	460	43.0	145	-39	190

Teboil Synpag

A synthetic polyglycol-based industrial gear and circulation oil for heavy-duty worm gears with bronze-steel gear pairs. It is also suitable for use in extremely high temperatures and demanding conditions.

NOTE! Polyglycol-based oils should never mix with other lubricating oils, therefore, special care must be taken when using them.

Specifications: DIN 51517-3 (CLP); ISO 12925-1 CKS/CKT

ISO VG class	Product No.	20l	208l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
220	**0450**	22	48	220	41.0	242	-42	230
460	**0452**	22	48	460	84.0	262	-36	284

COMPRESSOR OILS

Teboil Compressor Oil P

Oils especially designed for lubricating piston compressors. Due to their low carbon deposits build-up and low oxidation tendencies, these oils are suitable for use in high temperatures and demanding conditions These oils comply with the DIN 51506 VDL grade, which allows a compression temperature of 220°C.

Specifications: DIN 51506 VDL; ISO-L-DAA (100) and ISO-L-DAB (68)

ISO VG class	Product No.	1l	20l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
P68S	**0770**	-	22	68	9.8	125	-42	210
100	**0769**	52	22	100	11.0	95	-30	220

Teboil Compressor Oil SX

Synthetic oil for lubrication of screw and other rotary compressors. The oil features highly effective additives against wear, corrosion, and oxidation. Suitable for use in high temperatures and demanding conditions.

Specification: ISO-L-DAH

ISO VG class	Product No.	20l	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
46	**0762**	22	45	47	8.0	145	-39	250

Teboil Compressor Oil 46 SHV

A fully synthetic compressor oil for lubrication of screw and other rotary compressors operating in extremely demanding conditions. This oil contains highly effective additives against wear, oxidation and corrosion, and exceeds the most demanding ISO-L-DAJ standard requirements for screw compressor oils.

Specification: ISO-L-DAJ

ISO VG class	Product No.	20l	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
46	**0763**	22	45	45	8.1	155	-48	255

PNEUMATIC TOOL OILS

Teboil Pneumo

Special oils designed for lubrication of all types of pneumatic tools. These oils form a durable lubricating film on metal surfaces, effectively preventing metal-to-metal contact. In addition, the oils effectively protect compressed air systems against moisture and corrosion.

ISO VG class	Product No.	20l	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
22	**0701**	22	45	22	4.5	115	-42	180
46	**0705**	22	45	46	6.9	105	-25	205
100	**0703**	22	45	100	11.4	100	-15	210

HEAT-TRANSFER OILS

Teboil Termo Oil

Special oils for use in closed heat-transfer systems. They have excellent anti-oxidation properties, very low cracking tendency, and very long service life. There is no need for regular oil changes. The need is determined on the basis of oil analyses.

Product No.	20l	-200l	ISO VG class	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
0734	-	-	**15**	15	3.3	80	-42	180
0735	22	45	**32**	32	5.4	100	-12	200
0736	-	45	**100**	100	11.0	95	-12	220

TURBINE OILS

Teboil Turbine Oil XOR

Turbine oil made of special base oil and additives, intended for extremely demanding operating conditions. This oil features excellent anti-oxidation, water and air separation, and anti-foaming properties. These properties allow for very long service life in demanding applications in turbines.

Specifications: DIN 51515-L-TD / L-TG; Siemens TLV 901304-01 / TLV 901305-01; British Standard BS 489; General Electric GEK 32568F and Ahlstom HTGD 90117 V0001S

ISO VG class	Product No.	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
32	**0715**	45	32	5.9	128	-15	240
46	**0716**	45	43	7.3	135	-12	250
68	**0717**	45	65	8.7	105	-12	230

Teboil Turbine Oil XOR EP

Turbine lubrication oils made of special base oil and pressure resistance (EP) additives, intended for extremely demanding operating conditions. These oils are intended for turbines where the reduction gear is also lubricated with the same oil. Turbine XOR EP oils feature excellent anti-oxidation, water and air separation, and anti-foaming properties. These properties allow for very long service life in demanding applications in turbines.

Specifications: DIN 51515-TGP; Siemens TLV 901304-01 / TLV 901305-01; General Electric; MAN turbo (ISO VG 46) and Voith Turbo

ISO VG class	Product No.	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
32	**0718**	45	32	5.9	128	-15	240
46	**0719**	45	43	7.3	135	-12	250

NON-DRIP OILS

Teboil Past Oil S

These oils are developed for lubricating sliding surfaces, screws and chains operating in high temperatures or otherwise demanding conditions. The characteristics of the products are good lubrication and adhesion properties and low deposit forming in high temperature conditions. They are ideally suited for lubricating veneer dryer drive chains in plywood mills, for example.

ISO VG class	Product No.	-200l	1000l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
150 S	**0689**	44	-	150	14.5	95	-12	230
320 S	**0690**	44	-	320	23.0	90	-12	260
460 S	**0694**	44	49	460	29.0	90	-9	260

SLIDE-WAY OILS

Teboil Slide

High-quality slide oils with "anti slip-stick" properties for lubrication of slide ways in machine tools. Their excellent friction properties enable smooth feed movements, and the so-called "stick-slip" phenomenon does not occur. These oils are suitable for use as hydraulic oils for machines where guiding surfaces are lubricated with the same oil.

Specifications: DIN 51524-2 (HLP), DIN 51517-3 (CLP), DIN 51502 (CGLP); Cincinnati P-47 (68), P-50 (220), P-53 (32)

ISO VG class	Product No.	20l	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
32	**0696**	22	44	32	5.4	100	-12	200
68	**0697**	22	44	68	8.7	105	-12	210
220	**0698**	22	44	220	19.0	95	-12	240

TRANSFORMER OILS

Teboil Transformer Oil SL 200

A high-quality transformer oil with excellent anti-oxidation and electrical isolation properties. This oil is suitable for use in transformers and oil-immersed breakers in extremely low temperatures or otherwise demanding conditions.

Specifications: ASTM D3487; IEC 60296 edition 4.0; ASTM 1275 B, IEC 62535; DIN 51353

Product No.	-200l	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	VI	Pour point, °C	Flash point, °C
0740	44	7.5	2	40	<- 51	> 140

CONCRETE FORM OILS

Teboil Formoil Universal

Teboil Formoil Universal is a user-friendly, pure lubricating form oil based on modern lubrication technology. As the product does not contain solvents, it has a significantly higher flash point and lower evaporation loss than most conventional form oils. This also means that there are no harmful VOC emissions. Formoil Universal eases the removal of the casting from the form, leaving a smooth and clean surface. It also protects steel forms from corrosion and the wood forms from rotting. This product is ideally suited for all types of concreting and conventional form materials such as steel, wood, hardboard and plastic. It can be applied with a brush, cloth or sprayer.

Product No.	-200l	Viscosity @40°C mm²/s	Pour point, °C	Flash point, °C
0750	45	11	<- 29	> 150

Teboil Ward series of oils are cylinder and system oils for marine medium-speed cross-head engines. These oils have excellent cleanliness, anti-oxidation (in high temperatures), good water absorption and filterability properties.

Oil viscosity is selected according to the engine manufacturer's recommendations, and the TBN is chosen according to the engine manufacturer's recommendations and the fuel used. The higher the sulphur content of the fuel used, the higher the recommended TBN. This will ensure that the engine remains clean and the lubricant has a long service life.

CYLINDER AND SYSTEM OILS FOR MEDIUM-SPEED CROSS-HEAD ENGINES

	Product No.	-200l	SAE	Viscosity @40°C mm²/s	Viscosity @100°C mm²/s	TBN, mg KOH/g
TEBOIL WARD L 10T	**0380**	44	**30**	110	12.0	12
TEBOIL WARD L 10T	**0381**	44	**40**	148	14.5	12
TEBOIL WARD L 20T	**0382**	-	**30**	110	12.0	20
TEBOIL WARD L 20T	**0383**	-	**40**	148	14.5	20
TEBOIL WARD L 30T	**0387**	44	**30**	110	12.0	30
TEBOIL WARD L 30T	**0379**	44	**40**	148	14.5	30

For more information on other marine lubricants and product recommendations, please contact our Teboil Technical Advice, tel. 020 470 0916 or lubricants@teboil.fi

TECHNICAL INFORMATION

The main functions of the coolant are to prevent the fluid from freezing in winter and protect the cooling system against corrosion and oxidation. Because of the protective properties of the coolant, even in the summer period, the radiator should not be operated using only water.

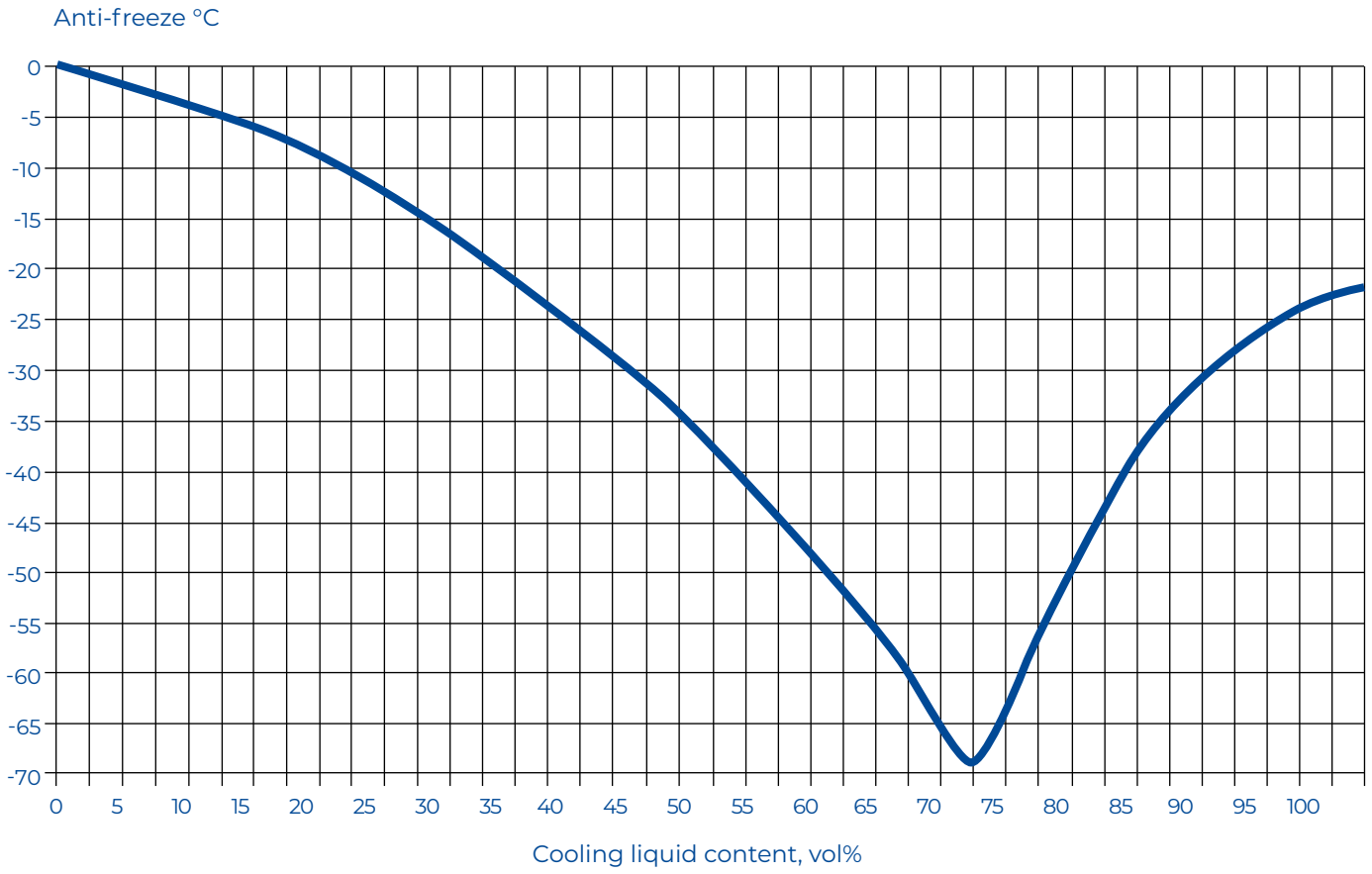
Teboil's coolants contain monoethylene glycol and modern OAT (organic acid technology) additives. Our coolants do not contain environmentally harmful nitrites, amines, phosphates or borates.

The advanced formulation makes the coolants suitable for engines using not only conventional materials but also plastic and light metal alloys, brass, copper and aluminium.

The coolant must always be mixed with water. The best properties are obtained by using a mixing ratio of 50% water and 50% coolant. Too much coolant will reduce the heat-transfer capacity of the fluid.

The anti-freeze property of the coolant can be checked either with a gravity meter or a refractometer. In order to provide adequate protection, the coolant should be changed within the intervals specified by the engine manufacturer.

Water/coolant mixture ratio's impact on frost resistance For Teboil coolants based on monoethylene glycol



Teboil Glycold XLC

A high-quality antifreeze based on monoethylene glycol for both light and heavy-duty engines. Modern and efficient additives effectively protect the engine's cooling system against corrosion even at extended change intervals. The fluid is suitable for use in engines in which, along with traditional materials, brass, copper and aluminium, mixes of plastic and light metals are used. The recommended mixing ratio for a freeze resistance of -38°C is 50% water and 50% coolant.

Product No.	1l	3l	10l	-200l	1000l
0205	52	13	21	24	49

	Product No.	1000l
XLC 50/50	**0206**	49

Specifications: ASTM D 3306, 4656, 4985, 6210 Type I-FF; BS 6580; NATO S-759; SAE J-1034; MB 325.3; MAN 324 SNF; DAF 74002; Renault 41-01-001/- -S Type D; STJLR 651.5003; MTU MTL 5048; Komatsu; Ford WSS-M97B44-D; VAG TL-774-D (G12), F (G12+); GM 6277M, GMW 3420; Porche TL-774-D; Deutz 0199-99-1115; DQC CB-14; JDM H5; MAT3624; CES 14603, 14439; MD1-36-130; MEZ MN 121 D

Colour: red

Teboil Cooling Liquid

A high-quality antifreeze based on monoethylene glycol for both light and heavy-duty engines. Modern formulation of additives makes the coolant suitable for engines using not only conventional materials but also plastic and light metal alloys, brass, copper and aluminium. It can also be used in various industrial heat-transfer systems where the use of water-glycol mixture is recommended. The recommended mixing ratio for a freeze resistance of -36°C is 50% water and 50% coolant.

Product No.	1l	3l	10l	-200l	1000l
0203	52	13	21	24	49

	Product No.	1000l
COOLING LIQUID 50/50	**0200**	49

Specifications: BS 6580:2010; ASTM D3306

Colour: green

DID YOU KNOW?

- The recommended mixing ratio is 50% water and 50% coolant.
- A mixture with too much water will not provide effective protection against corrosion and freezing.
- Too much coolant will reduce heat-transfer capacity.

LATEST LUBRICATION TECHNOLOGIES

Teboil lubricants are manufactured in Finland at the Hamina lubricant facility from carefully selected base oils and additives. Comprehensive automation and production control systems allow us to manufacture high-performance and high-quality lubricants. Quality control covers the raw materials entering the facility and the finished products delivered to customers. All products are inspected and tested before they are delivered to our customers. This ensures that all products leaving our factory meet the quality requirements.

PRODUCT RECOMMENDATION

www.teboil.fi/voiteluaineet

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