# 77® lubricants

## Product Guide


**Local Service, Worldwide**


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**The name of Jan Lammers should be very well-known to most motor racing followers. He is after all, one of the most versatile racers of the modern era, having driven everything from sports cars, trucks (in Paris - Dakar) and Indy cars, most forms of single seaters, touring cars and even rally machines. And, of course, he has driven in Formula One, a category in which he has the unique claim to fame of making a come-back away for more than 10 years, the longest gap between F1 starts in the history of Grand Prix racing. Jan Lammers promotes 77 Lubricants because of good results!**

**Jan Lammers**

# ABOUT 77 LUBRICANTS

## HIGH QUALITY LUBRICANTS

77 Lubricants is one of the largest independent lubricating oil brands in Europe. 77 Lubricants produces and sells an extensive selection of high quality lubricants and specialties that are used in a wide range of applications. The products are developed and produced by specialists who can choose from a wide variety of base oils and additives, making sure they put together lubricants that meet the latest standards of the Original Equipment Manufacturers (OEM's) and International Standardization Committees.

The products of 77 Lubricants are produced in one of the largest and most advanced lubricant plants in the Netherlands. This plant, with an annual production capacity of 130.000 Metric Tons of finished lubricants, has an oil storage capacity of 17 million liters, more than 60 tanks for the storage of finished products and several warehouses for storing packaged products.

The ISO 9001 certified plant has a fully equipped laboratory at its disposal, which guarantees 100 percent product compliance. It also offers an oil analysis program.

77 Lubricants is a proud international brand that offers a sophisticated product line of the highest quality available in Europe. This is combined with excellent service from the sales staff and the technical team, who put the products on the market.
All products are sold by local distributors and supported by us to make sure we offer the best possible service to end-users.
Commitment and personal support of our partners and customers is in our DNA.
We act quickly and are very reliable. If you have any questions, please do not hesitate to contact us.

## 77 MARINE LUBRICANTS

77 Lubricants has an extensive marine lubricants portfolio, which includes high-performance diesel-engine cylinder oils, trunk-piston engine oils and special greases. We also provide a range of technical services and lubrication advice to support our customers in gaining optimum results when they use our 77 lubricants products. With a national supply chain of 6 bunker barges for lubricant transport and dedicated tank trucks, 77 Lubricants marine products are guaranteed to be delivered on demand in all Dutch ports.

Worlds biggest bunker barge in the Port of Rotterdam. The Port of Rotterdam, located in the city of Rotterdam, the Netherlands, is the largest port in Europe. Every year about 34.000 sea-going vessels and 100.000 inland vessels call at the Port of Rotterdam. The petrochemical industry and general cargo transshipment handlings are the most important activities in the Port of Rotterdam. For deliveries in the Rotterdam area, 77 Lubricants works with the world's biggest and most modern double hull lubricants bunker barge: the TNB Pride. Use our technical expertise to improve your productivity

As a leading supplier of marine lubricants, we have the resources to develop technology and services that immediately respond to your evolving lubrication needs. Our dedicated team of engineers and technicians offers unrivalled technical expertise. Through our oil analyses we can support you with our technical information and increase your productivity and profit.

For additional information on our services, please do not hesitate to contact us by mail at info@77lubricants.nl.

# Introduction

77 Lubricants est une des marques de lubrifiant indépendantes les plus diversifiées d'Europe. 77 Lubricants produit et introduit sur le marché une collection complète de lubrifiants de qualité supérieure, ainsi que des spécialités pour une vaste palette d'applications. Les produits sont développés et produits par des spécialistes qui font leur choix parmi une grande variété d'huiles de base et d'additifs en vue d'obtenir des lubrifiants conformes aux derniers standards de l'OEM (Original Equipment Manufacturers) et du Comité international de standardisation.

Tous les produits de 77 Lubricants sont fabriqués dans une des plus grandes usines de mélange de lubrifiant des Pays-Bas, et une des plus sophistiquées. Sa capacité annuelle est de 13 000 tonnes de produit fini, sa capacité de stockage d'huile de base s'élève à 17 millions de litres, et elle compte plus de 60 réservoirs pour le stockage de produits finis et divers entrepôts pour le stockage de produits finis.

Certifiée ISO 9001, l'usine dispose d'un laboratoire entièrement équipé garantissant une conformité produits de 100%, et propose d'autre part un programme d'analyse « huiles en service ».

77 Lubricants est fier du caractère international de la marque, de son statut de vendeur d'une ligne de produits sophistiquée et d'excellente qualité - une des meilleures en Europe. Le service optimal du département ventes et technique de 77 ne fait que faciliter le marketing de nos produits.

Tous les produits 77 Lubricant sont revendus par des distributeurs locaux, lesquels disposent du support total de l'usine de production aux Pays-Bas. Le résultat : un service excellent à destination des utilisateurs finaux de nos produits.

Fournir à nos partenaires et à nos clients un soutien individuel et personnel est notre seconde nature. Fiables, nous agissons rapidement et sommes à votre disposition pour répondre à vos questions.

# Introducción

77 lubricants es una de las marcas independientes de aceites lubricantes más grandes de Europa. 77 lubricants produce y comercializa una selección integral de lubricantes y especialidades de alta calidad, destinada a una gran variedad de aplicaciones. Los productos son desarrollados y producidos por especialistas que tienen a su disposición una amplia variedad de aceites base y aditivos para obtener lubricantes que cumplan con los estándares más recientes de los fabricantes de equipos originales (OEM) y los Comités Internacionales de Estandarización.

Todos los productos de 77 Lubricants son producidos en una de las plantas mezcladoras de lubricantes más grandes y avanzadas de los Países Bajos. Esta planta, con una capacidad de producción anual de 130.000 toneladas métricas de lubricantes terminados, tiene una capacidad de almacenamiento de 17 millones de litros, más de 60 tanques para el almacenamiento de productos terminados y varias instalaciones de almacenamiento para productos envasados.

La planta que cuenta con el certificado ISO 9001, dispone de un laboratorio totalmente equipado lo cual le permite garantizar un cumplimiento absoluto con los requisitos del producto y además ofrece un programa para el análisis de los aceites producidos.

77 Lubricants está orgullosa por ser una marca internacional, que ofrece un producto sofisticado y de la mayor calidad disponible en Europa. La comercialización de los productos cae bajo la responsabilidad del personal de ventas y el equipo técnico de 77, ofreciendo siempre el mejor servicio posible.

Todos los productos son vendidos por distribuidores locales que disfrutan de un soporte incondicional por parte de la fábrica en los Países Bajos. Esto garantiza el mejor servicio posible para los usuarios finales de nuestros productos.

La combinación de compromiso y el apoyo individual y personalizado en el trato con nuestros socios y clientes, es nuestra segunda naturaleza.

Trabajamos con rapidez y fiabilidad y estamos a su total disposición para responder cualquier pregunta.

## RACING OIL SL 10W-60

Product Code 4201

RACING OIL SL 10W-60 is a high performance fully synthetic motor oil of exceptional quality, delivering extreme performance in gasoline-, diesel- and LPG fuelled engines in passenger cars with or without turbocharger, working under severe temperature and load conditions.

RACING OIL SL 10W-60 is based on high quality 100% synthetic Poly Alpha Olefin (PAO) in combination with an unique additive package to ensure the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersant and detergent properties.
- Excellent cold temperature properties for a smooth cold start.
- Excellent protection against wear, corrosion and foam.
- Suited for extreme and severe conditions.

**Exceeds: API SN/CF, ACEA A3/B4**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-60 |
| Density@15°C | kg/m³ | ASTM D4052 | 848 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 165.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 23.9 |
| Viscosity Index | | ASTM D2270 | 177 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.3 |
| Sulpated Ash | %Wt | ASTM D874 | 1.09 |

## RACING OIL SM 5W-50

Product Code 4202

RACING OIL SM 5W-50 is a high performance motor oil based on 100% synthetic technology with exceptional quality, delivering extreme performance in gasoline-, diesel- and LPG fuelled engines in passenger cars with or without turbocharger, working under severe temperature and load conditions.

RACING OIL SM 5W-50 is based on high quality synthetic base oil in combination with an unique additive package to ensure the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersant and detergent properties.
- Excellent cold temperature properties for a smooth cold start.
- Excellent protection against wear, corrosion and foam.
- Suited for extreme and severe conditions.

**Exceeds: API SN, ACEA A3/B4, MB 229.1, VW 502.00/505.00**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-50 |
| Density@15°C | kg/m³ | ASTM D4052 | 852 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 109 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 18.4 |
| Viscosity Index | | ASTM D2270 | 189 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.2 |
| Sulpated Ash | %Wt | ASTM D874 | 1.09 |

# MOTOR OIL VX 0W-20

Product Code 4217

MOTOR OIL VX 0W-20 is a fully synthetic fuel saving long life oil based for use in gasoline- and diesel engines of passenger cars and light vans where a VAG norm 508.00/509.00 has been prescribed.

Remark: This product is not backwards compatible with older vehicles that require the VW 504 00/507 00 specification.

MOTOR OIL VX 0W-20 is formulated with high quality 100% Poly Alpha Olefin (PAO) base stocks in combination with an unique additive technology to achieve the following performance:

- Exceptional good low temperature properties.
- Excellent protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.
- Extended oil drain interval.
- Improved fuel economy

**Exceeds: VW 508 00 / 509 00, ACEA C5, Porsche C20, (VW TL 52577)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 0W-20 |
| Density@15°C | kg/m³ | ASTM D4052 | 835 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 39 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.8 |
| Viscosity Index | | ASTM D2270 | 177 |
| Viscosity CCS @-35°C, max | cP | ASTM D5293 | 3280 |
| Flash Point COC | °C | ASTM D92 | >205 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 6.7 |
| Sulpated Ash | %Wt | ASTM D874 | 0.8 |

# MOTOR OIL CP 0W-30

Product Code 4243

MOTOR OIL CP 0W-30 is a high performance fuel saving engine oil based on 100% synthetic technology to be used in gasoline- and diesel engines of the latest generation passenger cars and light vans where a ACEA C2 specification is required and suitable for all engines which require an PSA B71 2290 performance specification.

MOTOR OIL CP 0W-30 is based on high performance 100% synthetic technology oil in combination with a specially selected additive technology to ensure the following properties:

- Excellent thermal and oxidation stability.
- Fuel saving properties.
- Excellent protection against wear, foam and corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Long oil drain interval possible.

**Exceeds: ACEA C2, PSA B71 2290, Ford M2C950-A**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 0W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 856 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 70 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 10.5 |
| Viscosity Index | | ASTM D2270 | 165 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6200 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7.5 |
| Sulpated Ash | %Wt | ASTM D874 | 0.79 |

# MOTOR OIL VX 5W-30

Product Code 4224

MOTOR OIL VX 5W-30 is a high performance fuel saving LOW SAPS long life oil based on 100% synthetic technology for use in gasoline- and diesel engines of passenger cars and light vans where a VAG norm 504.00/507.00 has been prescribed and also suitable for vehicles where MB 229.51 and BMW LL-04 are required.

MOTOR OIL VX 5W-30 is formulated with high quality synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.
- Extended oil drain interval.
- Also suitable for engines equipped with other catalyst like TWC.

**Approved: VW 504 00 / 507 00, MB-approval 229.51**
**Exceeds: ACEA C3, API SN, Porsche C30, BMW LL-04**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 852 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 65.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.6 |
| Viscosity Index | | ASTM D2270 | 173 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.7 |
| Sulpated Ash | %Wt | ASTM D874 | 0.7 |

# MOTOR OIL XT 5W-30

Product Code 4231

MOTOR OIL XT 5W-30 is a high performance fuel saving LOW SAPS long life oil based on 100% synthetic technology for use in gasoline- and diesel engines of passenger cars and light vans where a VAG norm 504.00/507.00 has been prescribed and also suitable for vehicles where MB 229.51 and BMW LL-04 are required.

Remark: not suitable for R5- and V10 TDI engines and engines where VAG norm VW 506.01 is being advised.

MOTOR OIL XT 5W-30 is formulated with high quality synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.
- Extended oil drain interval.
- Also suitable for engines equipped with other catalyst like TWC.

**Exceeds: ACEA C3, VW 504.00/507.00, MB 229.51, BMW LL-04, API SN**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 856 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 71.0 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 12.0 |
| Viscosity Index | | ASTM D2270 | 166 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.7 |
| Sulpated Ash | %Wt | ASTM D874 | 0.79 |

## MOTOR OIL RN 5W-30

Product Code 4233

MOTOR OIL RN 5W-30 is a high performance fuel saving LOW SAPS oil based on 100% synthetic technology for use in gasoline- and diesel engines of passenger cars and light vans specially designed for the latest generation Renault and Nissan diesel engines equipped with a Diesel Particulate Filter (DPF) and all other engines where an ACEA C4 product is required.

MOTOR OIL RN 5W-30 is based on high performance synthetic base oil in combination with a specially selected additive technology to ensure the following properties:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.
- Extend oil drain interval.
- Also suitable for engines equipped with other catalyst like TWC.

**Exceeds: ACEA C4, Renault 0720, MB 229.51, MB 226.51**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 849 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 67 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.9 |
| Viscosity Index | | ASTM D2270 | 177 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7.8 |
| Sulpated Ash | %Wt | ASTM D874 | 0.50 |

## MOTOR OIL SN 0W-20

Product Code 4215

MOTOR OIL SN 0W-20 is high performance fuel conserving engine oil based on 100% synthetic technology for all gasoline engines in passenger cars and light vans.

MOTOR OIL SN 0W-20 is specially designed for the lubricating of the latest generation vehicles like hybrid and ECO models which require a SAE 0W-20 and running on gasoline and/or ethanol-containing fuels up to E85.

MOTOR OIL SN 0W-20 is based on synthetic base oil in combination with a special additive package to obtain the following properties.

- Excellent thermal and oxidation stability.
- Excellent cold temperature properties for a smooth cold start.
- Very good dispersant and detergent properties.
- Fuel saving properties due to low friction properties
- Very good antifoam, antiwear and anticorrosion properties.
- Long oil change interval possible.

**Exceeds: API SN/SN-RC, ILSAC GF-5, GM Dexos 1:2015** (Dexos 1: Gen2)**, GM 4718M**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 0W-20 |
| Density@15°C | kg/m³ | ASTM D4052 | 847 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 44 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 8.5 |
| Viscosity Index | | ASTM D2270 | 175 |
| Viscosity CCS @-35°C, max | cP | ASTM D5293 | 6200 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.2 |
| Sulpated Ash | %Wt | ASTM D874 | 0.86 |

## MOTOR OIL VLV 0W-20

Product Code 4244

MOTOR OIL VLV 0W-20 is a fuel saving oil based on 100% synthetic technology specially designed for use in Volvo passenger cars with or without turbocharger where Volvo VCC RBS0-2AE is required.

MOTOR OIL VLV 0W-20 can also be used for applications where an oil according to ACEA A1/B1 or API: SN is recommended by the manufacturer.

MOTOR OIL VLV 0W-20 is formulated with high quality synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Protection to wear by cold start.
- Very good low temperature properties.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.
- Added fuel economy

**Approved: Volvo VCC RBS0/2AE**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 0W-20 |
| Density@15°C | kg/m³ | ASTM D4052 | 845 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 47,4 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9,10 |
| Viscosity Index | | ASTM D2270 | 175 |
| Viscosity CCS @-35°C, max | cP | ASTM D5293 | <6200 |
| Flash Point COC | °C | ASTM D92 | 230 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.0 |
| Sulpated Ash | %Wt | ASTM D874 | 0.80 |

## MOTOR OIL SN 5W-20

Product Code 4205

MOTOR OIL SN 5W-20 is high performance fuel conserving engine oil based on 100% synthetic technology for all gasoline engines in passenger cars and light vans. MOTOR OIL SN 5W-20 is specially designed for the lubricating of the latest generation vehicles like hybrid and ECO models which require a SAE 5W-20 and running on gasoline and/or ethanol-containing fuels up to E85.

MOTOR OIL SN 5W-20 is based on synthetic base oil in combination with a special additive package to obtain the following properties.

- Excellent thermal and oxidation stability.
- Excellent cold temperature properties for a smooth cold start.
- Very good dispersant and detergent properties.
- Fuel saving properties due to low friction properties
- Very good antifoam, antiwear and anticorrosion properties.
- Long oil change interval possible.

**Exceeds: API SN-RC, ILSAC GF-5, GM Dexos 1:2015** (Dexos 1: Gen2)**, MS 6395, GM 4718M**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-20 |
| Density@15°C | kg/m³ | ASTM D4052 | 846 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 43 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 8.3 |
| Viscosity Index | | ASTM D2270 | 172 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.3 |

# MOTOR OIL LE 5W-30

Product Code 4225

MOTOR OIL LE 5W-30 is a high performance fuel saving MID SAPS engine oil based on 100% synthetic technology for use in the latest generation gasoline and diesel engines of passenger car and light vans with or without turbocharger. MOTOR OIL LE 5W-30 is developed for use in engine which are equipped with or without an exhaust gas after treatment system.

MOTOR OIL LE 5W-30 is based on high performance 100% synthetic base oil in combination with a specially selected additive technology to ensure the following properties:

- Good thermal and oxidation stability.
- MID SAPS technology.
- Good protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Equipped for diesel engines with an exhaust after treatment system.
- Fuel saving properties.

**Approved: MB-Approval 229.52 (pending)**
**Exceeds: API SN/CF, ACEA C3, BMW LL-04, Dexos 2, MB 229.31, MB 229.51, Renault RN0700**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 850 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 66.4 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.9 |
| Viscosity Index | | ASTM D2270 | 178 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7.7 |
| Sulpated Ash | %Wt | ASTM D874 | 0.8 |

# MOTOR OIL ASP 5W-30

Product Code 4232

MOTOR OIL ASP 5W-30 is a high performance fuel saving MID SAPS engine oil based on 100% synthetic technology to be used in gasoline- and diesel engines of the latest generation passenger cars and light vans where a PSA B71 2290 specification is required and suitable for all engines which require an C2 performance specification.

MOTOR OIL ASP 5W-30 is based on high performance synthetic base oil in combination with a specially selected additive technology to ensure the following properties:

- Excellent thermal- and oxidation stability.
- Fuel saving properties.
- Excellent protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Long oil drain interval possible.

**Exceeds: API SN/CF, ACEA C2, Renault RN 0700, PSA B 71 2290, Fiat 9.55535-S1**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 852 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 64 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.1 |
| Viscosity Index | | ASTM D2270 | 166 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7.7 |
| Sulpated Ash | %Wt | ASTM D874 | 0.8 |

# MOTOR OIL DX1 5W-30

Product Code 4236

MOTOR OIL DX1 5W-30 is the advanced synthetic energy conserving motor oil specially developed for the most modern high output gasoline and turbocharged engines in passenger cars, sport utility vehicles and light-duty trucks, operating on ethanol-containing fuels up to E85. It is formulated to help improve & retain fuel economy and protect vehicle emission system & turbocharger components while meeting the latest GM Dexos1 TM demands.

MOTOR OIL DX1 5W-30 is based on exceptional quality synthetic base oil in combination with a special selected additive package to reach to following properties:

- Improved protection against stochastic pre-ignition
- Improving sludge protection, piston cleanliness, turbo-charger protection, seal compatibility, wear protection
- Special friction modifiers used in this Energy conserving oil help improving & retaining fuel economy.
- Offers excellent lubrication at low temperatures and protect engine at high temperatures.
- Superior volatility characteristics reduce oil consumption and hydro-carbon pollution (VOCs).
- Advanced additive chemistry helps in emission system durability.
- Compatible with ethanol-containing fuels up to E85.

**Exceeds: GM Dexos1™ :2015** (Gen2)**, ILSAC GF-5, API: SN, GM 6094M, GM 4718M, Chrysler MS 6395**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 850 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 62 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.2 |
| Viscosity Index | | ASTM D2270 | 176 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.2 |

# MOTOR OIL SN/CF SEMI-SYNTH 5W-30

Product Code 4521

MOTOR OIL SN/CF SEMI-SYNTH 5W-30 is an universal high performance fuel saving oil based on semi-synthetic technology for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SN/CF SEMI-SYNTH 5W-30 is formulated with high quality mineral and synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Exceeds: API SN/CF**

| Properties | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 867 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 70 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 10.8 |
| Viscosity Index | | ASTM D2270 | 144 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 6.8 |

# MOTOR OIL HT 0W-40

Product Code 4229

MOTOR OIL HT 0W-40 is a fully synthetic oil for the latest generation engines and specially formulated to meet the requirements of the latest generation gasoline & diesel engines. This multi-grade oil provides excellent protection against wear and good lubrication to help saving fuel and reduction of emissions.

MOTOR OIL HT 0W-40 is formulated with high quality synthetic base oils and Poly Alpha Olefin (PAO) in combination with a special selected additive package to ensure the following properties:

- Excellent thermal and oxidation stability.
- Excellent cold temperature properties for an easy cold start.
- Very good dispersant and detergent properties.
- Very good antifoam, antiwear and anti-corrosion properties.
- Long oil change interval possible.

**Approved: MB-Approval 229.5**
**Exceeds: ACEA A3/B4, API SN, VW 502.00/505.00, Porsche A40, BMW LL-01, Renault RN0700/0710, MB 229.3, Ford M2C937-A**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 0W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 845 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 80.9 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.6 |
| Viscosity Index | | ASTM D2270 | 189 |
| Viscosity CCS @-35°C, max | cP | ASTM D5293 | 6200 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.0 |

# MOTOR OIL LE 5W-40

Product Code 4226

MOTOR OILL LE 5W-40 is a high performance fuel saving MID SAPS engine oil based on 100% synthetic technology for use in the latest generation gasoline and diesel engines of passenger car and light vans with or without turbocharger. MOTOR OIL LE 5W-40 is developed for use in engine which are equipped with or without an exhaust gas after treatment system.

MOTOR OIL LE 5W-40 is based on high performance 100% synthetic base oil in combination with a specially selected additive technology to ensure the following properties:

- Good thermal and oxidation stability.
- MID SAPS technology.
- Good protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Equipped for diesel engines with an exhaust after treatment system.
- Fuel saving properties.

**Approved: MB-Approval 229.51**
**Exceeds: API SN/CF, ACEA C3, Renault RN 0700/0710, Dexos 2, Porsche A40, BMW LL-04, Ford M2C917A, MB 226.5, MB229.31, VW 502.00/505.00, VW 505.01**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 851 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 82.0 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.1 |
| Viscosity Index | | ASTM D2270 | 178 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7.6 |
| Sulpated Ash | %Wt | ASTM D874 | 0.8 |

# MOTOR OIL SM 5W-40

Product Code 4204

MOTOR OIL SM 5W-40 is an universal high performance fuel saving oil based on 100% synthetic technology for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SM 5W-40 is formulated with high quality synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Approved: MB-Approval 229.3, VW 502.00 / 505.00**
**Exceeds: API SN/CF, ACEA A3/B4, Renault RN 0700/0710, GM-LL-A-025, GM-LL-B-025, Porsche A40, BMW LL-01, PSA B 71 2296**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 854 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 83.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.3 |
| Viscosity Index | | ASTM D2270 | 178 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.4 |
| Sulpated Ash | %Wt | ASTM D874 | 1.20 |

# MOTOR OIL MP 5W-40

Product Code 4247

MOTOR OIL MP 5W-40 is an high performance engine oil based on 100% synthetic technology for use especially in Mercedes-Benz and Porsche as well as in other gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particle Filter (DPF).

MOTOR OIL MP 5W-40 is formulated with high quality synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Approved: MB-Approval 229.5, VW 502.00 / 505.00** (pending)
**Exceeds: API SN, ACEA A3/B4, BMW Longlife-01, Porsche A40, GM-LL-A-25/B025, Renault RN 0700/0710**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 854 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 86 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.3 |
| Viscosity Index | | ASTM D2270 | 174 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | 201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.3 |
| Sulpated Ash | %Wt | ASTM D874 | 1.26 |


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# MOTOR OIL SN 10W-30

Product Code 4235

MOTOR OIL SN 10W-30 is a high performance fuel saving engine oil based on mineral technology to be used in gasoline- and diesel engines of the latest generation passenger cars and light vans where a ACEA A3/B4 specification is required and suitable for all engines which require an MB 229.3 and VW 502.00 performance specification.

MOTOR OIL SN 10W-30 is formulated with high quality refined mineral and synthetic base stocks in combination with a special additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Approved: API SN/CF, ACEA A3/B4, VW 502.00/505.00, MB 229.3**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 873 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 66 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 10.5 |
| Viscosity Index | | ASTM D2270 | 147 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.3 |
| Sulpated Ash | %Wt | ASTM D874 | 1.31 |

# MOTOR OIL SN 10W-40

Product Code 4234

MOTOR OIL SN 10W-40 is an universal high performance fuel saving semi synthetic oil for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SN 10W-40 is formulated with high quality refined mineral and synthetic base stocks in combination with a special additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Exceeds: API SN/CF, ACEA A3/B4, MB 229.3, RN 0700/0710, VW 501.01/505.00, PSA B71 2300**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 861 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 92 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.9 |
| Viscosity Index | | ASTM D2270 | 154 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >215 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.2 |
| Sulpated Ash | %Wt | ASTM D874 | 1.31 |

# MOTOR OIL SN 20W-50

Product Code 4240

MOTOR OIL SN 20W-50 is an universal high performance engine oil for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SN 20W-50 is formulated with high quality hydro-treated mineral base stocks in combination with a special additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Exceeds: API SN/CF, ACEA A3/B4, MB 229.1/229.3, VW 501.01/505.00**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 20W-50 |
| Density@15°C | kg/m³ | ASTM D4052 | 873 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 137 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 17.8 |
| Viscosity Index | | ASTM D2270 | 145 |
| Viscosity CCS @-15°C, max | cP | ASTM D5293 | 9500 |
| Flash Point COC | °C | ASTM D92 | >215 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.4 |
| Sulpated Ash | %Wt | ASTM D874 | 1.31 |

# MOTOR OIL SL 0W-30

Product Code 4219

MOTOR OIL SL 0W-30 is a high performance fully synthetic motor oil for gasoline-- and diesel engines of modern passenger cars and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SL 0W-30 is formulated with high quality 100% synthetic base oil (Poly Alpha Olefin (PAO)) in combination with an unique additive package to ensure the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersant and detergent properties.
- Excellent cold temperature properties for a smooth cold start.
- Excellent protection against wear, corrosion and foam.
- Suited for extreme and severe conditions.

**Exceeds: API: SL/CF, ACEA A3/B4, VW 502.00/505.00, MB 229.5, Volvo VCC 95200356, Renault RN 0700/0710**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 0W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 844 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 48.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.42 |
| Viscosity Index | | ASTM D2270 | 184 |
| Viscosity CCS @-35°C, max | cP | ASTM D5293 | 6200 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.4 |
| Sulpated Ash | %Wt | ASTM D874 | 1.51 |

# MOTOR OIL FEB 5W-20

Product Code 4218

MOTOR OIL FEB 5W-20 is a high quality fuel saving engine oil based on 100% synthetic technology specially designed for the latest Ford Ecoboost gasoline engines. Motor Oil FEB 5W-20 is also suited for engines where ACEA A1/B1 or API SN is recommended

MOTOR OIL FEB 5W-20 is based on high performance synthetic oil in combination with a specially selected additive technology to ensure the following properties.

- Excellent thermo- and oxidation stability.
- Very high detergency and dispersion.
- Very good low temperature properties.
- Protection to wear by cold start.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High and stable viscosity index.
- Low Fuel Consumption.

**Exceeds: Ford WSS M2C-948B, ACEA A1/B1, API SN**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-20 |
| Density@15°C | kg/m³ | ASTM D4052 | 855 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 44.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.9 |
| Viscosity Index | | ASTM D2270 | 152 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7 |
| Sulpated Ash | %Wt | ASTM D874 | 0.78 |

# MOTOR OIL FEC 5W-30

Product Code 4227

MOTOR OIL FEC 5W-30 is a high performance fuel saving oil based on 100% synthetic technology for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger and designed for the last generation Ford vehicles and other vehicles where an ACEA A5/B5 is been required. This product is not to be used in diesel engines equipped with a Diesel Particle Filter (DPF) except on Ford engines that require Ford WSS M2C913C/D.

MOTOR OIL FEC 5W-30 is formulated with high quality synthetic base stocks in combination with an unique additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.
- Longer oil drain interval.

**Exceeds: API SL/CF, ACEA A1/B1, ACEA A5/B5, Renault 0700, Ford WSS M2C913C, Ford WSS M2C913D**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 852 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 55 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.9 |
| Viscosity Index | | ASTM D2270 | 171 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.1 |
| Sulpated Ash | %Wt | ASTM D874 | 1.08 |

# MOTOR OIL SL 10W-30

Product Code 4228

MOTOR OIL SL 10W-30 is an universal high performance fuel saving semi synthetic oil for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SL 10W-30 is formulated with high quality refined mineral and synthetic base stocks in combination with a special additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Exceeds: API SL/CF, MB 229.1, VW 501.01 / 505.00, ACEA A3/B4-04**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 864 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 73 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11,3 |
| Viscosity Index | | ASTM D2270 | 147 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.4 |
| Sulpated Ash | %Wt | ASTM D874 | 1.05 |

# MOTOR OIL SL 10W-40

Product Code 4206

MOTOR OIL SL 10W-40 is an universal high performance fuel saving semi synthetic oil for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SL 10W-40 is formulated with high quality refined mineral and synthetic base stocks in combination with a special additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Approved: MB-Approval 229.1**
**Exceeds: ACEA A3/B3, API SL/CF, BMW LL-01, VW 501.01/505.00**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 858 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 87.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.9 |
| Viscosity Index | | ASTM D2270 | 162 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.5 |
| Sulpated Ash | %Wt | ASTM D874 | 0.95 |

# MOTOR OIL SL 15W-40

Product Code 4208

MOTOR OIL SL 15W-40 is a high performance mineral engine oil suitable for gasoline-, LPG-, and diesel engines in modern passenger cars and light vans with or without turbochargers.

MOTOR OIL SL 15W-40 is based on high performance mineral base oil in combination with a specially selected additive technology to ensure the following properties:

- Good thermal and oxidation stability.
- Stay-in-grade.
- Good protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.

**Exceeds: ACEA A3/B3, MB 229.1, VW 505.00, API SL/CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 879 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 86 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.9 |
| Viscosity Index | | ASTM D2270 | 143 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.5 |
| Sulpated Ash | %Wt | ASTM D874 | 1.05 |

# MOTOR OIL SL 20W-50

Product Code 4210

MOTOR OIL SL 20W-50 is a high performance mineral engine oil suitable for gasoline-, LPG-, and diesel engines in modern passenger cars and light vans with or without turbochargers.

MOTOR OIL SL 20W-50 is based on high performance mineral base oil in combination with a specially selected additive technology to ensure the following properties:

- Good thermal and oxidation stability.
- Stay-in-grade.
- Good protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.

**Exceeds: ACEA A3/B3, MB 229.1, VW 505.00, API SL/CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 20W-50 |
| Density@15°C | kg/m³ | ASTM D4052 | 890 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 157 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 17.8 |
| Viscosity Index | | ASTM D2270 | 125 |
| Viscosity CCS @-15°C, max | cP | ASTM D5293 | 9500 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.4 |
| Sulpated Ash | %Wt | ASTM D874 | 1.06 |

# MOTOR OIL SL/CF 10W-40

Product Code 4209

MOTOR OIL SL/CF 10W-40 is an universal high performance semi synthetic oil for use in gasoline- and diesel engines of passenger car and light vans with or without turbocharger. This product is unsuitable for diesel engines equipped with a Diesel Particle Filter (DPF).

MOTOR OIL SL/CF 10W-40 is formulated with high quality re-refined mineral and synthetic base stocks in combination with a special additive technology to achieve the following performance:

- Very good low temperature properties.
- Protection to wear by cold start.
- Very high thermal- and oxidation stability.
- Excellent resistance against foaming, corrosion and wear.
- High dispersancy and detergency level.
- High viscosity index.

**Exceeds: API SL/CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 863 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 96 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 152 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 6.4 |
| Sulpated Ash | %Wt | ASTM D874 | 0.95 |

# MOTOR OIL SF 15W-40

Product Code 4212

MOTOR OIL SF 15W-40 is a multi functional mineral engine oil for older gasoline-, diesel- and LGP engines of passenger car and light vans with or without turbo compressor. MOTOR OIL SF 15W-40 is not suited for engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SF 15W-40 is formulated with special selected base stocks in combination with unique additive package to reach the following properties:

- Stable viscosity index.
- Good protection against rust, corrosion and wear.
- Good dispergency and detergency properties.
- Good antifoam properties.

**Exceeds: API SF/CD**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 879 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 105 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.0 |
| Viscosity Index | | ASTM D2270 | 135 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |
| Total Base Number | mgKOH/g | ASTM D2896 | 5.0 |
| Sulpated Ash | %Wt | ASTM D874 | 0.66 |

# MOTOR OIL SF 20W-50

Product Code 4214

MOTOR OIL SF 20W-50 is a multi functional mineral engine oil for older gasoline-, diesel- and LGP engines of passenger car and light vans with or without turbo compressor. MOTOR OIL SF 20W-50 is not suited for engines equipped with a Diesel Particulate Filter (DPF).

MOTOR OIL SF 20W-50 is formulated with special selected base stocks in combination with unique additive package to reach the following properties:

- Stable viscosity index.
- Good protection against rust, corrosion and wear.
- Good dispergency and detergency properties.
- Good antifoam properties.

**Exceeds: API SF/CD**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 20W-50 |
| Density@15°C | kg/m$^3$ | ASTM D4052 | 889 |
| Kin. Viscosity @40°C | mm$^2$/s | ASTM D7042 | 167 |
| Kin. Viscosity @100°C | mm$^2$/s | ASTM D7042 | 18.3 |
| Viscosity Index | | ASTM D2270 | 123 |
| Viscosity CCS @-15°C, max | cP | ASTM D5293 | 9500 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| Total Base Number | mgKOH/g | ASTM D2896 | 5.2 |
| Sulpated Ash | %Wt | ASTM D874 | 0.66 |

# ENGINE OIL SYNTHETIC UHPD 5W-30

Product Code 4502

ENGINE OIL SYNTHETIC UHPD 5W-30 is a fuel conserving super high performance "MID SAPS" oil based on 100% synthetic technology designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year and running on low Sulphur Diesel Fuel (max. 50 ppm).

ENGINE OIL SYNTHETIC UHPD 5W-30 is formulated for use in Euro-5 and Euro-6 engines equipped with Diesel Particle Filter (DPF). This product is also suitable for vehicles equipped with EGR and/or SCR after treatment systems.

ENGINE OIL SYNTHETIC UHPD 5W-30 is formulated on high refined synthetic base stock in combination with an special additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against "Bore Polishing".
- Extended drain intervals up to 150.000 km.
- Suitable for engines equipped with a Diesel Particulate Filter (DPF).
- Fuel conserving.


**Exceeds: API CJ-4, ACEA E4/E6/E7/E9, MB 228.31/ 228.51, MAN M3677/ 3575, MAN M3477/ 3271, Volvo VDS-4, MTU Type 3.1, Mack EO-O, Deutz DQC IV-10-LA, Renault RLD-3, Mack EO-N+, JASO DH-2, CAT ECF-3, Scania LA, Scania LDF-4, Cummins CES 20081, DDC 93K218**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 859 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 70.3 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 12.1 |
| Viscosity Index | | ASTM D2270 | 170 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Total Base Number | mgKOH/g | ASTM D2896 | 13.1 |
| Sulpated Ash | %Wt | ASTM D874 | 0.98 |

# ENGINE OIL SPECIAL UHPD 10W-40

Product Code 4279

ENGINE OIL SPECIAL UHPD 10W-40 is a fuel conserving super high performance "MID SAPS" oil, designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year and running on low sulphur diesel fuel (max. 50 ppm). ENGINE OIL SPECIAL UHPD 10W-40 is formulated for use in Euro 5 and Euro 6 engines equipped with Diesel Particulate Filter (DPF). This product is also suitable for vehicles equipped with EGR and/or SCR after treatment system.

ENGINE OIL SPECIAL UHPD 10W-40 is formulated on high refined 100% synthetic base stock in combination with an special additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against "Bore Polishing".
- Extended drain intervals up to 150.000 km.
- Suitable for engines equipped with a Diesel Particulate Filter (DPF).
- Fuel conserving.

**Approved: Volvo VDS-4, Mack EO-O Premium Plus, Renault VI RLD-3**
**Meets: ACEA E4/E6/E7/E9, API CJ-4, MB 228.31/228.51, MTU Type 3.1/2.1, MAN M3477/3575/3271-1, Cummins CES 20081, Scania Low-Ash, Detroit 93K218, JASO DH-2, Deutz DQC IV-10-LA, Mack EO-N Premium Plus, Renault VI RLD-2, CAT ECF-3**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 862 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 92.5 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.2 |
| Viscosity Index | | ASTM D2270 | 158 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.8 |
| Sulpated Ash | %Wt | ASTM D874 | 0.98 |

# ENGINE OIL SUPER UHPD 10W-40

Product Code 4267

ENGINE OIL SUPER UHPD 10W-40 is a high performance fully synthetic engine oil to be used in diesel engines in light- and heavy commercial vehicles with or without turbocharger.

ENGINE OIL SUPER UHPD 10W-40 is designed for use in Euro-II, Euro-III and EURO-IV emission requirements and engines equipped with EGR and/or SCR exhaust after treatment system.

ENGINE OIL SUPER UHPD 10W-40 may not been used in diesel engines equipped with a Diesel Particulate Filter (DPF). Suited for Scania engines which require a LDF-3 performance oil

ENGINE OIL SUPER UHPD 10W-40 is based on high performance synthetic base oil in combination with especially selected additive technology to ensure the following properties.

- Excellent thermal and oxidation stability.
- Excellent protection against forming of "Bore Polishing".
- Suitable for Low emission engine equipped with EGR and SCR technology
- Excellent protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Extended oil drain interval possible

**Exceeds: ACEA E4/E7, API CF, MB 228.5, MAN M3277, MTU Type 3, Deutz DQC III-10, Volvo VDS-3, Renault RVI RLD-2, Mack EO-N, Scania LDF-3, DAF extended drain**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 865 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 85.9 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.5 |
| Viscosity Index | | ASTM D2270 | 160 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 15.2 |
| Sulpated Ash | %Wt | ASTM D874 | 1.85 |

# ENGINE OIL UHPD 10W-40

Product Code 4252

ENGINE OIL UHPD 10W-40 is a high performance fully synthetic engine oil to be used in diesel engines in light- and heavy commercial vehicles with or without turbocharger.

ENGINE OIL UHPD 10W-40 is designed for use in Euro-II, Euro-III and EURO-IV emission requirements and engines equipped with EGR and/or SCR exhaust after treatment system.

ENGINE OIL UHPD 10W-40 may not been used in diesel engines equipped with a Diesel Particulate Filter (DPF).

ENGINE OIL UHPD 10W-40 is based on high performance synthetic base oil in combination with especially selected additive technology to ensure the following properties.

- Excellent thermal and oxidation stability.
- Excellent protection against forming of "Bore Polishing".
- Suitable for Low emission engine equipped with EGR and SCR technology
- Excellent protection against wear, foam and corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Extended oil drain interval possible

**Exceeds: ACEA E4/E7, MB 228.5, Deutz DQC IV-10, Mack EO-N, MTU Type 3, MAN M3277, MAN M3377, Renault RLD-2, Volvo VDS-3**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 864 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 97.3 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 155 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.1 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## ENGINE OIL EHPD 10W-40

Product Code 4250

ENGINE OIL EHPD 10W-40 is a high performance semi synthetic engine oil to be used in diesel engines in light- and heavy commercial vehicles with or without turbocharger designed for use in Euro-II, Euro-III and EURO-IV emission requirements and engines equipped with EGR and/or SCR exhaust after treatment system. ENGINE OIL EHPD 10W-40 is unsuitable for diesel engines equipped with a Diesel Particulate Filter (DPF)

ENGINE OIL EHPD 10W-40 is based on high performance synthetic and mineral base oil in combination with a specially selected additive technology to ensure the following properties:

- Excellent thermal and oxidation stability.
- Excellent protection against forming of “Bore Polishing”.
- Suitable for Low emission engine equipped with EGR and SCR technology
- Excellent protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Extended oil drain interval possible.

**Exceeds: API CI-4, ACEA E7/E4, MB 228.5, MAN M3277, Renault RLD-2, Volvo VDS-3, Mack EO-N, MTU Type 3, Scania LDF-2, Renault RXD, Deutz DQC III-10, Cummins CES 20077/78**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 867 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 96 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.6 |
| Viscosity Index | | ASTM D2270 | 158 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 13.1 |
| Sulpated Ash | %Wt | ASTM D874 | 1.6 |

## ENGINE OIL SHPD 10W-30

Product Code 4269

ENGINE OIL SHPD 10W-30 is a fuel saving MID SAPS super high performance universal oil based on 100% synthetic technology designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-4, Euro-5 and Euro-6 engines equipped with a Diesel Particulate Filter (DPF) and suited for diesel engines equipped with EGR and/or SCR after treatment system.

ENGINE OIL SHPD 10W-30 is formulated with high refined synthetic base stock in combination with an unique additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against “Bore Polishing”.
- Extended drain intervals.
- Complies with strictest European emission regulation.

**Approved: Volvo VDS 4.5, Mack EOS-4.5**
**Exceeds: API CK-4, ACEA E7/E9, MB 228.31, DFS 93K222, DQC III-10-LA, MTU Type 2.1, CAT ECF-3, MAN M3575, Renault RLD-3, Ford M2C171-F1, Cummins CES 20086**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 866 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 75.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.5 |
| Viscosity Index | | ASTM D2270 | 144 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.1 |
| Sulpated Ash | %Wt | ASTM D874 | 1.00 |

## ENGINE OIL SHPD 10W-40

Product Code 4246

ENGINE OIL SHPD 10W-40 is a fuel saving MID SAPS super high performance universal oil based on 100% synthetic technology designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-4, Euro-5 and Euro-6 engines equipped with a Diesel Particulate Filter (DPF) and suited for diesel engines equipped with EGR and/or SCR after treatment system.

ENGINE OIL SHPD 10W-40 is formulated with high refined synthetic base stock in combination with an unique additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against “Bore Polishing”.
- Extended drain intervals.
- Complies with strictest European emission regulation.

**Exceeds: API CK-4, ACEA E7/E9, MB 228.31, Cummins CES 20086, DFS 93K222, DQC III-10-LA, Mack EOS-4.5, MAN M3575, CAT ECF-3, MTU Type 2.1, Renault RLD-3, Volvo VDS 4.5**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 864 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 97.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 15.1 |
| Viscosity Index | | ASTM D2270 | 164 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.8 |
| Sulpated Ash | %Wt | ASTM D874 | 1.00 |

## ENGINE OIL SHPD 15W-40

Product Code 4251

ENGINE OIL SHPD 15W-40 is a fuel saving MID SAPS super high performance universal oil based on 100% synthetic technology designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-4, Euro-5 and Euro-6 engines equipped with a Diesel Particulate Filter (DPF) and suited for diesel engines equipped with EGR and/or SCR after treatment system.

ENGINE OIL SHPD 15W-40 is formulated with high refined base stock in combination with an unique additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against “Bore Polishing”.
- Extended drain intervals.
- Complies with strictest European emission regulation.

**Approved: Volvo VDS 4.5, Mack EOS-4.5, MB-Approval 228.31**
**Exceeds: API SN, ACEA E7/E9, API CK-4, DFS 93K222, DQC III-10-LA, MTU Cat 2.1, Cummins CES 20086, MAN M3575, Renault RLD-3, CAT ECF-3, Ford M2C171-F1**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 874 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 114.4 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 15.3 |
| Viscosity Index | | ASTM D2270 | 140 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.6 |
| Sulpated Ash | %Wt | ASTM D874 | 1.00 |

## ENGINE OIL HDX EXTRA 15W-40 Product Code 4263

ENGINE OIL HDX EXTRA 15W-40 is an extra high performance, extra high TBN, universal engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions in combination with high-sulphur diesel fuels. ENGINE OIL HDX EXTRA 15W-40 is suitable for use in engine with (EGR and SCR) and without exhaust gas after treatment systems, making the product suitable for engines of Euro-1 upto Euro-5. This product is not suitable for vehicles equipped with DPF filters.

ENGINE OIL HDX EXTRA 15W-40 is formulated with high refined solvent mineral stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Extra protection against high sulphur fuels
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals.

**Exceeds: MB 228.3, MAN M 3275, Volvo VDS-3, MACK EO-N, API CI-4, ACEA E7, Renault RLD-2, Global DHD-1, JASO DH-1, Allison C4, MTU Type 2, Mack EO-M+, DAF HP-2, Cummins CES 2077/20078, API SL, CAT ECF-2, DDC 93K215**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 876 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 100 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.4 |
| Viscosity Index | | ASTM D2270 | 149 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 16.4 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## ENGINE OIL LSP 5W-30 Product Code 4259

ENGINE OIL LSP 5W-30 is a fuel conserving super high performance universal oil designed based on 100% synthetic technology for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year and running on low Sulphur Diesel Fuel (max. 50 ppm).

ENGINE OIL LSP 5W-30 is developed for use in Euro-4, Euro-5 and Euro-6 engines equipped with Diesel Particulate Filter (DPF). This product is also suitable for vehicles equipped with EGR and/or SCR after treatment systems.

ENGINE OIL LSP 5W-30 is formulated on high refined synthetic base stock in combination with an special additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against “Bore Polishing”.
- Extended drain intervals up to 150.000 km.
- Suitable for engines equipped with a Diesel Particle Filter (DPF)
- Fuel conserving

**Exceeds: ACEA E6/E7, API CI-4, MB 228.51, MAN M3477, MAN M3271-1, MACK EO-N, Volvo VDS-3, MTU Type 3.1, Deutz DQC III-10 LA, Renault RLD-2, Cummins 20076/20077**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 5W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 857 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 70 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 11.9 |
| Viscosity Index | | ASTM D2270 | 165 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >219 |
| Pour Point | °C | ASTM D97 | -39 |
| Total Base Number | mgKOH/g | ASTM d2896 | 10.2 |
| Sulpated Ash | %Wt | ASTM D874 | 0.8 |

## ENGINE OIL SCR 10W-40 Product Code 4254

ENGINE OIL SCR 10W-40 is a fuel conserving super LOW SAPS high performance universal oil designed based on 100% synthetic technology for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year and running on low Sulphur Diesel Fuel (max 50 ppm) for use in Euro-4, Euro-5 and Euro-6 engines equipped with Diesel Particulate Filter (DPF). This product is also suitable for vehicles equipped with EGR and/or SCR after treatment systems.

ENGINE OIL SCR 10W-40 is formulated on high quality refined synthetic base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against “Bore Polishing”.
- Extended drain intervals up to 150.000 km.
- Suitable for engines equipped with a Diesel Particle Filter (DPF)
- Fuel conserving

**Approved: MAN M 3477, Volvo VDS-3, Renault VI RLD-2, MACK EO-N**
**Exceeds: ACEA E6/E7, Deutz DQC-IV-10 LA, API CI-4, MTU Type 3.1, MB 228.51**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 864 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 97.4 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 155 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.0 |
| Sulpated Ash | %Wt | ASTM D874 | 0.8 |

## ENGINE OIL HDX 10W-40

Product Code 4255

ENGINE OIL HDX 10W-40 is an extra high performance universal semi synthetic engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-3, Euro-4 and Euro-5 engines equipped with EGR and/or SCR. This product is not suitable for vehicles equipped with DPF filters.

ENGINE OIL HDX 10W-40 is formulated with high refined solvent mineral and synthetic base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals.


**Approved: MB Approval 228.3, Volvo VDS-3, Renault RLD-2, MACK EO-N**
**Exceeds: API CI-4, API SL, ACEA E7, ACEA A3/B4, CAT ECF-1a, ECF-2, Deutz DQC-III-10, MTU Type 2, Mack EO-M+, Cummins CES 20077/20078, Global DHD-1, MAN M3275, JASO DH-1, DDC 93K215**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 873 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 91.4 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.0 |
| Viscosity Index | | ASTM D2270 | 157 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 11.1 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## ENGINE OIL HDX 15W-40

Product Code 4256

ENGINE OIL HDX 15W-40 is an extra high performance universal engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-3, Euro-4 and Euro-5 engines equipped with EGR and/or SCR. This product is not suitable for vehicles equipped with DPF filters.

ENGINE OIL HDX 15W-40 is formulated with high refined solvent mineral stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals.


**Approved: MB Approval 228.3, Volvo VDS-3, Renault RLD-2, MACK EO-N**
**Exceeds: API CI-4/ SL, ACEA E7, DDC 93K215, Global DHD-1, JASO DH-1, Deutz DQC-III, MTU Type 2, CAT ECF-1a, MAN M 3275, Cummins CES 2077/20078**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 886 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 101.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.1 |
| Viscosity Index | | ASTM D2270 | 142 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 11.7 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## ENGINE OIL HDX 20W-50

Product Code 4248

ENGINE OIL HDX 20W-50 is an extra high performance universal engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-3, Euro-4 and Euro-5 engines equipped with EGR and/or SCR. This product is not suitable for vehicles equipped with DPF filters.

ENGINE OIL HDX 20W-50 is formulated with high refined solvent mineral stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals.

**Exceeds: API CI-4, API SL, ACEA E7, MB 228.3, MTU Type 2, DDC 93K215, MAN M 3275, Volvo VDS-3, Deutz DQC-III, MACK EO-N, Cummins CES 2077/20078, CAT ECF-1a, Renault RLD-2, JASO DH-1, Global DHD-1**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 20W-50 |
| Density@15°C | kg/m³ | ASTM D4052 | 890 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 138.3 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 17.7 |
| Viscosity Index | | ASTM D2270 | 141 |
| Viscosity CCS @-15°C, max | cP | ASTM D5293 | 9500 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -24 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.2 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## ENGINE OIL HDX 25W-60

Product Code 4245

ENGINE OIL HDX 25W-60 is an extra high performance universal engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under severe operating conditions through the whole year for use in Euro-3, Euro-4 and Euro-5 engines equipped with EGR and/or SCR. This product is not suitable for vehicles equipped with DPF filters.

ENGINE OIL HDX 25W-60 is formulated with high refined solvent mineral stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals.

**Approved: API CI-4, API SL, ACEA E7, MB 228.3, MTU Type 2, DDC 93K215, MAN M 3275, Volvo VDS-3, Deutz DQC-III, MACK EO-N, Cummins CES 2077/20078, CAT ECF-1a, Renault RLD-2, JASO DH-1, Global DHD-1**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 25W-60 |
| Density@15°C | kg/m³ | ASTM D4052 | 897 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 236.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 23.46 |
| Viscosity Index | | ASTM D2270 | 123 |
| Viscosity CCS @-10°C, max | cP | ASTM D5293 | 13000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -21 |
| Total Base Number | mgKOH/g | ASTM D2896 | 11.3 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## ENGINE OIL HDL 10W-40

Product Code 4257

ENGINE OIL HDL 10W-40 is an high performance universal semi synthetic engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under heavy operating conditions through the whole year for use in Euro I, Euro II and Euro III engines.
This product is not suitable for vehicles equipped with particulate filters.

ENGINE OIL HDL 10W-40 is formulated with high refined solvent mineral and synthetic base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Not suitable for engine equipped with a Diesel Particulate Filter (DPF).

**Exceeds: API CH-4, API SL, ACEA A3/B4, MAN M 3275m, MB 228.3, MTU Type 2, JASO DH-1**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 872 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 93.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.1 |
| Viscosity Index | | ASTM D2270 | 158 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Total Base Number | mgKOH/g | ASTM D2896 | 11.1 |
| Sulpated Ash | %Wt | ASTM D874 | 1.26 |

## ENGINE OIL HDL 15W-40

Product Code 4258

ENGINE OIL HDL 15W-40 is an high performance universal diesel engine oil designed for high loaded diesel engines in light- and heavy commercial vehicles working under heavy operating conditions through the whole year for use in Euro I, Euro II, Euro III, Euro IV and Euro V engines. This product is not suitable for vehicles equipped with particulate filters.

ENGINE OIL HDL 15W-40 is formulated with high refined solvent mineral base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Not suitable for engine equipped with a Diesel Particulate Filter (DPF)

**Exceeds: API CH-4, API SJ, ACEA E7, MB 228.1, MAN M 3275, Deutz DQC-III, MTU type 2, Cummins CES 20077, Cat ECF-1a**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 880 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 94.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.9 |
| Viscosity Index | | ASTM D2270 | 150 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 11.5 |
| Sulpated Ash | %Wt | ASTM D874 | 1.26 |

## ENGINE OIL HD 15W-40

Product Code 4260

ENGINE OIL HD 15W-40 is a mineral based “High Performance Diesel” (HPD) engine oil providing good performance in high output , high speed, turbo charged engines operating under severe conditions.

ENGINE OIL HD 15W-40 is formulated with high quality mineral base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Controlling deposits and viscosity increase
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.

**Exceeds: MB 228.3, MAN M3275, Volvo VDS, MTU Type 2, API: CG-4, ACEA E2, MACK E0-L, Allison C4**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 881 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 102 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.1 |
| Viscosity Index | | ASTM D2270 | 140 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.9 |
| Sulpated Ash | %Wt | ASTM D874 | 1.27 |

## ENGINE OIL HD 20W-50

Product Code 4261

ENGINE OIL HD 20W-50 is a mineral based “High Performance Diesel” (HPD) engine oil providing good performance in high output , high speed, turbo charged engines operating under severe conditions.

ENGINE OIL HD 20W-50 is formulated with high quality mineral base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Controlling deposits and viscosity increase
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.

**Exceeds: API CG-4, MB 228.1, MAN M271, Volvo VDS, MTU Type 1, ACEA E2, Renault RD**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 20W-50 |
| Density@15°C | kg/m³ | ASTM D4052 | 884 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 152 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 18.1 |
| Viscosity Index | | ASTM D2270 | 132 |
| Viscosity CCS @-15°C, max | cP | ASTM D5293 | 9500 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.9 |
| Sulpated Ash | %Wt | ASTM D874 | 1.27 |

## MONO ENGINE OIL CF 10W

Product Code 4262

MONO ENGINE OIL CF 10W is a heavy duty diesel engine oil developed to meet the requirements of a variety of diesel engines operating under severe conditions.

MONO ENGINE OIL CF 10W is suitable for use in a wide range of on- and off-highway applications where an API CF oil is recommended.

MONO ENGINE OIL CF 10W is based on high quality refined virgin base oil in combination with a special additive package to ensure the following properties:

- High thermal and oxidation stability.
- Effective in preventing from wear, corrosion and foam.
- High dispersancy and detergency properties.

**Exceeds: API SF/CF, MTU Type 2, CCMC G2/D1, MIL-L-46152**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W |
| Density@15°C | kg/m³ | ASTM D4052 | 881 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 38 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 6.1 |
| Viscosity Index | | ASTM D2270 | 115 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.4 |

## MONO ENGINE OIL CF 20W-20

Product Code 4264

MONO ENGINE OIL CF 20W-20 is a heavy duty diesel engine oil developed to meet the requirements of a variety of diesel engines operating under severe conditions.

MONO ENGINE OIL CF 20W-20 is suitable for use in a wide range of on- and off-highway applications where an API CF oil is recommended.

MONO ENGINE OIL CF 20W-20 is based on high quality refined virgin base oil in combination with a special additive package to ensure the following properties:

- High thermal and oxidation stability.
- Effective in preventing from wear, corrosion and foam.
- High dispersancy and detergency properties.

**Exceeds: API SF/CF, MTU Type 2, CCMC G2/D1, MIL-L-46152**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 20W-20 |
| Density@15°C | kg/m³ | ASTM D4052 | 891 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 67 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 8.6 |
| Viscosity Index | | ASTM D2270 | 105 |
| Viscosity CCS @-15°C, max | cP | ASTM D5293 | 9500 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| Total Base Number | mgKOH/g | ASTM D2896 | 13.1 |

## MONO ENGINE OIL CF 30

Product Code 4266

MONO ENGINE OIL CF 30 is a heavy duty diesel engine oil developed to meet the requirements of a variety of diesel engines operating under severe conditions.

MONO ENGINE OIL CF 30 is suitable for use in a wide range of on- and off-highway applications where an API CF oil is recommended.

MONO ENGINE OIL CF 30 is based on high quality refined virgin base oil in combination with a special additive package to ensure the following properties:

- High thermal and oxidation stability.
- Effective in preventing from wear, corrosion and foam.
- High dispersancy and detergency properties.

**Exceeds: API SF/CF, MTU Type 2, CCMC G2/D1, MIL-L-46152**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 30 |
| Density@15°C | kg/m³ | ASTM D4052 | 895 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 93 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 10.7 |
| Viscosity Index | | ASTM D2270 | 98 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -24 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.7 |

## MONO ENGINE OIL CF 40

Product Code 4268

MONO ENGINE OIL CF 40 is a heavy duty diesel engine oil developed to meet the requirements of a variety of diesel engines operating under severe conditions.

MONO ENGINE OIL CF 40 is suitable for use in a wide range of on- and off-highway applications where an API CF oil is recommended.

MONO ENGINE OIL CF 40 is based on high quality refined virgin base oil in combination with a special additive package to ensure the following properties:

- High thermal and oxidation stability.
- Effective in preventing from wear, corrosion and foam.
- High dispersancy and detergency properties.

**Exceeds: API SF/CF, MTU Type 2, CCMC G2/D1, MIL-L-46152, Cummins CES 20081, Renault VI RLD-3**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 40 |
| Density@15°C | kg/m³ | ASTM D4052 | 899 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 140 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.0 |
| Viscosity Index | | ASTM D2270 | 96 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -18 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.5 |

## MONO ENGINE OIL CF 50

Product Code 4270

MONO ENGINE OIL CF 50 is a heavy duty diesel engine oil developed to meet the requirements of a variety of diesel engines operating under severe conditions.

MONO ENGINE OIL CF 50 is suitable for use in a wide range of on- and off-highway applications where an API CF oil is recommended.

MONO ENGINE OIL CF 50 is based on high quality refined virgin base oil in combination with a special additive package to ensure the following properties:

- High thermal and oxidation stability.
- Effective in preventing from wear, corrosion and foam.
- High dispersancy and detergency properties.

**Exceeds: API SF/CF, MTU Type 2, CCMC G2/D1, MIL-L-46152**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 50 |
| Density@15°C | kg/m³ | ASTM D4052 | 903 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 204 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 18.1 |
| Viscosity Index | | ASTM D2270 | 97 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |
| Total Base Number | mgKOH/g | ASTM D2896 | 12.8 |

## RAILROAD ENGINE OIL 413

Product Code 4271

RAILROAD ENGINE OIL 413 is a high performance, zinc-free and chlorine-free oil specially designed to provide excellent engine cleanliness and oil filter life in the modern railroad diesel locomotive engines. RAILROAD ENGINE OIL 413 is recommended for railroad diesel locomotive engines specifying LMOA Generation 5 quality oils & for medium speed two-cycle and four-cycle railroad engines, including newer diesel locomotive engines of GE and EMD of General Motors.

RAILROAD ENGINE OIL 413 is also suited for marine and stationary engines for power generation or off-shore drilling requiring zinc-free oils and for Detroit Diesel 149 series engines operating under severe conditions and stationary engines requiring API CF and CF-2 quality oils.

RAILROAD ENGINE OIL 413 is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Exceptional detergency and dispersancy provides excellent engine cleanliness, especially engine top decks.
- Excellent retention of TBN facilitates extended drain intervals.
- High thermo-oxidative.
- Zinc-free formulation protects silver bearings against corrosion.
- Non-chlorinated additive package helps in reducing used oil disposal costs.

**Approved: Electro-Motive Diesel (EMD)**
**Exceeds: API CF / CF-2, LMOA Generation 5, GE Generation 4 Long Life**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 40 |
| Density@15°C | kg/m³ | ASTM D4052 | 898 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 150 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 15.1 |
| Viscosity Index | | ASTM D2270 | 102 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -18 |
| Total Base Number | mgKOH/g | ASTM D2896 | 13.9 |
| Sulpated Ash | %Wt | ASTM D874 | 1.5 |

## MOTOR CYCLE OIL SYN 2T

Product Code 4295

MOTOR CYCLE OIL SYN 2T is a high performance low smoke 2-stroke motorcycle oil based on 100% synthetic technology to be used in 2-stroke motorcycle, scooter, snow mobiles and other variety gasoline engines.

MOTOR CYCLE OIL SYN 2T is based on high performance synthetic base oil in combination with a specially selected additive technology to ensure the following properties.

- Excellent engine protection on cleanliness.
- Low smoke even under extreme operation conditions.
- High thermal and oxidation stability.
- Exceptional protection against piston scuffing.
- High anti-wear and anti-corrosion properties.
- Homogeneous mixture even at low ambient temperatures.

**Exceeds: API TC, JASO FD, ISO-L-EGD, ROTAX 253, ISO 6743-15, Husqvarna 346/372**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density @ 15°C | kg/m3 | ASTM D4052 | 870 |
| Kinematic Viscosity @ 40°C | mm2/s | ASTM D7042 | 43 |
| Kinematic Viscosity @ 100°C | mm2/s | ASTM D7042 | 8.3 |
| Viscosity Index | | ASTM D2270 | 170 |
| Flash Point COC | °C | ASTM D92 | >90 |
| Pour Point | °C | ASTM D97 | -51 |
| Total Base Number | mgKOH/g | ASTM D2896 | 1.6 |
| Sulphated Ash | wt % | ASTM D874 | 0.15 |

## MOTOR CYCLE OIL 2T EXTRA

Product Code 4294

MOTOR CYCLE OIL 2T EXTRA is a high quality semi-synthetic lubricant specially developed for high powered 2-stroke air cooled gasoline engines fitted with oil-injection or premix systems.

MOTOR CYCLE OIL 2T EXTRA is based on a high quality virgin and synthetic base oils in combination with a special selected additive package to obtain the following properties:

- Outstanding protection against piston scuffing and premature wear of engine components.
- Excellent control against engine deposits, exhaust system blocking.
- Extended engine life without power loss.
- Low ash additive technology prevents pre-ignition and spark plug fouling.
- Specially selected synthetic base fluid reduces visible exhaust smoke.
- Easy miscibility with gasoline ensures stable homogeneous mixture even at low ambient temperatures.

**Exceeds: API TC, JASO FD, ISO-L-EGD**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density@15°C | kg/m³ | ASTM D4052 | 873 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 71 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.8 |
| Viscosity Index | | ASTM D2270 | 123 |
| Flash Point COC | °C | ASTM D92 | >90 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 1.4 |
| Sulpated Ash | %Wt | ASTM D78 | 0.14 |

## MOTOR CYCLE OIL 2T

Product Code 4292

MOTOR CYCLE OIL 2T is a high quality lubricant suitable for use in air cooled 2-stroke gasoline engines deployed in variety of applications.

MOTOR CYCLE OIL 2T is based on a high quality virgin base oils in combination with a special selected additive package to obtain the following properties:

- Excellent lubricity protects against piston scuffing and premature wear of engine components
- Proven additive technology controls engine and exhaust system deposits
- Low ash formula prevents pre-ignition and spark plug fouling
- Easy miscibility with gasoline ensures stable homogeneous mixture even at low ambient temperatures.

**Exceeds: API TC, JASO FB**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density @ 15°C | kg/m³ | ASTM D4052 | 883 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 71 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 9.3 |
| Viscosity Index | | ASTM D2270 | 109 |
| Flash Point COC | °C | ASTM D92 | >100 |
| Pour Point | °C | ASTM D97 | -30 |
| Total Base Number | mgKOH/g | ASTM D2896 | 1.2 |
| Sulphated Ash | wt % | ASTM D874 | 0.25 |

## RACING KART 2T

Product Code 4300

RACING KART 2T is a high performance ultimate lubricant based on synthetic ester and castor proven base oil. KART 2T is specially developed for high revving 2-stroke air- and/or water-cooled Karts engines which run under severe conditions..

RACING KART 2T is formulated with high quality synthetic ester and castor base stocks in combination with an unique additive technology to achieve the following performance:

- More power and better bearing protection.
- Very high film strength and affinity for hot metal.
- Excellent scuff protection.
- Exceptional Piston Cleanliness.
- Low carbon residue, reduces smoke.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density@15°C | kg/m³ | ASTM D4052 | 938 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 151 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 18.2 |
| Viscosity Index | | ASTM D2270 | 134 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -48 |

# MOTOR CYCLE OIL 4T EXTRA

Product Code 4298

MOTOR CYCLE OIL 4T EXTRA is a high performance 4-stroke gasoline engine oil developed specifically to meet the special requirements of latest high performance air cooled 4-stroke motorcycles. It provides excellent protection to engine, gearbox and wet clutch used in 4-stroke motorcycles and ensures highest degree of reliability even under severe operating conditions and temperatures.

MOTOR CYCLE OIL 4T EXTRA is based on 100% synthetic Poly Alpha Olefin (PAO) base stock in combination with esters and a special selected additive package to obtain the following properties:

- Outstanding thermo-oxidative stability.
- Exceptional anti-wear, anti-rust and anti-corrosion properties.
- Controlled frictional properties eliminate clutch slippage.
- Increased power/ fuel economy and improves drivability.
- Excellent dispersancy and detergency properties.
- Excellent shear stability maintains viscosity under high temperature-high shear environment and provides improved wear protection.
- Outstanding low temperature properties enable easy starting at low ambient temperatures and ensure effective lubrication and wear protection at start up.
- Low volatility characteristics reduce oil consumption and hydrocarbon pollution.

**Exceeds: API SL, JASO MA/MA2**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 5W-40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 846 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 84.0 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.1 |
| Viscosity Index | | ASTM D2270 | 171 |
| Viscosity CCS @-30°C, max | cP | ASTM D5293 | 6600 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.1 |
| Sulphated Ash | wt % | ASTM D874 | 1.2 |

# MOTOR CYCLE OIL 4T 10W-40

Product Code 4299

MOTORCYCLE OIL 4T 10W-40 is an synthetic technology based 4-stroke gasoline engine oil developed specifically to meet the special requirements of latest high performance air and liquid cooled 4-stroke motorcycles. It provides excellent protection to engine, gearbox and wet clutch used in 4-stroke motorcycles and ensures highest degree of reliability even under severe operating conditions and temperatures.

MOTOR CYCLE OIL 4T 10W-40 is based on a high quality synthetic technology base oils in combination with a special selected additive package to obtain the following properties:

- Excellent anti-wear, anti-rust and anti-corrosion properties.
- Good thermo-and oxidative stability.
- Controlled frictional properties eliminate clutch slippage and improves drivability.
- Excellent dispersant and detergent properties.

**Exceeds: API SL, JASO MA-2**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 10W-40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 860 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 87 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 13.7 |
| Viscosity Index | | ASTM D2270 | 160 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.6 |
| Sulphated Ash | wt% | ASTM D874 | 1.15 |

# MOTOR CYCLE OIL 4T 10W-50

Product Code 4293

MOTOR CYCLE OIL 4T 10W-50 is a semi synthetic 4-stroke gasoline engine oil developed specifically to meet the special requirements of latest high performance air cooled 4-stroke motorcycles. It provides excellent protection to engine, gearbox and wet clutch used in 4-stroke motorcycles and ensures highest degree of reliability even under severe operating conditions and temperatures.

MOTOR CYCLE OIL 4T 10W-50 is based on a high quality mineral and synthetic base oils in combination with a special selected additive package to obtain the following properties:

- Outstanding thermo-oxidative stability.
- Exceptional anti-wear, anti-rust and anti-corrosion properties.
- Controlled frictional properties eliminate clutch slippage.
- Increased power/ fuel economy and improves drivability.
- Excellent dispersancy and detergency properties.
- Excellent shear stability maintains viscosity under high temperature-high shear environment.
- Provides improved wear protection.
- Outstanding low temperature properties enable easy starting at low ambient temperatures.
- Ensure effective lubrication and wear protection at start up.
- Low volatility characteristics reduce oil consumption and hydrocarbon pollution.

**Exceeds: API SL, JASO MA-2**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 10W-50 |
| Density@15°C | kg/m³ | ASTM D4052 | 857 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 117 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 17.7 |
| Viscosity Index | | ASTM D2270 | 168 |
| Viscosity CCS @-25°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.7 |
| Sulpated Ash | %Wt | ASTM D78 | 1.15 |

# MOTOR CYCLE OIL 4T 15W-50

Product Code 4297

MOTOR CYCLE OIL 4T 15W-50 is a high performance mineral engine oil especially developed for use in air-, oil-, and water-cooled 4-stroke motorcycles to provide excellent protection towards engine, gearbox and wet clutches and ensures the highest possible reliability even under the most severe operation conditions.

MOTOR CYCLE OIL 4T 15W-50 is based on high performance mineral base oil in combination with a specially selected additive technology to ensure the following properties:

- Good thermal and oxidation stability.
- Stay-in-grade.
- Good protection against wear, foam en corrosion.
- Low temperature properties, to ensure a smooth cold start.
- Controlled frictional properties eliminate clutch slippage, effectively improving the driveability of the vehicle.

**Exceeds: API SL, JASO MA-2**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 15W-50 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 875 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 134 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 17.8 |
| Viscosity Index | | ASTM D2270 | 147 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >210 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.2 |
| Sulphated Ash | wt % | ASTM D874 | 1.25 |

## SNOWMOBILE OIL SYN 2T

Product Code 4291

SNOWMOBILE OIL SYN 2T is a fully synthetic excellent performance lubricant developed for air & water cooled 2-stroke engines. The special formulation ensures excellent engine protection, cleanliness and low smoke, even under extreme operating conditions.

SNOW MOBILE OIL SYN 2T is based on a high quality fully synthetic base oils in combination with a special selected additive package to obtain the following properties:

- Outstanding protection against piston scuffing and premature wear of engine components.
- Excellent control against engine deposits, exhaust system blocking.
- Extended engine life without power loss.
- Low ash additive technology prevents pre-ignition and spark plug fouling.
- Specially selected synthetic base fluid reduces visible exhaust smoke.
- Easy miscibility with gasoline ensures stable homogeneous mixture even at very low ambient temperatures.

**Exceeds: API TC, JASO FD, ISO-L-EGD, ROTAX 253, ISO 6743-15**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density @ 15°C | kg/m³ | ASTM D4052 | 870 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 43 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 8.3 |
| Viscosity Index | | ASTM D2270 | 170 |
| Flash Point COC | °C | ASTM D92 | >90 |
| Pour Point | °C | ASTM D7346 | -51 |
| Total Base Number | mgKOH/g | ASTM D2896 | 1.6 |
| Sulphated Ash | wt % | ASTM D874 | 0.15 |

## OUTBOARD ENGINE OIL 2T

Product Code 4296

OUTBOARD ENGINE OIL 2T is a high performance ashless 2-stroke engine oil for use in modern cooled outboard engines where NMMA TC-W3® is required

OUTBOARD ENGINE OIL 2T is based on high performance mineral base oil in combination with a specially selected additive technology to ensure the following properties.

- Excellent lubricity.
- Protection against wear and rust.
- High protection against scuffing and deposit forming.
- Easy mixing and stable mixture even at low temperatures

**Exceeds: NMMA TC-W3®**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density @ 15°C | kg/m³ | ASTM D4052 | 876 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 46 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 7.3 |
| Viscosity Index | | ASTM D2270 | 118 |
| Flash Point COC | °C | ASTM D92 | >90 |
| Pour Point | °C | ASTM D97 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.0 |

## AUTOGEAR OIL SYN 75W-90

Product Code 4310

AUTOGEAR OIL SYN 75W-90 is a high quality fuel conserving fully synthetic total driveline gear lubricants designed to meet the demanding requirements of light duty and heavy duty commercial vehicles and off-highway equipment operating in most severe operating conditions. Unique additive technology allows the use of a single lubricant in rear axles, synchronized and non-synchronized manual transmission. AUTOGEAR OIL SYN 75W-90 is formulated with high quality synthetic base oil in combination with a special additive package to reach the following properties:

- Unique additive technology allows the use of a single lubricant in rear axles, synchronised and non-synchronised manual transmissions and therefore helps in rationalisation of products.
- Exceptional thermo-oxidative stability and load bearing characteristics help in extending the life of the driveline components and the oil.
- Effective rust and corrosion protection, especially to copper and its alloys reduces wear, extends synchroniser life and improves shifting performance
- Outstanding low temperature fluidity reduces wear at start up and provides smoother shifting at low ambient temperatures
- Exceptional shear stability helps in retaining viscosity and film strength to protect against wear even under severe operating conditions
- Superior frictional properties provide improved fuel economy and smoother shift ability.

**Exceeds: API GL-4/5, MT-1, MAN 342-M3, MIL-PRF-2105E, Scania STO 1:0, MB 235.0 / 235.8, SAE J2360, MACK GO-J, MAN M3343S, MAN 341-E2, MAN 341-Z2, Arvin Meritor 0-76-N, ZF TE-ML 02B/05B/07A/12B/12N/16F/17B/19C/21B**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 75W-90 |
| Density@15°C | kg/m³ | ASTM D4052 | 876 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 92 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 15.4 |
| Low-Temperature Viscosity Index | | ASTM D2270 | 177 |
| Brookfield @-40°C | cP | ASTM D2983 | 150000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |

## AUTOGEAR OIL SYN 75W-85

Product Code 4334

AUTOGEAR OIL SYN 75W-85 is an universal high performance fuel saving transmission on synthetic technology for use in manual shifted transmission of the modern passenger car and light vans where an API GL-5, SAE 75W-85 is recommended.

AUTOGEAR OIL SYN 75W-85 is based on special selected high performance synthetic base oil in combination with a special selected EP-additive package to reach to following properties:

- Excellent EP-properties.
- Excellent thermal- and oxidation stability.
- Good shifting even at low temperatures.
- Low pour point.
- Fuel saving properties.
- Excellent protection against the forming of foam, corrosion and wear

**Exceeds: API GL-5, MB 235.7, ZF TE-ML 18, VW G 052 190, VW G 055 190, Alfa-Romeo, BMW, Fiat, Lancia, VW G 052 145**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 75W-85 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 870 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 81.4 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 12.2 |
| Viscosity Index | | ASTM D2270 | 146 |
| Brookfield @-40°C | cP | ASTM D2983 | 150000 |
| Flash Point COC | °C | ASTM D2983 | >201 |
| Pour Point | °C | ASTM D7346 | -51 |

# AUTOGEAR OIL TX 75W-80

Product Code 4333

AUTOGEAR OIL TX 75W-80 is a high quality fuel saving synthetic thermally stable long life gear lubricant designed for passenger- and commercial vehicles using manual transmissions fitted with different synchronizers including latest ones based on carbon.

AUTOGEAR OIL TX 75W-80 is based on high quality synthetic base oil in combination with a special additive package to ensure the following properties:

- Exceptional thermo and oxidative stability.
- Superior lubricating properties provide improved fuel economy.
- Exceptional load bearing characteristics.
- Effective rust and corrosion protection.
- Outstanding low temperature fluidity provides smoother shifting at low ambient temperatures.
- Good gear engagement with a variety of synchronizer materials including latest carbon.
- Good frictional properties provide improved fuel economy and smoother shift ability.

**Exceeds: API GL-4, MAN 341 Z4, Volvo 97307, Renault B0032/2, IVECO, Eaton Europe, ZF TE-ML 01L,02L,08,13,16K,24A, DAF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 75W-80 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 862 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 59.4 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 9.9 |
| Brookfield Viscosity @ -40°C | cP | ASTM D2983 | 150000 |
| Viscosity Index | | ASTM D2270 | 153 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |

# AUTOGEAR OIL SYN LS 75W-140

Product Code 4337

AUTOGEAR OIL SYN LS 75W-140 is a synthetic extra high performance multi-functional gear lubricant designed to provide effective lubrication in modern high performance passenger cars, sports utility vehicles, vans and light duty trucks and “off highway” equipment equipped with both conventional and limited slip differentials. The special friction modifier used in this oil helps in reducing chatter and improving traction besides retaining the frictional properties for longer service life.

AUTOGEAR OIL SYN LS 75W-140 is formulated with high quality synthetic base oils in combination with a special additive package to reach the following properties:

- Unique additive technology allows the use of a single lubricant in rear axles, synchronised and non-synchronised manual transmissions and therefore helps in rationalisation of products.
- Exceptional thermo-oxidative stability and load bearing characteristics help in extending the life of the driveline components and the oil.
- Effective rust and corrosion protection, especially to copper and its alloys reduces wear, extends synchroniser life and improves shifting performance
- Outstanding low temperature fluidity reduces wear at start up and provides smoother shifting at low ambient temperatures
- Exceptional shear stability helps in retaining viscosity and film strength to protect against wear even under severe operating conditions
- Superior frictional properties provide improved fuel economy and smoother shift ability.
- Excellent limited slip performance reduces chatter and improves traction

**Exceeds: API GL-5 (LS), MT-1, MIL-PRF-2105E, MIL-L-2105D, SAE J 2360, MACK GO-J, Scania STO 1:0 (Axle), ZF TE-ML-05D, ZF TE-ML-21D, Ford M2C192-A**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 75W-140 |
| Density@15°C | kg/m³ | ASTM D4052 | 872 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 165 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 25.4 |
| Viscosity Index | | ASTM D2270 | 188 |
| Low-Temperature Brookfield viscosity@-40°C | cP | ASTM D2983 | 150000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D97 | -42 |

# AUTOGEAR OIL LS 80W-90

Product Code 4312

AUTO GEAR OIL LS 80W-90 is an extra high performance extreme pressure type automotive gear lubricant specially developed for use in modern high performance passenger cars, sports utility vehicles, vans and light duty trucks with limited slip differentials.

AUTOGEAR OIL LS 80W-90 is based on high quality mineral virgin base oil in combination with a special additive package to ensure the following properties:

- Exceptional thermo-oxidative stability.
- Exceptional load bearing characteristics.
- Effective rust and corrosion protection.
- Excellent limited slip performance to reduce chatter and improves traction.
- Outstanding low temperature fluidity provides smoother shifting at low ambient temperatures.
- Exceptional shear stable.
- Good frictional properties provide improved fuel economy and smoother shift ability

**Exceeds: API GL-5, MAN 342 M1/M2, ZF TE-ML 05C, 07A, 08, 12E, 16E, 17B, 19B, 21C, MIL-L-2105D, Volvo 1273.10, Arvin Meritor**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 80W-90 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 898 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 139.5 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.3 |
| Low-Temp. Brookfield Viscosity @ -26°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 100 |
| Flash Point COC | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | -30 |

# AUTOGEAR OIL MTF 75W-80

Product Code 4338

AUTOGEAR OIL MTF 75W-80 is a high quality manual transmission fluid designed for passenger- and light commercial vehicles using both manual transmissions and transaxles. Not suitable for differentials and other API: GL-5 applications

AUTOGEAR OIL MTF 75W-80 is based on high quality synthetic technology base oil in combination with a special additive package to ensure the following properties:

- Exceptional thermo-oxidative stability.
- Superior lubricating properties provide improved fuel economy.
- Exceptional load bearing characteristics.
- Effective rust and corrosion protection.
- Outstanding low temperature fluidity provides smoother shifting at low ambient temperatures.
- Good gear engagement with a variety of synchronizer materials including brass, carbon, sintered bronze and molybdenum

**Exceeds: API: GL-4, BMW MTF LT-2, BMW MTF LT-3, BMW MTF LT-4, Ford WSD-M2C200-C, Ford WSS-M2C200-D2, GM 1940004, GM 19259104, GM 1940764, GM 1940768, GM 1940182, MB 235.10, MTF94, Honda MTF, Honda MTF II, Honda MTF III, Nissan MT-XZ, Nissan MT-XZ TL, Volvo 97308, Volvo 97309, VW G 009 317, VW G 052 171, VW G 052 178, VW G 052 512, VW G 052 726, VW G 060 726, VW G 052 527, VW G 060 726, VW G 070 726, VW G50, PSA B71 2230, Renault (NFJ/NFP/TRJ/TRT/TRZ)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 75W-80 |
| Density@15°C | kg/m³ | ASTM D4052 | 869 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 54 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.4 |
| Low-Temp. Brookfield Viscosity @ -40°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 158 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |

# AUTOGEAR OIL XP 80W-90 Product Code 4311

AUTOGEAR OIL XP 80W-90 is a high performance total driveline gear lubricant designed to provide excellent lubrication in a wide range of drive trains of light & heavy duty commercial vehicles.

AUTOGEAR OIL XP 80W-90 is based on high quality mineral base oil in combination with a special additive package to ensure the following properties:

- Good thermo-oxidative stability.
- Good load bearing characteristics.
- Effective rust and corrosion protection.
- High low temperature fluidity provides smoother shifting at low ambient temperatures.
- Exceptional shear stable.
- Excellent frictional properties provide improved fuel economy and smoother shiftability.

**Exceeds: API GL-4/5, MT-1, MAN M 3343, MIL-PRF-2105E, Scania STO 1:0, MB 235.0, ZF TE-ML 02B/05A/07A/12E/16B/16C/16D/17B/19B/21A, SAE J2360, MACK G0-J, MAN 341 E2, Volvo 97310**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 80W-90 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 900 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 139 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.1 |
| Low-Temp. Brookfield Viscosity @ -26°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |

# AUTOGEAR OIL MP 80W-90 Product Code 4306

AUTOGEAR OIL MP 80W-90 is an universal high performance mineral multi-purpose gear oil for use in manual transmission en transaxles of passenger cars, vans, light- and heavy commercial vehicles, off-highway equipment, mining and agriculture where a SAE 80W-90 GL-5 is been required.

AUTOGEAR OIL MP 80W-90 is formulated with high refined mineral base stocks in combination with a special MP-additive technology to achieve the following performance:

- Very good protection against wear.
- Very good performance against the forming of foam and corrosion.
- Good Oxidation- and thermal stability.

**Exceeds: API GL-5, MIL-L-2105D, MAN 342 M1/M2, ZF TE-ML 05A, 7A, 16B, 16C, 16D, 17B, 19B, 21A**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 80W-90 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 898 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 143 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.4 |
| Low-Temp. Brookfield Viscosity @ -26°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 98 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |

# AUTOGEAR OIL MP 85W-90 Product Code 4307

AUTOGEAR OIL MP 85W-90 is an universal high performance mineral multi-purpose gear oil for use in manual transmission en transaxles of passenger cars, vans, light- and heavy commercial vehicles, off-highway equipment, mining and agriculture where a SAE 85W-90 GL-5 is been required.

AUTOGEAR OIL MP 85W-90 is based on high quality mineral base oil in combination with a special additive package to ensure the following properties:

- Good thermo-oxidative stability.
- Good load bearing characteristics.
- Effective rust and corrosion protection.
- High low temperature fluidity provides smoother shifting at low ambient temperatures.
- Exceptional shear stable.

**Exceeds: API GL-5, MIL-L-2105D, MAN 342 M1/M2, MB 235.0, Volvo 97310, Volvo 97316, Voith 3.325-339, ZF TE-ML 07A/08/16B/16C/16D/17B/19B/21A**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 85W-90 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 901 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 157 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 15.2 |
| Low-Temp. Brookfield Viscosity @ -12°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 97 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -24 |

# AUTOGEAR OIL MP 80W-140 Product Code 4309

AUTOGEAR OIL MP 80W-140 is an universal high performance mineral multi-purpose gear oil for use in manual transmission en transaxles of passenger cars, vans, light- and heavy commercial vehicles, off-highway equipment, mining and agriculture where a SAE 80W-140 GL-5 is been required. This product is also suitable for applications where a SAE 85W-140 GL-5 is required.

AUTOGEAR OIL MP 80W-140 is based on high quality mineral base oil in combination with a special additive package to ensure the following properties:

- Good thermo-oxidative stability.
- Good load bearing characteristics.
- Effective rust and corrosion protection.
- High low temperature fluidity provides smoother shifting at low ambient temperatures.
- Exceptional shear stable.

**Exceeds: API GL-5, MIL-L-2105D**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 80W-140 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 901 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 232 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 27.1 |
| Low-Temp. Brookfield Viscosity @ -26°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 150 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |

# AUTOGEAR OIL TDL 85W-140 Product Code 4336

AUTOGEAR OIL TDL 85W-140 is a thermally stable high quality total driveline gear lubricants designed to meet the severe requirements of drivetrains of light and heavy duty commercial vehicles.

AUTOGEAR OIL TDL 85W-140 is formulated with high refined solvent mineral stock in combination with a special additive package to reach the following properties:

- Unique additive technology allows the use of a single lubricant in rear axles.
- Exceptional thermo-oxidative stability.
- High load bearing characteristics help in extending the life of the driveline components and the oil.
- Effective rust and corrosion protection, especially to copper and its alloys reduces wear.
- Extends synchroniser life and improves shifting performance.
- Good low temperature fluidity reduces wear and provides easy start-up.
- Good anti-foam properties ensure film strength for effective lubrication.
- Superior seal compatibility minimises leakage and reduces chance of contamination

**Exceeds: API GL-5, MT-1, MIL-PRF-2105E, MIL-L-2105D, SAE J 2360, MACK GO-J, Scania STO 1:0, MAN M 3343M, ZF TE ML 05A, 07A, 08, 12E, 16C/D, 19B**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 85W-140 |
| Density@15°C | kg/m³ | ASTM D4052 | 907 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 372 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 27.4 |
| Viscosity Index | | ASTM D2270 | 99 |
| Low-Temp. Brookfield Viscosity @ -12°C | cP | ASTM D2983 | 150000 |
| Flash Point COC | °C | ASTM D92 | 211 |
| Pour Point | °C | ASTM D7346 | -15 |

# AUTOGEAR OIL MP 85W-140 Product Code 4308

AUTOGEAR OIL MP 85W-140 is an universal high performance mineral multi-purpose gear oil for use in manual transmission en transaxles of passenger cars, vans, light- and heavy commercial vehicles, off-highway equipment, mining and agriculture where a SAE 85W-140 GL-5 is been required.

AUTOGEAR OIL MP 85W-140 is based on high quality mineral base oil in combination with a special additive package to ensure the following properties:

- Good thermo-oxidative stability.
- Good load bearing characteristics.
- Effective rust and corrosion protection.
- High low temperature fluidity provides smoother shifting at low ambient temperatures.
- Exceptional shear stable.

**Exceeds: API GL-5, MIL-L-2105D**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 85W-140 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 906 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 387 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 28.3 |
| Low-Temp. Brookfield Viscosity @ -12°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |

# AUTOGEAR OIL EP 80W Product Code 4303

AUTOGEAR OIL EP 80W is a premium performance gear lubricant designed to provide effective lubrication in a wide range of automotive transmissions and is formulated from high quality base stocks and proven performance extreme pressure additives to provide protection to gear components against wear and scoring.

AUTOGEAR OIL EP 80W has excellent extreme pressure and antiwear properties that protects against wear and scoring leading to lower maintenance costs, enhanced equipment durability and potential for long service life. High oxidation stability minimises deposit formation facilitating longer gear and bearing life. Effective rust and corrosion protection reduces wear and extends component life. Better low temperature fluidity reduces wear at start-up and helps in smoother shifting at low ambient temperatures. Good anti-foam properties ensure film strength for effective lubrication. Excellent seal compatibility helps minimise leakages and reduce chances of contamination

AUTOGEAR OIL EP 80W is suited for heavy duty manual transmissions and axle drives where API GL-4 quality oils are specified. On-road light and heavy duty trucks, buses, vans and passenger cars and off-highway equipment in construction, mining and agriculture. Other applications involving spiral bevel gears operating under moderate to severe speeds and loads and axles with hypoid gears operating under mild to moderate speeds and loads but not suitable for automatic transmissions.

**Exceeds: Exceeds: API GL-4, US MIL-L-2105, MB 235.5, MAN 341 Type Z-2, ZF TE-ML 02B / 17A**

| Property: | Unit | Test Method | Typical Values |
|---|---|---|---|
| SAE Grade | | SAE J306 | 80W |
| Density @ 15°C | kg/m³ | ASTM D4052 | 891 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 82.2 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 9.9 |
| Low-Temperature | | | |
| Brookfield Viscosity @ -26°C | cP | ASTM D2983 | 80600 |
| Viscosity Index | | ASTM D2270 | 100 |
| Flash Point | | ASTM D92 | 210°C |
| Pour Point | | ASTM D7346 | -30°C |

# AUTOGEAR OIL EP 80W-90 Product Code 4302

AUTOGEAR OIL EP 80W-90 is an universal high performance mineral EP gear oil for use in manual transmission en transaxles of passenger cars, vans, light- and heavy commercial vehicles, off-highway equipment, mining and agriculture where a SAE 80W-90 GL-4 is been required.

AUTOGEAR OIL EP 80W-90 is formulated with high refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance:

- Good Extreme Pressure and anti-wear properties.
- High thermal- and oxidation stability.
- Effective rust, wear and corrosion protection.
- Better low temperature provides easy start-up at low ambient temperatures.
- Good anti-foam properties ensure film strength for effective lubrication.
- Excellent seal compatibility.

**Exceeds: API GL-4, MIL-L-2105**

| Property: | Unit | Test Method | Typical Values |
|---|---|---|---|
| SAE Grade | | SAE J306 | 80W-90 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 894 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 148 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.8 |
| Low-Temperature | | | |
| Brookfield Viscosity @ -26°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |

# AUTOGEAR OIL EP 85W-140

Product Code 4304

AUTOGEAR OIL EP 85W-140is an universal high performance mineral EP gear oil for use in manual transmission en transaxles of passenger cars, vans, light- and heavy commercial vehicles, off-highway equipment, mining and agriculture where a SAE 85W-140 GL-4 is been required.

AUTOGEAR OIL EP 85W-140 is formulated with high refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance:

- Good Extreme Pressure and anti-wear properties.
- High thermal- and oxidation stability.
- Effective rust, wear and corrosion protection.
- Better low temperature provides easy start-up at low ambient temperatures.
- Good anti-foam properties ensure film strength for effective lubrication.
- Excellent seal compatibility.

**Exceeds: API GL-4, MIL-L-2105**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 85W-140 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 904 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 404 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 28.9 |
| Low-Temp. Brookfield Viscosity @ -12°C | cP | ASTM D2983 | <150000 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |

# AUTOGEAR OIL GL-1 140

Product Code 4301

AUTOGEAR OIL GL-1 140 is an oil for the lubrication of older gearboxes and rear axles not requiring EP properties.

AUTOGEAR OIL GL-1 140 is based on high performance mineral base oil in combination with a specially selected additive technology to ensure the following properties:

- Good resistance against oxidation.
- Good resistance against sludge formation.
- Effectively offsets the formation of foam.

**Exceeds: API GL-1, MIL-L-2105**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 140 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 899 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 397 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 28.7 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -12 |

# SPECIAL RACING GEAR LS 80W-250

Product Code 4598

SPECIAL RACING GEAR LS 80W-250 is a fully synthetic extremely thermally stable limited slip differential lubricant designed for racing and supercar applications. Extreme protection again heavy shock loads and very high torque applications.

SPECIAL RACING GEAR LS 80W-250 has successfully been tested and race-proven on OS Giken differentials.

SPECIAL RACING GEAR LS 80W-250 is **not** recommended for transaxle applications.

SPECIAL RACING GEAR LS 80W-250 is formulated with high quality 100% synthetic Poly Alpha Olefin (PAO) base oil in combination with a special additive package to reach the following properties:

- Exceptional thermo-oxidative stability and load bearing characteristics help in extending the life of the driveline components and the oil.
- Exceptional high anti-wear additive dosage providing maximum differential protection (2600+ ppm Phosphorus).
- Outstanding low temperature fluidity reduces wear at start up and provides smoother shifting at low ambient temperatures
- Exceptional shear stability helps in retaining viscosity and film strength to protect against wear even under severe racing conditions

**Exceeds: API GL-5 (LS), MIL-L-2105D**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J3000 | 80W-250 |
| Density@15°C | kg/m³ | ASTM D4052 | 862 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 422 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 50.1 |
| Low-Temperature | | ASTM D2270 | 182 |
| Brookfield Viscosity @-26°C | cP | ASTM D2983 | 150000 |
| Flash Point COC | °C | ASTM D92 | >210 |
| Pour Point | °C | ASTM D7346 | -45 |

# AUTOGEAR OIL LS 90

Product Code 4313

AUTOGEAR OIL LS 90 is an extra high performance extreme pressure type automotive gear lubricant specially developed for use in modern high performance passenger cars, sports utility vehicles, vans and light duty trucks with limited slip differentials.

AUTOGEAR OIL LS 90 is based on high quality mineral virgin base oil in combination with a special additive package to ensure the following properties:

- Exceptional thermo-oxidative stability.
- Exceptional load bearing characteristics.
- Effective rust and corrosion protection.
- Excellent limited slip performance to reduce chatter and improves traction.
- Outstanding low temperature fluidity provides smoother shifting at low ambient temperatures.
- Exceptional shear stable.
- Good frictional properties provide improved fuel economy and smoother shift ability.

**Exceeds: API GL-5, MAN 342 M1, ZF TE-ML 05C, 07A, 08, 12C, 16E, 17B, 19B, 21C, MB 235.0, Volvo 97310, VW TL 727, Arvin Meritor**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J306 | 90 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 905 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 167.3 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 15.8 |
| Viscosity Index | | ASTM D2270 | 96 |
| Flash Point | °C | ASTM D92 | 220 |
| Pour Point | °C | ASTM D7346 | -15 |

# TO-4 TRANSMISSION FLUID 30

Product Code 4314

TO-4 TRANSMISSION FLUID 30 is specifically designed for powershift transmissions, final drives and wet brakes on heavy duty off-highway equipment used in earthmoving, mining logging, road transport and agricultural applications.

TO-4 TRANSMISSION FLUID 30 is formulated with a high refined solvent mineral base stock in combination with a special additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals possible.

**Exceeds: Caterpillar TO-4, Komatsu KES 07.868.1, Allison C-4, API CF-2/CF, Komatsu Dresser, ZF TE-ML 03C, ZF TE-ML 07F, DANA Powershift transmissions**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 892 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 87.8 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 10.4 |
| Viscosity Index | | ASTM D2270 | 100 |
| Flash Point | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.3 |

# TO-4 TRANSMISSION FLUID 50

Product Code 4315

TO-4 TRANSMISSION FLUID 50 is specifically designed for powershift transmissions, final drives and wet brakes on heavy duty off-highway equipment used in earthmoving, mining logging, road transport and agricultural applications.

TO-4 TRANSMISSION FLUID 50 is formulated with high refined solvent mineral base stock in combination with a special additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals possible.

**Exceeds: Caterpillar TO-4, Komatsu KES 07.868.1, Allison C4, ZF TE-ML 03**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J3000 | 50 |
| Density@15°C | kg/m³ | ASTM D4052 | 900 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 198 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 18.3 |
| Viscosity Index | | ASTM D2270 | 101 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -24 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.8 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.8 |

# TO-4 TRANSMISSION FLUID 10W

Product Code 4316

TO-4 TRANSMISSION FLUID 10W is specifically designed for powershift transmissions, final drives and wet brakes on heavy duty off-highway equipment used in earthmoving, mining logging, road transport and agricultural applications.

TO-4 TRANSMISSION FLUID 10W is formulated with a high refined solvent mineral base stock in combination with a special additive package to reach the following properties:

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- High anti-foam, anti-wear and anti-corrosion properties.
- Excellent protection against Bore Polishing.
- Extended drain intervals possible.

**Exceeds: Caterpillar TO-4, Komatsu KES 07.868.1, Allison C-4, API CF-2/CF, Vickers 35VQ25, ZF TE-ML 03C, Komatsu Dresser, DANA Powershift transmissions**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 10W |
| Density@15°C | kg/m³ | ASTM D4052 | 869 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 43.8 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.0 |
| Viscosity Index | | ASTM D2270 | 117 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.1 |

## ATF DCT FLUID

Product Code 4321

ATF DCT FLUID is a high performance full synthetic long life ATF specially designed for use in the last generation DCT (Double Coupling Transmission) transmission of the VAG group and various other manufacturers like Renault, BMW, Ford and PSA and are characterized for fast and sportive shifting.

ATF DCT FLUID is based on fully synthetic base in combination with an unique additive package to ensure the following properties:

- Excellent thermo- and oxidation stability.
- Excellent lubrication, even under extreme conditions.
- Very high protection against wear, corrosion and foam.
- High “shear stable”.
- Very low pour point, can be used by very cold temperatures.
- High Viscosity Index.

**Exceeds: VW TL 052 182, BMW EU 83 22 2 148 578, BMW EU 83 22 2 148 579, VW TL 052 529, Ford WSS-M2C936-A, BMW EU 83 22 0 440 214, PSA 9734.S2, MB 236.21, BMW EU 83 22 2 147 477, SSTF-1, Volvo 1161 838/839, Porsche 999.917.080.00, DCT-1, TE DCT-3, Ford WSS-M2C936A, Ford WSS0M2C200-D2, BMW DCTF-1, BMW MTF LT-5, Renault EDC-6**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Colour | | Visual | Amber |
| Density @ 15°C | kg/m³ | ASTM D4052 | 852 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 7.1 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 34.7 |
| Viscosity Index | | ASTM D2270 | 174 |
| Flash Point COC | °C | ASTM D92 | >210 |
| Pour Point | °C | ASTM D7346 | -48 |


## ATF CVT FLUID

Product Code 4325

ATF CVT FLUID is a fully synthetic ultra-high performance CVT fluid formulated with selected base stocks and specially developed for use in the latest generation of Continuously Variable Transmission (CVT) – gearboxes which transfer traction via steel-made traction chain or push-belts.

ATF CVT FLUID is formulated on high refined synthetic base stock in combination with an unique additive package to reach the following properties.

- Good thermo-and oxidation stability.
- Extended drain interval possible.
- Excellent anti-wear, anti-rust and anti-corrosion technology.
- High Viscosity Index ensures adequate lubrication in both high operating & low starting temperatures.
- Better foam control leads to smooth & lasting shift feel and reduces fluid loss.
- Enhanced Low temperature fluidity assist in good cold start performance.
- Compatibility with all common seal materials

**Exceeds: MB 236.20, Ford M2C928-A, BMW 83 22 0 136 376, BMW 83 22 0 429 154, VW G 052 180, Toyota CVTF-TC, Toyota CVT-FE, Nissan NS-1 / NS-2 / NS-3, Honda HMMF, Honda HCF-2, Mitsubishi SP-III, Mitsubishi CVTF-J1, Subaru ECVT, Subaru iCVT, Daihatsu Ammix CVT, Suzuki CVTF Green 1, Hyundai SP-III, EZL 799, Chrysler/Jeep NS-2**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Amber |
| Density@15°C | kg/m³ | ASTM D4052 | 844 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 34.1 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.3 |
| Viscosity Index | | ASTM D2270 | 187 |
| Flash Point COC | °C | ASTM D92 | >210 |
| Pour Point | °C | ASTM D7346 | -45 |


## ATF L8S

Product Code 4504

ATF L8S is a synthetic high quality heavy-duty oil intended exclusively for ZF 6-speed and 8-speed automatic car transmissions. Subjected to extreme testing, ATF L8S guarantees maximum performance of the automatic transmission. At the same time, the wear of heavily loaded components is minimized due to the specifically matched oils.

ATF L8S is based on fully synthetic base in combination with an unique additive package to ensure the following properties:

- Excellent thermo- and oxidation stability.
- Excellent lubrication, even under extreme conditions.
- Very high protection against wear, corrosion and foam.
- High “shear stable”.
- Very low Pour point, can be used by very cold temperatures.
- High Viscosity Index.

**Exceeds: VW G 060 162, BMW 83 22 2 152 426, Rolls-Royce 83 22 2 152 426**
**ATF L8S is also suitable where the following specifications are required: M 1375.4, VW G 055 005, Toyota Type WS, Nissan Matic S, Hyundai SP-IV, Mercon LV, Dexron VI, JWS 3324**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Colorless to light Yellow |
| Density @15°C | kg/m³ | ASTM D4052 | 844 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 27.3 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.8 |
| Viscosity Index | | ASTM D2270 | 163 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -48 |


## ATF L6S

Product Code 4501

ATF L6S is a high performance full synthetic long life ATF specially designed for all 6-speeds automatic transmissions developed by ZF where a constructor requires a M.1375-4 specification.

ATF L6S is based on fully synthetic base in combination with an unique additive package to ensure the following properties:

- Excellent thermo- and oxidation stability.
- Excellent lubrication, even under extreme conditions.
- Very high protection against wear, corrosion and foam.
- High “shear stable”.
- Very low Pour point, can be used by very cold temperatures.
- High Viscosity Index.

**Exceeds: M.1375-4, VW G 055 005, Toyota Type WS, Nissan Matic S, Hyundai SP-IV, Mercon LV, Dexron VI, MB 236.12**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Colorless to light Yellow |
| Density @15°C | kg/m³ | ASTM D4052 | 844 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 27.2 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.7 |
| Viscosity Index | | ASTM D2270 | 161 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -48 |

## ATF MV

Product Code 4323

ATF MV is a high quality synthetic fluid specially designed with advanced multi-vehicle additive technology to serve a broad range of. ATF MV exceeds the complex requirements of Automatic Transmission/ Vehicle Manufacturers of Europe, North America and Asia including the JASO 1-A performance standard created by Japanese Automobile Manufacturers Association.

Remark: Not suitable for use in Continuously Variable Transmissions (CVT), Dual Clutch Transmission (DCT), Daimler MB 7 speed (NAG 2), ZF 6 Speed.

ATF MV is based on fully synthetic base in combination with an unique additive package to ensure the following properties:

- Excellent thermo- and oxidation stability.
- Excellent lubrication, even under extreme conditions.
- Very high protection against wear, corrosion and foam.
- High “shear stable”.
- Very low Pour point, can be used by very cold temperatures.
- High Viscosity Index.

**Exceeds: Allison C4, TES 295, LT 71141, LA 2634, ETL -7045E, 8072B, Chrysler AS68RC ATF, Chrysler +3, +4, Ford Mercon, Ford Mercon V, Dexron IID, IIIG/H, Honda Z1, Mitsubishi SP-II / III, Hyundai/ KIA SPII /III, Idemitsu K17 / ATF HP, JWS 3309/3314/3317, JASO M315-2004, Texaco N402, MAN 339 V1/Z1/Z2, Mazda ATF M-III, M5, MB 236.3, 5, 6, 7, 8, MB 236.9, 10, 11, 91, Nissan Matic D,J,K,W, Subaru ATF, HP, Toyota T-III, T-IV, Voith H55.6335.xx, Volvo Std 1273.4, VW G 052 025, VW G 055 025, VW G 052 162, VW G 052 990, Volvo P/N 1161521, Volvo 1161540, Volvo 1161640, Volvo CE 1273,41, PSA P/N Z 000169756, ZF TE ML 03D, 04D, 11A/B, 14A, 14B, 17C, Ssang Yong DSIH 5M-66**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Colorless to light Yellow |
| Density@15°C | kg/m³ | ASTM D4052 | 845 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 34.5 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.5 |
| Viscosity Index | | ASTM D2270 | 195 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -51 |


## ATF DX VI

Product Code 4324

ATF DX VI is a high quality universal fluid based on 100% synthetic base stocks to be used in automatic transmission, torque convertors and powersteering of passenger car, light vans and commercial vehicles where a GM Dexron VI specification is required. This product is backwards compatible where DEXRON® III (H), DEXRON® III(G), DEXRON®IIE and DEXRON®IID is been required.

ATF DX VI is formulated on high refined synthetic base stock in combination with an unique additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Special friction modifiers.
- Verry high viscosity Index.
- Low pour point.
- Excellent shifting at very low and high temperatures.
- Excellent protection against the forming corrosion, foam and wear.

**Exceeds: DEXRON®VI**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Colour | | Visual | Red |
| Density @ 15°C | kg/m³ | ASTM D4052 | 846 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 29 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 5.9 |
| Viscosity Index | | ASTM D2270 | 152 |
| Flash Point (COC) | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -48 |


## ATF DX III

Product Code 4322

ATF DX III is a high quality universal fluid to be used in automatic transmission, torque convertors and power steering of passenger car, light vans and commercial vehicles.

ATF DX III is formulated on high refined solvent mineral and synthetic base stock in combination with an unique additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Special friction modifiers.
- Very high viscosity Index.
- Low pourpoint.
- Excellent shifting at very low and high temperatures.
- Excellent protection against the forming corrosion, foam and wear.

**Exceeds: DEXRON IIIF/G/H, Allison C4, CAT TO-2, MAN 339 Z1/Z2, MAN 339 Z1/Z2 , MAN 339 V1/V2, MB 236.10/236.9/236.7/236.5/236.1, Voith 55.6335, Volvo 97341, Mercon, ZF 02F/03D/04D, ZF 11A/11B/14B/16L**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Red |
| Density@15°C | kg/m³ | ASTM D4052 | 864 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 41 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.8 |
| Viscosity Index | | ASTM D2270 | 164 |
| Viscosity Brookfield @-40°C, max | cP | ASTM D2983 | <20000 |
| Flash Point COC | °C | ASTM D92 | 201 |


## ATF DX II

Product Code 4320

ATF DX II is an oil for automatic transmissions in older vehicles specifying the use of DEXRON® II quality fluids. High quality base oils and special additives provides resistance towards oxidation, provides and shows improved frictional properties.

ATF DX II is formulated on high quality re-refined mineral and virgin synthetic base stocks in combination with an unique additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Special friction modifiers.
- Very High Viscosity Index.
- Low pour point.
- Excellent shifting at very low and high temperatures.
- Excellent protection against the forming corrosion, foam and wear.

**Exceeds: DEXRON® II D, ZF TE-ML 02F, 03D, 04D, 09, 11B, 14A, 17C**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Red |
| Density @15°C | kg/m³ | ASTM D4052 | 853 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 38 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.6 |
| Viscosity Index | | ASTM D2270 | 172 |
| Viscosity Brookfield @-40°, typical | cP | ASTM D2983 | 18000 |
| Flash Point COC | °C | ASTM D92 | 201 |
| Pour Point | °C | ASTM D7346 | -51 |

## ATF TYPE F

Product Code 4317

ATF TYPE F is a high friction automatic transmission fluid intended for use in automatic transmissions of all Ford vehicles that were built prior to 1977 and certain models built during 1977-1980 requiring fluids meeting Ford ESW-M2C33-F specification.

ATF TYPE F is formulated on high refined mineral base stock in combination with an unique additive package to reach the following properties.

- Extended thermal- and oxidation stability
- Superior anti-wear technology protects transmission against wear
- Improved low temperature fluidity provides fast circulation in cold climatic conditions
- Compatible with all common seal materials

**Exceeds: Ford M2C33-F, Ford M2C33-G, Ford M2C9007-AA, Borg-Warner**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Red |
| Density@15°C | kg/m³ | ASTM D4052 | 865 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 35 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.2 |
| Viscosity Index | | ASTM D2270 | 177 |
| Flash Point COC | °C | ASTM D92 | 195 |
| Pour Point | °C | ASTM D7346 | -42 |


## ATF MBS

Product Code 4505

ATF MBS is a high quality fuel saving fully synthetic automatic transmission oil specially developed for the last generation MB (NAG II+) 7-G Tronic Plus automatic transmissions.

ATF MBS is based on special selected high performance synthetic base oil in combination with a special selected EP-additive package to reach to following properties:

- Excellent thermal- and oxidation stability.
- Excellent low temperature properties.
- Good shifting even at low temperatures.
- High viscosity index.
- Excellent shifting even after long use.
- Extended drain interval possible.
- Fuel saving properties.
- Excellent protection against the forming of foam, corrosion and wear.

**Exceeds: MB 236.15**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Blue |
| Density @15°C | kg/m³ | ASTM D4052 | 843 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 28 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.8 |
| Viscosity Index | | ASTM D2270 | 160 |
| Flash Point COC | °C | ASTM D92 | 180 |
| Pour Point | °C | ASTM D7346 | -48 |


## ATF MBF

Product Code 4318

ATF MBF is a high quality fuel saving fully synthetic automatic transmission oil specially developed for the last generation MB (NAG-2) 7-speeds automatic transmissions. ATF MBF is backwards compatible to automatic transmissions where a MB 236.12 specification is recommended.

ATF MBF is based on special selected high performance synthetic base oil in combination with a special selected EP-additive package to reach to following properties:

- Excellent thermal- and oxidation stability.
- Excellent low temperature properties.
- Good shifting even at low temperatures.
- High Viscosity Index.
- Excellent shifting even after long use.
- Extended drain interval possible.
- Fuel saving properties.
- Excellent protection against the forming of foam, corrosion and wear.

**Exceeds: MB 236.14, Ssang Yong**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | RED |
| Density @15°C | kg/m³ | ASTM D4052 | 844 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 27.6 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.8 |
| Viscosity Index | | ASTM D2270 | 162 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -48 |


## ATF ECOMAT

Product Code 4341

ATF ECOMAT is a high performance fully synthetic fuel economy automatic transmission fluid specially designed for 6-speeds transmission for city buses.

ATF ECOMAT is formulated on high refined 100% synthetic base stock in combination with an unique additive package to reach the following properties.

- Lower service cost through increased oil change interval.
- High level of anti-wear protection.
- Extended thermal- and oxidation stability.
- Limited viscosity increase
- Prevents acid formation and soft metal corrosion
- Friction durability leading to good shift performance and drivability even at end of drain interval.
- Avoid sludge formation that could lead to sluggish transmission operation.

**Exceeds: Voith H55.6335.xx, Voith 150.014524.xx, MB 236.9, Volvo 97341, ZF TE-ML 14C/20C, MAN 339 V2/Z3/Z12**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Amber |
| Density @15°C | kg/m³ | ASTM D4052 | 843 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 38.6 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.2 |
| Viscosity Index | | ASTM D2270 | 152 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -45 |


TWIN-TURBO
BENT


MOTOR OIL
LE SW-40

## UNIVERSAL TRACTOR OIL SYN 80W

Product Code 4330

UNIVERSAL TRACTOR OIL SYN 80W is a high performance fluid for use in (CVT) transmissions, hydraulic systems, oil immersed brakes of tractors and off-road equipment. These fluids are specially designed for use where a common lubricant reservoir serves transmissions, final drives and hydraulic systems and to optimize the performance of agricultural and commercial tractors.

UNIVERSAL TRACTOR OIL SYN 80W is based on high quality synthetic base oil in combination with an unique additive package to ensure the following properties:

- High oil aging resistance due to its synthetic base oils, allowing high drain intervals
- Enhanced frictional properties optimize clutch performance and ensure noise free operation of wet brakes
- High viscosity index coupled with high shear stability provides consistent performance
- Excellent low temperature fluidity provides good response and effective lubrication at low ambient temperatures
- Robust anti-wear and extreme pressure properties control wear, extend equipment life and reduce maintenance costs
- Multipurpose capability reduces inventory and prevents accidental contamination and misapplication

**Exceeds: API GL-4, John Deere J20C, J20D, ZF TE ML-06B/D/E/F/H/M, Volvo WB101 (97303), MF M1145, AGCO CVT ML200, Case MS 1204/6/7/9, Fendt Vario, Allison C-4, Valtra G2-08 (XT-60), Valtra G2-10 (XT-60+), Caterpillar TO-2, Claas CVT, MAT 3540 (CVT), CNH MAT 3525/3526, NH410B, NH420A, Ford M2C134D, Ford M2C86A/B, New Holland 82948718, Oliver: Type 55/Type 5J, Eaton I-280-S, I.H.C: B-5 & B-6 Hydran, White: Q-1705/1722/1766B, White: Q-1802/1826, Eaton M2950S, Kubota: UDT fluid, Sauer Sundstrand/ Danfoss, Denison HF(-0-2), JCMAS HK P-041, DIN 51524-3**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 80W |
| Density@15°C | kg/m³ | ASTM D4052 | 861 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 51.7 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.7 |
| Viscosity Index | | ASTM D2270 | 175 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.0 |

## UNIVERSAL TRACTOR OIL 80W

Product Code 4332

UNIVERSAL TRACTOR OIL 80W is a high performance fluids for use in transmissions, hydraulic systems, oil immersed brakes of tractors and off-road equipment. These fluids are specially designed for use where a common lubricant reservoir serves transmissions, final drives and hydraulic systems and to optimize the performance of agricultural and commercial tractors.

UNIVERSAL TRACTOR OIL 80W is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Enhanced frictional properties optimize clutch performance and ensure noise free operation of wet brakes
- High viscosity index coupled with high shear stability provides consistent performance
- Excellent low temperature fluidity provides good response and effective lubrication at low ambient temperatures
- Robust anti-wear and extreme pressure properties control wear, extend equipment life and reduce maintenance costs
- Multipurpose capability reduces inventory and prevents accidental contamination and misapplication.

**Exceeds: UTTO/Trans Spec: John Deere J20C/J20D, Ford M2C86A/B, Ford M2C134D, API GL-4, Allison C-4, Caterpillar TO-2, Case MS 1204/6/7/9, MF M1135/1143/1145, NH410B, NH420A, CNH MAT 3525/3526, Oliver: Type 55/Type 5J, New Holland 82948718, I.H.C: B-5 & B-6 Hydran, Volvo WB101 (97303), Valtra G2-08 / G2-B10, White: Q-1705/1722/1766B, White: Q-1802/1826, ZF TE-ML 03E/05F/06K Hydr. Spec: Eaton M2950S, Eaton I-280-S, JCMAS HK P-041, Denison(pump only) HF(-0-2), Kubota: UDT fluid, Sauer Sundstrand/ Danfoss, DIN 51524-3**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 80W |
| Density@15°C | kg/m³ | ASTM D4052 | 882 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 58.3 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.7 |
| Viscosity Index | | ASTM D2270 | 152 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Total Base Number | mgKOH/g | ASTM D2896 | 9.0 |

# UNIVERSAL TRACTOR OIL 85W

Product Code 4331

UNIVERSAL TRACTOR OIL 85W is a high performance fluids for use in transmissions, hydraulic systems, oil immersed brakes of tractors and off-road equipment. These fluids are specially designed for use where a common lubricant reservoir serves transmissions, final drives and hydraulic systems and to optimize the performance of agricultural and commercial tractors.

UNIVERSAL TRACTOR OIL 85W is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Enhanced frictional properties optimize clutch performance and ensure noise free operation of wet brakes
- High viscosity index coupled with high shear stability provides consistent performance
- Excellent low temperature fluidity provides good response and effective lubrication at low ambient temperatures
- Robust anti-wear and extreme pressure properties control wear, extend equipment life and reduce maintenance costs
- Multipurpose capability reduces inventory and prevents accidental contamination and misapplication.

**Exceeds: API GL4, NH MAT 3525/3526, JD J20C, Volvo WB 101, ZF TEML 03E/05E, MF 1135/1143/1145, Case 1204/1206/1207, Ford M2C86 A/B, Ford M2C134 A/C/D, Ford M2C41B, CNH MAT 3525/3526, NH 410B, 420A, Allison C4, Caterpillar TO-2**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J306 | 85W |
| Density@15°C | kg/m3 | ASTM D4052 | 886 |
| Kin. Viscosity @40°C | mm2/s | ASTM D7042 | 67 |
| Kin. Viscosity @100°C | mm2/s | ASTM D7042 | 11.0 |
| Viscosity Index | | ASTM D2270 | 154 |
| Brookfield Viscosity CCS @-12°C, max | cP | ASTM D2983 | 150000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 8.8 |
| Sulpated Ash | %Wt | ASTM D874 | 1.3 |

# SUPER TRACTOR OIL 10W-30

Product Code 4327

SUPER TRACTOR OIL 10W-30 is a high quality universal mineral based so called “Super Tractor Oil Universal” (STOU) developed for use in tractors, combines, harvesters and off the road equipment with or without turbocharger diesel engines. Super Tractor Oil Universal is also designed to lubricate the transmission, power take-off, final drive, hydraulic system and oil immersed “wet brakes”. This product cannot been used in diesel engines equipped with a Diesel Particle Filter (DPF).

SUPER TRACTOR OIL 10W-30 is formulated on high refined solvent mineral base stock in combination with an unique additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- Excellent cold start properties.
- High anti-foam, anti-wear and anti-corrosion properties.
- Suitable for Wet Brakes.

**Exceeds: Engine Spec: API CG-4/CF-4/CE/SF, MB 227.1, ACEA E3, UTTO Spec: JD J20C/D, Ford M2C86B/C, Ford M2C134D, CASE MS 1204/6/7/9, MF M1135/1139, MF M1143/1145, Cat TO-2, API GL-4, Allison C-4 Hydr Spec: Eaton M-2950S, Eaton 1-280-S, Danfoss**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 10W-30 |
| Density@15°C | kg/m³ | ASTM D4052 | 878 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 69 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 10.75 |
| Viscosity Index | | ASTM D2270 | 143 |
| Viscosity CCS @-25°C, max | cP | ASTM D2983 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -36 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.5 |

# SUPER TRACTOR OIL 15W-40

Product Code 4329

SUPER TRACTOR OIL 15W-40 is a high quality universal synthetic so called “Super Tractor Oil Universal” (STOU) developed for use in tractors, combines, harvesters and off the road equipment with or without turbocharger diesel engines. Super Tractor Oil Universal is also designed to lubricate the transmission, power take-off, final drive, hydraulic system and oil immersed “wet brakes”. This product cannot been used in diesel engines equipped with a Diesel Particulate Filter (DPF).

SUPER TRACTOR OIL 15W-40 is formulated on synthetic base stocks in combination with an unique additive package to reach the following properties.

- Excellent thermal- and oxidation stability.
- Very good dispersancy and detergency.
- Excellent cold start properties.
- High anti-foam, anti-wear and anti-corrosion properties.
- Suitable for Wet Brakes.

**Exceeds: Engine Spec: API CG-4/CF-4/CE/SF, MB 228.1, ACEA E3 UTTO Spec: JD J20C/D, Ford M2C86B/C, Ford M2C134-A/C/D, Ford M2C159B/C, FNH 82009201, Allison C-4, CASE MS 1204/6/7/9, MF M1135/1139, MF M1143/1145, Cat TO-2, API GL-4, MF 1127-A, FNH-2-C-201.00, NH 410-B, NH 420-A, ZF TE-ML 5K, 6B/C, 7B/D, Hydr Spec: Eaton M-2950S, Eaton 1-280-S, Danfoss**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density@15°C | kg/m³ | ASTM D4052 | 876 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 95 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.5 |
| Viscosity Index | | ASTM D2270 | 142 |
| Viscosity CCS @-20°C, max | cP | ASTM D5293 | 7000 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| Total Base Number | mgKOH/g | ASTM D2896 | 10.6 |

# MILKING MACHINE OIL 68

Product Code 4340

MILKING MACHINE OIL 68 is a high-quality oil developed for use in milking machines and formulated from specially selected highly refined mineral oils. This product is a non-foaming oil for use in all piston and rotary milking machine vacuum pumps.

MILKING MACHINE OIL 68 is formulated with high quality refined mineral base stocks in combination with a special additive technology to achieve the following performance:

- Good water separation ensuring the oil does not emulsify with moisture or condensation.
- Excellent filterability ensuring solid contaminants are easily removed from the oil, therefore promoting long pump life and reliability.
- Low volatility that prevents oil constituents evaporating away during periods of high temperature Operation.
- Low pour point provides protection for the equipment when starting up and operating at temperatures below 0°C.
- High Viscosity Index maintains the oil film at high temperatures.

MILKING MACHINE OIL 68 should NOT be permitted to come into contact with the milk, i.e. no incidental food contact.

**Exceeds: AFNOR NFE-48-603, ISO 11158 HM, DIN 51524/2 HLP**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 68 |
| Density@15°C | kg/m³ | ASTM D4052 | 882 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 68 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 8.7 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| Air Release Value @50°C | Minutes | DIN 51381 | Pass |
| Demulsility @54°C | Minutes | DIN 51599 | Pass |

# INDUSTRIAL GEAR OIL CLP 68

Product Code 4345

INDUSTRIAL GEAR OIL CLP 68 is a high performance extreme pressure gear oils developed for lubrication of heavy duty industrial gears working under severe operating conditions.

INDUSTRIAL GEAR OIL CLP 68 is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Excellent load carrying capability protects gears against scuffing and wear and offers long equipment life and reduced maintenance costs.
- High thermo-oxidative stability helps resist deposit formation, provides enhanced system cleanliness and enables longer service intervals.
- Provides effective rust and corrosion protection to all gearbox components.
- Excellent demulsibility property enables trouble-free operation in conditions encountering water/ moisture.

**Exceeds: DIN 51517-3 CLP, ISO 12925-1 CKD, AGMA 9005 E-02, David Brown S1.53.101 E, AIST 224 (former US Steel 224)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 68 |
| Density@15°C | kg/m³ | ASTM D4052 | 882 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 66.6 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 8.7 |
| Viscosity Index | | ASTM D2270 | 102 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -24 |
| FZG Fail Load Stage, min | | DIN 51354-2 | 12 |
| Total Acid Number | mgKOH/g | ASTM D664 | <0.5 |

# INDUSTRIAL GEAR OIL CLP 100

Product Code 4370

INDUSTRIAL GEAR OIL CLP 100 is a premium quality heavy duty gear oil, primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL CLP 100 is formulated from carefully selected base stocks and sulphur/phosphorous extreme pressure (EP) additives.

INDUSTRIAL GEAR OIL CLP 100 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL CLP 100 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL CLP 100 is recommended for the lubrication of enclosed spur, helical, bevel and worm gears.

**Exceeds: DIN 51517-3: CLP, ISO 12925-1: L-CKC, AGMA 9005 E-02 AIST (US Steel) Req. No 224, David Brown S1.53 101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 100 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 891 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 90-110 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.4 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >210 |
| Pour Point | °C | ASTM D7346 | <-27 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.5 |
| FZG Load Stage | | DIN 51354-2 | 12 |
| Demulsibility @ 82°C | min. | DIN 51599 | <30 |

# INDUSTRIAL GEAR OIL CLP 150

Product Code 4372

INDUSTRIAL GEAR OIL CLP 150 is a high performance extreme pressure gear oils developed for lubrication of heavy duty industrial gears working under severe operating conditions.

INDUSTRIAL GEAR OIL CLP 150 is based on high quality mineral base oil in combination with an unique zinc-free additive package to ensure the following properties:

- Excellent load carrying capability protects gears against scuffing and wear and offers long equipment life and reduced maintenance costs.
- High thermo-oxidative stability helps resist deposit formation, provides enhanced system cleanliness and enables longer service intervals.
- Provides effective rust and corrosion protection to all gearbox components.
- Excellent demulsibility property enables trouble-free operation in conditions encountering water/ moisture.

**Exceeds: DIN 51517-3 CLP, ISO 12925-1 CKC, AGMA 9005 E-02, David Brown S1.53.101**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 150 |
| Density@15°C | kg/m³ | ASTM D4052 | 893 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 148 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |
| FZG Fail Load Stage, min | | DIN 51354-2 | >12 |
| Total Acid Number | mgKOH/g | ASTM D664 | <0.5 |

# INDUSTRIAL GEAR OIL CLP 220

Product Code 4374

INDUSTRIAL GEAR OIL CLP 220 is a premium quality heavy duty gear oil, primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL CLP 220 is formulated from carefully selected base stocks and sulphur/phosphorous extreme pressure (EP) additives.

INDUSTRIAL GEAR OIL CLP 220 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL CLP 220 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL CLP 220 is recommended for the lubrication of enclosed spur, helical, bevel and worm gears.

**Exceeds: DIN 51517-3: CLP, ISO 12925-1: L-CKC, AGMA 9005 E-02 AIST (US Steel) Req. No 224, David Brown S1.53 101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 220 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 900 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 198-242 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 19.7 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >210 |
| Pour Point | °C | ASTM D7346 | <-21 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.5 |
| FZG Load Stage | | DIN 51354-2 | 12 |
| Demulsibility @ 82°C | min. | DIN 51599 | <30 |

# INDUSTRIAL GEAR OIL CLP 320

Product Code 4376

INDUSTRIAL GEAR OIL CLP 320 is a premium quality heavy duty gear oil, primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL CLP 320 is formulated from carefully selected base stocks and sulphur/phosphorous extreme pressure (EP) additives.

INDUSTRIAL GEAR OIL CLP 320 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL CLP 320 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL CLP 320 is recommended for the lubrication of enclosed spur, helical, bevel and worm gears.

**Exceeds: DIN 51517-3: CLP, ISO 12925-1: L-CKC, AGMA 9005 E-02**
**AIST (US Steel) Req. No 224, David Brown S1.53 101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 320 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 904 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 288-352 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 22.8 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-12 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.5 |
| FZG Load Stage | | DIN 51354-2 | 12 |
| Demulsibility @ 82°C | min. | DIN 51599 | <30 |

# INDUSTRIAL GEAR OIL CLP 460

Product Code 4378

INDUSTRIAL GEAR OIL CLP 460 is a premium quality heavy duty gear oil, primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL CLP 460 is formulated from carefully selected base stocks and sulphur/phosphorous extreme pressure (EP) additives.

INDUSTRIAL GEAR OIL CLP 460 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL CLP 460 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL CLP 460 is recommended for the lubrication of enclosed spur, helical, bevel and worm gears.

**Exceeds: DIN 51517-3: CLP, ISO 12925-1: L-CKC, AGMA 9005 E-02**
**AIST (US Steel) Req. No 224, David Brown S1.53 101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 4 | 60 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 907 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 414-506 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 30.5 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >240 |
| Pour Point | °C | ASTM D7346 | <-15 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.5 |
| FZG Load Stage | | DIN 51354-2 | 12 |
| Demulsibility @ 82°C | min. | DIN 51599 | <30 |

# INDUSTRIAL GEAR OIL CLP 680

Product Code 4380

INDUSTRIAL GEAR OIL CLP 680 is a premium quality heavy duty gear oil, primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL CLP 680 is formulated from carefully selected base stocks and sulphur/phosphorous extreme pressure (EP) additives.

INDUSTRIAL GEAR OIL CLP 680 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL CLP 680 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL CLP 680 is recommended for the lubrication of enclosed spur, helical, bevel and worm gears.

**Exceeds: DIN 51517-3: CLP, ISO 12925-1: L-CKC, AGMA 9005 E-02**
**AIST (US Steel) Req. No 224, David Brown S1.53 101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 680 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 906 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 612-748 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 38.2 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >240 |
| Pour Point | °C | ASTM D7346 | <-15 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.5 |
| FZG Load Stage | | DIN 51354-2 | 12 |
| Demulsibility @ 82°C | min. | DIN 51599 | <30 |

# INDUSTRIAL GEAR OIL CLP 1000

Product Code 4493

INDUSTRIAL GEAR OIL CLP 1000 is a high performance extreme pressure gear oils developed for lubrication of heavy duty industrial gears working under severe operating conditions.

INDUSTRIAL GEAR OIL CLP 1000 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties:

- Excellent load carrying capability protects gears against scuffing and wear and offers long equipment life and reduced maintenance costs.
- High thermo-oxidative stability helps resist deposit formation, provides enhanced system cleanliness and enables longer service intervals.
- Provides effective rust and corrosion protection to all gearbox components.
- Excellent demulsibility property enables trouble-free operation in conditions encountering water/ moisture.

**Exceeds: DIN 51517-3 CLP, ISO 12925-1 CKC, AGMA 9005 E-02, David Brown S1.53.101**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 1000 |
| Density@15°C | kg/m³ | ASTM D4052 | 901 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 1001 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 54.2 |
| Viscosity Index | | ASTM D2270 | 90 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -3 |
| FZG Fail Load Stage, min | | DIN 51354-2 | >12 |
| Total Acid Number | mgKOH/g | ASTM D664 | <0.5 |

# INDUSTRIAL GEAR OIL SYNTH 100

Product Code 4346

INDUSTRIAL GEAR OIL SYNTH 100 is a premium quality fully synthetic heavy duty gear oil, formulated from Poly Alpha Olefins (PAO) and selected additives and is primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL SYNTH 100 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL SYNTH 100 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL SYNTH 100 is recommended for the lubrication of heavy duty industrial gear boxes working under severe load and high temperatures conditions.

**Exceeds: ISO 12925-1 Enclosed Gears of Category CKD, DIN 51517 Part 3 – Lubricating Oils CLP AGMA 9005-E02 – Extreme Pressure Gear Lubricants, AIST (US Steel) Requirements No. 224 Lead Free EP Gear Oil, David Brown S1.53.101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 100 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 839 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.4 |
| Viscosity Index | | ASTM D2270 | 145 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | -42 |
| FZG Load Stage | | DIN 51354-2 | 12 |

# INDUSTRIAL GEAR OIL SYNTH 150

Product Code 4344

INDUSTRIAL GEAR OIL SYNTH 150 is a premium quality fully synthetic heavy duty gear oil, formulated from Poly Alpha Olefins (PAO) and selected additives and is primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL SYNTH 150 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL SYNTH 150 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL SYNTH 150 is recommended for the lubrication of heavy duty industrial gear boxes working under severe load and high temperatures conditions.

**Exceeds: ISO 12925-1 Enclosed Gears of Category CKD, DIN 51517 Part 3 – Lubricating Oils CLP AGMA 9005-E02 – Extreme Pressure Gear Lubricants, AIST (US Steel) Requirements No. 224 Lead Free EP Gear Oil, David Brown S1.53.101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 150 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 842 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 13.6 |
| Viscosity Index | | ASTM D2270 | >140 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-30 |
| FZG Load Stage | | DIN 51354-2 | 12 |

# INDUSTRIAL GEAR OIL SYNTH 220

Product Code 4497

INDUSTRIAL GEAR OIL SYNTH 220 is a premium quality fully synthetic heavy duty gear oil, formulated from Poly Alpha Olefins (PAO) and selected additives and is primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL SYNTH 220 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL SYNTH 220 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL SYNTH 220 is recommended for the lubrication of heavy duty industrial gear boxes working under severe load and high temperatures conditions.

**Exceeds: ISO 12925-1 Enclosed Gears of Category CKD, DIN 51517 Part 3 – Lubricating Oils CLP AGMA 9005-E02 – Extreme Pressure Gear Lubricants, Flender AG, AIST (US Steel) Requirements No. 224 Lead Free EP Gear Oil, David Brown S1.53.101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 220 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 845 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 198-242 |
| Viscosity Index | | ASTM D2270 | >145 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-30 |
| FZG Load Stage | | DIN 51354-2 | 12 |

# INDUSTRIAL GEAR OIL SYNTH 320

Product Code 4475

INDUSTRIAL GEAR OIL SYNTH 320 is a premium quality fully synthetic heavy duty gear oil, formulated from Poly Alpha Olefins (PAO) and selected additives and is primarily recommended for enclosed gear units working under severe shock operating conditions.

INDUSTRIAL GEAR OIL SYNTH 320 provides excellent protection against high loads, prevent damage on tooth- and friction surfaces. Furthermore INDUSTRIAL GEAR OIL SYNTH 320 shows excellent protection against rust and oxidation, while the excellent demulsification of the product allows easy water drain off.

INDUSTRIAL GEAR OIL SYNTH 320 is recommended for the lubrication of heavy duty industrial gear boxes working under severe load and high temperatures conditions.

**Exceeds: ISO 12925-1 Enclosed Gears of Category CKD, DIN 51517 Part 3 – Lubricating Oils CLP AGMA 9005-E02 – Extreme Pressure Gear Lubricants, Flender AG, AIST (US Steel) Requirements No. 224 Lead Free EP Gear Oil, David Brown S1.53.101(E)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 320 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 849 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 304 – 336 |
| Viscosity Index | | ASTM D2270 | 150 |
| Flash Point (COC) | °C | ASTM D92 | 250 |
| Pour Point | °C | ASTM D7346 | -30 |
| FZG Load Stage | | DIN 51354-2 | 12 |

# SLIDEWAY OIL 32

Productcode 4367

SLIDEWAY OIL 32 is a universal high performance machine tool lubricant specially designed for the lubrication of tableway. Slideway Oil 32 meets also the requirements of gear boxes, spindles and hydraulic systems of different machine tools.

SLIDEWAY OIL 32 is based on high quality mineral virgin base oil in combination with a special additive to ensure the following properties.

- Excellent stick-slip properties.
- Very good anti-wear, anti-rust and anti-foam properties.
- High oxidation stability.
- Good resistance to high pressure and loads.
- Excellent demulsification properties.
- Good filterability.
- Strong adhesion to (vertical) slides

**Exceeds: ISO 19378 GA & GB, General Motors LS2, ISO 11158 HG, DIN 51524 part II, DIN 51517 part III, FZG 12, AIST 224, AGMA 9005 E02 (EP)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | | 32 |
| Density@15°C | kg/m³ | ASTM D4052 | 872 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 31.8 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.4 |
| Viscosity Index | | ASTM D2270 | 105 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| FZG Fail Load Stage, min | | DIN 51354-2 | 12 |
| Total Acid Number | mgKOH/g | ASTM D974 | 0.5 |

# SLIDEWAY OIL 68

Productcode 4368

SLIDEWAY OIL 68 is a universal high performance machine tool lubricant specially designed for the lubrication of tableway. This product meets also the requirements of gear boxes, spindles and hydraulic systems of different machine tools.

SLIDEWAY OIL 68 is based on high quality mineral virgin base oil in combination with a special additive to ensure the following properties.

- Excellent stick-slip properties.
- Very good anti-wear, anti-rust and anti-foam properties.
- High oxidation stability.
- Good resistance to high pressure and loads.
- Excellent demulsification properties.
- Good filterability.
- Strong adhesion to (vertical) slides

**Exceeds: ISO 19378 GA & GB, General Motors LS2, ISO 11158 HG, DIN 51524 part II, DIN 51517 part III, FZG 12, AIST 224, AGMA 9005 E02 (EP)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | | 68 |
| Density@15°C | kg/m³ | ASTM D4052 | 885 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 69.8 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 8.8 |
| Viscosity Index | | ASTM D2270 | 98 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -27 |
| FZG Fail Load Stage, min | | DIN 51354-2 | 12 |
| Total Acid Number | mgKOH/g | ASTM D974 | 0.6 |

# SLIDEWAY OIL 150

Productcode 4495

SLIDEWAY OIL 150 is a universal high performance machine tool lubricant specially designed for the lubrication of tableway. This product meets also the requirements of gear boxes, spindles and hydraulic systems of different machine tools.

SLIDEWAY OIL 150 is based on high quality mineral virgin base oil in combination with a special additive to ensure the following properties.

- Excellent stick-slip properties.
- Very good anti-wear, anti-rust and anti-foam properties.
- High oxidation stability.
- Good resistance to high pressure and loads.
- Excellent demulsification properties.
- Good filterability.
- Strong adhesion to (vertical) slides

**Exceeds: ISO 19378 GA & GB, General Motors LS2, ISO 11158 HG, DIN 51524 part II, DIN 51517 part III, FZG 12, AIST 224, AGMA 9005 E02 (EP)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | | 150 |
| Density@15°C | kg/m³ | ASTM D4052 | 893 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 141.4 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 13.9 |
| Viscosity Index | | ASTM D2270 | 94 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -18 |
| FZG Fail Load Stage, min | | DIN 51354-2 | 12 |
| Total Acid Number | mgKOH/g | ASTM D974 | 0.4 |

# SLIDEWAY OIL 220

Productcode 4369

SLIDEWAY OIL 220 is a universal high performance machine tool lubricant specially designed for the lubrication of tableway. This product meets also the requirements of gear boxes, spindles and hydraulic systems of different machine tools.

SLIDEWAY OIL 220 is based on high quality mineral virgin base oil in combination with a special additive to ensure the following properties.

- Excellent stick-slip properties.
- Very good anti-wear, anti-rust and anti-foam properties.
- High oxidation stability.
- Good resistance to high pressure and loads.
- Excellent demulsification properties.
- Good filterability.
- Strong adhesion to (vertical) slides.

**Exceeds: ISO 19378 GA & GB, General Motors LS2, ISO 11158 HG, DIN 51524 part II, DIN 51517 part III, FZG 12, AIST 224, AGMA 9005 E02 (EP)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | | 220 |
| Density@15°C | kg/m³ | ASTM D4052 | 895 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 206 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 18.1 |
| Viscosity Index | | ASTM D2270 | 97 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -18 |
| FZG Fail Load Stage, min | | DIN 51354-2 | 12 |
| Total Acid Number | mgKOH/g | ASTM D974 | 0.5 |

# INDUSTRIAL SYSTEM OIL CL 32

Product Code 4490

INDUSTRIAL SYSTEM OIL CL 32 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties.

INDUSTRIAL SYSTEM OIL CL 32 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 32 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 32 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517-2 CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 32 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 870 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 28.8-35.2 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | <-21 |
| Total Acid Number | | ASTM D974 | 0.1 |
| Foaming Characteristics: | mgKOH/g | ASTM D892 | |
| Sequence I, max. 150/0 ml | ml | | 0/0 |
| Sequence II, max. 75/0 ml | ml | | 0/0 |
| Sequence III, max. 150/0 ml | ml | | 0/0 |
| Demulsibility @ 54°C | | DIN 51599 | Pass |

# INDUSTRIAL SYSTEM OIL CL 46

Product Code 4491

INDUSTRIAL SYSTEM OIL CL 46 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties. INDUSTRIAL SYSTEM OIL CL 46 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 46 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 46 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517-2 CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 46 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 874 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 41.4-50.6 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Acid Number | mgKOH/g | ASTM D974 | 0.1 |
| Foaming Characteristics: | | ASTM D892 | |
| Sequence I, max. 150/0 ml | ml | | 0/0 |
| Sequence II, max. 75/0 ml | ml | | 0/0 |
| Sequence III, max. 150/0 ml | ml | | 0/0 |
| Demulsibility @ 54°C | | DIN 51599 | Pass |

# INDUSTRIAL SYSTEM OIL CL 68

Product Code 4492

INDUSTRIAL SYSTEM OIL CL 68 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties. INDUSTRIAL SYSTEM OIL CL 68 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 68 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 68 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517-2 CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 68 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 884 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 61.2-74.8 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >185 |
| Pour Point | °C | ASTM D7346 | <-15 |
| Total Acid Number | mgKOH/g | ASTM D974 | 0.1 |
| Foaming Characteristics: | | ASTM D892 | |
| Sequence I, max. 150/0 ml | ml | | 0/0 |
| Sequence II, max. 75/0 ml | ml | | 0/0 |
| Sequence III, max. 150/0 ml | ml | | 0/0 |
| Demulsibility @ 54°C | | DIN 51599 | Pass |

# INDUSTRIAL SYSTEM OIL CL 100

Product Code 4487

INDUSTRIAL SYSTEM OIL CL 100 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties.

INDUSTRIAL SYSTEM OIL CL 100 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 100 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 100 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517-2 CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 100 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 889 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 10.2 |
| Viscosity Index | | ASTM D2270 | >97 |
| Flash Point (COC) | °C | ASTM D92 | 240 |
| Pour Point | °C | ASTM D7346 | <-15 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.1 |
| Foaming Characteristics: | | ASTM D892 | |
| Sequence I, max. 150/0 ml | | | 0/0 ml |
| Sequence II, max. 75/0 ml | | | 0/0 ml |
| Sequence III, max. 150/0 ml | | | 0/0 ml |
| Demulsibility @ 82°C | | DIN 51599 | Pass |

# INDUSTRIAL SYSTEM OIL CL 150

Product Code 4488

INDUSTRIAL SYSTEM OIL CL 150 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties.

INDUSTRIAL SYSTEM OIL CL 150 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 150 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 150 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517-2 CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL, Cincinnatti Lamb P-57**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 150 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 889 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.8 |
| Viscosity Index | | ASTM D2270 | >97 |
| Flash Point (COC) | °C | ASTM D92 | 240 |
| Pour Point | °C | ASTM D7346 | <-15 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.1 |
| Foaming Characteristics: | | ASTM D892 | |
| Sequence I, max. 150/0 ml | | | 0/0 ml |
| Sequence II, max. 75/0 ml | | | 0/0 ml |
| Sequence III, max. 150/0 ml | | | 0/0 ml |
| Demulsibility @ 82°C | | DIN 51599 | Pass |

# INDUSTRIAL SYSTEM OIL CL 220

Product Code 4489

INDUSTRIAL SYSTEM OIL CL 220 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties.

INDUSTRIAL SYSTEM OIL CL 220 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 220 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 220 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517-2 CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 220 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 897 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 19.8 |
| Viscosity Index | | ASTM D2270 | >97 |
| Flash Point (COC) | °C | ASTM D92 | 245 |
| Pour Point | °C | ASTM D7346 | <-12 |
| Total Acid Number (TAN) | mgKOH/g | ASTM D974 | 0.1 |
| Foaming Characteristics: | | ASTM D892 | |
| Sequence I, max. 150/0 ml | | | 0/0 ml |
| Sequence II, max. 75/0 ml | | | 0/0 ml |
| Sequence III, max. 150/0 ml | | | 0/0 ml |
| Demulsibility @ 82°C | | DIN 51599 | Pass |

# INDUSTRIAL SYSTEM OIL CL 460

Product Code 4520

INDUSTRIAL SYSTEM OIL CL 460 is a good quality multipurpose lubricating oil for use in circulating systems and certain other industrial applications which do not require oils with EP properties.

INDUSTRIAL SYSTEM OIL CL 460 is blended with carefully selected additives in mineral oil.

INDUSTRIAL SYSTEM OIL CL 460 gives extended life in the oil system, reduces rust and corrosion, increases bearing life due to good water separation and has good air release properties. Pump cavitation is minimised due to low foaming tendency.

INDUSTRIAL SYSTEM OIL CL 460 is suited for circulating systems with oil lubricated plain and rolling element bearings and in low or moderately enclosed gears.

**Exceeds: DIN 51517- CL, DIN 51524-1 HL, AFNOR NF E 48-603 HL**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 460 |
| Density@15°C | kg/m³ | ASTM D4052 | 900 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 460 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 30.5 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point COC | °C | ASTM D92 | >260 |
| Pour Point | °C | ASTM D7346 | -12 |
| FZG Fail Load Stage, min | | DIN 51354-2 | >12 |
| Total Acid Number | mgKOH/g | ASTM D664 | 0.1 |

# BRAKE FLUID DOT 4

Product Code 4392

BRAKE FLUID DOT 4 is a high performance brake fluid especially designed for use in disc, drum and Anti Brake Systems (ABS) of all commercial vehicles, passenger cars and motor cycles operating under moderate to severe conditions, where a DOT 4 fluid is prescribed.

BRAKE FLUID DOT 4 exceeds the performance requirements of United States Federal Motor Vehicle Safety Standard (FMVSS) 116 DOT 4. BRAKE FLUID DOT 4 contains oxidation and corrosion inhibitors to resist oxidation at the high temperatures encountered in the disc braking systems and to protect the system against rust and corrosion. The high boiling point of BRAKE FLUID DOT 4 reduces the impact of moisture absorption during service and provides reliable braking performance.

BRAKE FLUID DOT 4 is compatible with all seals and metals used in conventional braking systems. BRAKE FLUID DOT 4 can be used in the hydraulic disc- and drum braking systems including those fitted with ABS as found in passenger cars, motor cycles and commercial vehicles, where a DOT 4 product is prescribed. For improved braking performance it can also be used in hydraulic brake systems of vehicles requiring DOT 3 or SAE J 1703 quality fluids.

WARNING: BRAKE FLUID DOT 4 should never be used in place of or mixed with silicone based brake fluids (DOT 5) nor should be used where DOT 5.1 fluids are prescribed. !!! All brake fluids should be kept clean and dry. Dirt or water contamination can effect the performance of brake fluids and could cause brake system failure. Brake fluids can effect the vehicle's paint work.

**Exceeds: FMVSS 116: DOT 4, SAE J 1704, ISO 4925 Class 4**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Appearance | | Visual | Pale straw |
| Specific Gravity @ 20°C | kg/m3 | ASTM D4052 | 1040 |
| Kinematic Viscosity @ 100°C | mm2/s | SAE J1703 | 2.1 |
| Kinematic Viscosity @ -40°C | mm2/s | SAE J1703 | 1400 |
| pH (50% vol.) | | ASTM D1121 | 8.0 |
| Equilibrium Reflux Boiling Point | °C | SAE J1703 | 265 |
| Wet Equilibrium Reflux Boiling Point | °C | SAE J1703 | 163 |


# ANTIFREEZE XL

Product Code 4395

ANTIFREEZE XL is a long life silicate-containing nitrites, amines and phosphate free antifreeze in ethylene glycol to be used as a cooling and heat transferring fluid in combustion engines.

ANTIFREEZE XL may **not** be used undiluted in a combustion engine.

ANTIFREEZE XL is based on ethylene glycol in combination with a powerful additive technology to obtain the following properties:

- Efficient and long lasting corrosion protection.
- Maintenance-free operation against freezing and boiling.
- Extended coolant life.
- Excellent seal compatibility.

**Exceeds: VW TL 774C (G11), MB 325.0 / 325.2, FIAT 9.55523, IVECO 18-1830, Ford ESD M97B49-A, MAN 324 NF, Deutz DQC CA-14, ASTM D3306, MTU MTL 5048, Volvo CE, BS 6580, JASO M325, BMW GS 94000, Chrysler MS-7170, NFR 15-601, Case JIC-501, KSM 2142, Cummins 85T8-2, GM GME L1301**

| Property: | Unit | Test Method: | Typical Values: |
|---|---|---|---|
| Color | | | Blue/green |
| Density @15°C | kg/l | ASTM D5931 | 1.125 |
| Equilibrium Boiling Point | °C | ASTM D1120 | >170 |
| Reserve Alkalinity (pH 5.5) | | ASTM D1121 | 16 |
| Refractive Index, 20°C | | ASTM D1218 | 1.432 |
| Freezing Protection | | | |
| 33% dilution with water | °C | | -20 |
| 40% dilution with water | °C | | -27 |
| 50% dilution with water | °C | | -40 |


# ANTIFREEZE G12 PLUS

Product Code 4385

ANTIFREEZE G12 PLUS is a long life silicate-, amine-, nitrite- and phosphates free antifreeze based on Organic Acid Technology (OAT) technology in ethylene glycol to be used as a cooling and heat transferring fluid in combustion engines.

ANTIFREEZE G12 PLUS may **not** be used undiluted in a combustion engine.

ANTIFREEZE G12 PLUS is based on ethylene glycol and in combination of a patent silicate free aliphatic additive technology to obtain the following properties:

- Extended life.
- Environmentally friendly.
- Reliability.
- Excellent corrosion protection for aluminium heat transfer surfaces.
- Excellent cavitation protection.
- Improved heat transfer.
- Reduces repairs.
- Improved hard water stability.
- Suitable for mixed fleets.

**Exceeds: VAG TL 774-D/F, MB 325.3, MAN 324 SNF, GM 6277M, Ford WSS-M97B44D, Cummins IS Series, Detroit Diesel, Deutz/MWM, Hitachi, Liebherr MD1-36, MTU 5048, Renault/Nissan, Volvo, Thermo King**

| Property: | Unit | Test Method: | Typical Values: |
|---|---|---|---|
| Color | | | Orange/red |
| Density @15°C | kg/l | ASTM D5931 | 1.116 |
| Equilibrium Boiling Point | °C | ASTM D1120 | >170 |
| Reserve Alkalinity (pH 5.5) | | ASTM D1121 | 6.2 |
| Refractive Index, 20°C | | ASTM D1218 | 1.430 |
| Freezing Protection | | | |
| 33% dilution with water | °C | | -20 |
| 40% dilution with water | °C | | -27 |
| 50% dilution with water | °C | | -40 |


# ANTIFREEZE G13

Product Code 4514

ANTIFREEZE G13 is a long life silicate containing antifreeze based on Organic Acid Technology (OAT) in ethylene glycol to be used as a cooling and heat transferring fluid in the latest generation VAG, MB and MAN combustion engines.

ANTIFREEZE G13 is recommended to use, for good corrosion protection, at at least 33 vol. %, in the coolant solution. Mixtures with more than 70vol. % of this product in water are not recommended. The maximum frost protection (about -69°C) is obtained at a mixture of 68 vol%.

ANTIFREEZE G13 may not been used undiluted in a combustion engine.

ANTIFREEZE G13 is based on ethylene glycol and in combination Lobrid additive technology to obtain the following properties.

- Extended life.
- Environmentally friendly due to the absence of borate, nitrite, amines and phosphates.
- Reliability.
- Excellent corrosion protection for aluminium heat transfer surfaces.
- Excellent cavitation protection.

**Exceeds: VAG TL 774G, MB 325.5, MAN 324 Si-OAT**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | | Light Red/Violet |
| Density @15°C | kg/l | ASTM D5931 | 1.135 |
| Equilibrium Boiling Point | °C | ASTM D1120 | >170 |
| Reserve Alkalinity (pH 5.5) | | ASTM D1121 | 5.7 |
| Refractive Index, 20°C | | ASTM D1218 | 1.437 |
| Freezing Protection | | | |
| 35.6% dilution with water | °C | | -20 |
| 41.0% dilution with water | °C | | -25 |
| 49.8% dilution with water | °C | | -35 |

## ANTIFREEZE

Product Code 4394

ANTIFREEZE is a silicate, amine-, nitrites- and phosphates free antifreeze concentrate providing frost and corrosion protection. For the perfect operation of water-cooled internal combustion engines.

ANTIFREEZE may **not** be used undiluted in a combustion engine.

ANTIFREEZE is based Mono Ethylene Glycol in combination with a powerful additive technology to obtain the following benefits:

- Corrosion protection, also for non-ferro metals.
- Frost protection.
- Boling protection.
- Seal compatibility.
- Hard water stability.
- Miscibility.

**Exceeds: British Standard (BS) 6580, AFNOR 15-601, ASTM D3306, SAE J-1304, CUNA NC 956-16**

| Property: | Unit | Test Method: | Typical Values: |
|---|---|---|---|
| Color | | | Blue |
| Density @15°C | kg/l | ASTM D5931 | 1.131 |
| Equilibrium Boiling Point | °C | ASTM D1120 | 155 |
| Reserve Alkalinity (pH 5.5) | | ASTM D1121 | 3.0 |
| Refractive Index, 20°C | | ASTM D1218 | 1.435 |
| Freezing Protection | | | |
| 33% dilution with water | °C | | -17 |
| 50% dilution with water | °C | | -33 |


## COOLANT XL

Product Code 4517

COOLANT XL is a long life silicate-containing nitrites, amines and phosphate free ready to use coolant in ethylene glycol to be used as a cooling and heat transferring fluid in combustion engines.

COOLANT XL is based on ethylene glycol in combination with a power full additive technology to obtain the following properties.

- Extended life.
- Environmentally friendly.
- Reliability
- Excellent cavitation protection.
- Improved

**Exceeds: VW TL 774C (G11), MB 326.0, FIAT 9.55523, IVECO 18-1830, Ford ESD M97B49-A, GM GME L1301, Cummins 85T8-2, MAN 324 NF, MTU MTL 5048, Volvo CE, BS 6580, JASO M325, Deutz DQC CA-14, ASTM D3306, BMW GS 94000, Chrysler MS-7170, NFR 15-601, Case JIC-501, KSM 2142**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | Visual | Light Green |
| Density @15°C | kg/l | ASTM D5931 | 1.07 |
| Equilibrium Boiling Point | °C | ASTM D1120 | >125 |
| Reserve Alkalinity (pH 5.5) | | ASTM D1121 | 8 |
| Refractive Index, 20°C | | ASTM D1218 | 1.43 |
| Freezing Protection | °C | | -37 |


## COOLANT RTU 40

Product Code 4396

COOLANT RTU 40 is a silicate, amine-, nitrites- and phosphates free ready to use coolant (50% diluted) providing frost and corrosion protection. For the perfect operation of water-cooled internal combustion engines.

COOLANT RTU 40 is based mono ethylene glycol in combination with a powerful additive technology to obtain the following benefits:

- Corrosion protection, also for non-ferro metals.
- Frost protection.
- Boling protection.
- Seal compatibility.

**Exceeds: British Standard (BS) 6580, AFNOR 15-601, ASTM D-3306, SAE J-1304, CUNA NC 956-16**

| Property: | Unit | Test Method: | Typical Values: |
|---|---|---|---|
| Color | | | Blue |
| Density @15°C | kg/l | ASTM D5931 | 1.060 |
| Equilibrium Boiling Point | °C | ASTM D1120 | >125 |
| Reserve Alkalinity (pH 5.5) | | ASTM D1121 | 3.0 |
| Refractive Index, 20°C | | ASTM D1218 | 1.435 |
| Freezing Protection | °C | ASTM D1177 | -26 |


## COOLANT RTU G12 PLUS

Product Code 4397

COOLANT RTU G12 PLUS (Ready To Use) is a silicate free cooling fluid, composed of mono ethylene glycol, water and specially selected additives. COOLANT RTU G12 PLUS can be used throughout the year in all cooling systems in petrol- and diesel engines. Thanks to the balanced additive package and the high quality mono-ethylene glycol, this standard quality cooling fluid is one of the highest quality cooling fluids in the market. COOLANT RTU G12 PLUS should be used undiluted, only then the coolant gives a protection to -40°C.

COOLANT RTU G12 PLUS offers good protection of all metals in the cooling system and engine and is neutral towards seals and flexible hoses. COOLANT RTU G12 PLUS has extremely powerful organic corrosion inhibitors resulting in extended life-time of the radiator, pump and pipes. Offers strong protection: up to 650.000 km for buses and trucks, 250.000 km for passenger vehicles and up to 16.000 hours for steady-state engines. It is recommended to change the coolant every five years or at above mileages or operating times, whichever comes first. Strong compatibility with seals: completely compatible with elastomers used by European constructors. Excellent stability with hard water, because this coolant doesn't contain silicates nor other mineral salts and prevents the formation of deposits and scale. Perfectly mixable with other cooling fluids based on Mono Ethylene Glycol.

COOLANT RTU G12 PLUS is the latest generation silicate free coolant and is because of its high-grade quality already used as a first fill by more than 75% of automobile manufacturers. COOLANT RTU G12 PLUS is developed partly due to the demand of a full organic coolant. This special coolant needs to be used undiluted!

WARNING:
Keep all cooling fluids out of reach of children!
Do not drink cooling fluids! If swallowed, induce vomiting and immediately call for a doctor!

**Exceeds: FORD ESE-M97B49-4/44C, FORD WSS-M97B44-D, SCANIA, MAN 248 & 324 SNF, MB 325.3 GM/OPEL 1940656/6277M, Volvo no: 260, Renault: 41-01-001, PSA B715110, VW TL-774D/F (G12+)**

| Property: | Unit | Test Method: | Typical Values: |
|---|---|---|---|
| Color | | Visual | Red |
| Density @ 20°C | kg/m³ | ASTM D1298 | 1068 |
| Freezing Point @ 50% in water | °C | ASTM D1177 | -40 |
| pH (50% in water) | | ASTM D1287 | 8.6 |

# EP GREASE NLGI 1

Product Code 4406

EP GREASE NLGI 1 is a high quality multipurpose lithium thickened EP-1 grease suited for automotive, agriculture and industrial applications. EP GREASE NLGI 1is suitable for a wide range of plain and rolling bearings.

EP GREASE NLGI 1 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties:

- Good mechanical stability.
- High load carrying capacity.
- Good corrosion protection.
- Easy to pump at low temperatures.
- Suited for loaded bearings as well as wet environments.

Temp Range: Continuou operation: -30°C to + 120°C.
Short perios maximum +130°C

**Exceeds: DIN 51502, KP1K-30, ISO 6743-9, ISO-L-XCCFB1**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| NLGI Grade | | ASTM D217 | 1 |
| Color | | Visual | Yellow/Brown |
| Density @20°C | kg/m³ | IPPM-CS/03 | 930 |
| Dropping Point | °C | IP 396 | >180 |
| Base Oil Viscosity @40°C | mm²/s | ISO 12058 | 200 |
| Base Oil Viscosity @100°C | mm²/s | ISO 12058 | 15 |
| 4-Ball Weld Load | N | DIN 51350- 4 | 2600 |
| Mechanical Stability | | | |
| Penetration 60 strokes | | ISO 2137 | 310-340 |
| Penetration 100.000 | | ISO 2137 | +30 |
| Strokes Shell Roll Stability, 2 hrs / rt | | ASTM D1831 | +30 |
| Shell Roll Stability, 50 hrs @80°C | | ASTM D1831 mod | +80 |
| Oxidation Stability, 100hrs @100°C | kPa | ASTM D942 | 30 |
| Oil Separation 168hrs @40°C % | | IP 121 | 10 |

# EP GREASE NLGI 2

Product Code 4399

EP GREASE NLGI 2 is a lithium thickened lubricating grease based on mineral oil and contains antioxidants, corrosion inhibitors and EP/AW additives.

EP GREASE NLGI 2 is a typical multipurpose EP grease which can be used in various applications within given temperature limits.

EP GREASE NLGI 2 offers stability, high load carrying capacity and good corrosion protection making it suitable for heavily loaded bearings as well as wet environments.

EP GREASE NLGI 2 is a high quality multipurpose grease that can be used in both industrial and automotive applications and is suitable for use in a wide range of plain and rolling bearings

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP2K-30 |
| | | ISO 6743 | ISO-L-XCCIB2 |
| NLGI Grade | | ASTM D217 | 2 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 110 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 12 |
| Colour | | Visual | Light yellow |
| Dropping Point | °C | IP 396 | >180 |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 940 |
| 4-Ball weld load | N | DIN 51350-4 | 2600 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -30 to +120 |
| Maximum short period: | °C | - | +130 |
| Penetration 60 strokes: | | ISO 2137 | 265-295 |
| Penetration 100 strokes: | | ISO 2137 | +25 |
| SKF Emcor WWO distilled water | | ISO 11007mod | 0-1 |
| SKF Emcor WWO salt water | | ISO 11007mod | 2-3 |
| Copper Corrosion 24 hrs @ 100°C | | ASTM D4048 | 1b |
| Water resistance | | DIN 51807-1 | 1-90 |
| 4-ball wear scar 1 hr @ 400 N | mm | DIN 51350-5 | 0.5 |
| Flow pressure @ -35°C | hPa | DIN 51805 | <1400 |
| Oxidation Stability 100 hrs @ 100°C | kPa | ASTM D942 | 20 |

# EP GREASE NLGI 00

Product Code 4398

EP GREASE NLGI 00 is a lithium thickened lubricating grease based on mineral oil and contains antioxidants, corrosion inhibitors and EP/AW additives.

EP GREASE NLGI 00 is a state-of-the-art multipurpose EP grease which can be used in various applications within given temperature limits.

EP GREASE NLGI 00 offers good mechanical stability, high load carrying capacity and good corrosion protection and is easy to pump at low temperatures.

EP GREASE NLGI 00 is a high quality multipurpose grease that can be used in both industrial and automotive applications. The consistency of EP GREASE NLGI 00 makes it suitable for use in centralised lubrication systems that require semi-fluid grease.

EP GREASE NLGI 00 is also suitable for use in gearboxes.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP00K-30 |
| | | ISO 6743 | ISO-L-XCCHB00 |
| NLGI Grade | | ASTM D217 | 00 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 290 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 20 |
| Colour | | Visual | Dark brown |
| Dropping Point | °C | IP 396 | >160 |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 890 |
| 4-Ball weld load | N | DIN 51350-4 | 2600 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -30 to +100 |
| Maximum short period: | °C | - | +120 |
| Penetration 60 strokes: | | ISO 2137 | 400-430 |
| Penetration 100 strokes: | | ISO 2137 | +35 |
| Shell Roll Stability 50hrs @ 80°C | | ASTM D1831mod | +65 |
| Copper Corrosion 24 hrs @ 100°C | | ASTM D4048 | 1b |
| Water resistance | | DIN 51807-1 | 1-90 |
| 4-ball wear scar 1 hr @ 400 N | mm | DIN 51350-5 | 0.5 |
| Oxidation Stability 100 hrs @ 100°C | kPa | ASTM D942 | 47 |

# EPBF GREASE NLGI 2

Product Code 4400

EPBF GREASE NLGI 2 is a lithium thickened lubricating grease based on mineral oil and contains additives.

EPBF GREASE NLGI 2 is a general multipurpose grease which can be used in various applications within given temperature limits.

EPBF GREASE NLGI 2 has good mechanical stability, good load carrying capacity & can be used in a wide range of applications.

EPBF GREASE NLGI 2 is a quality multipurpose grease that can be used in both industrial and automotive applications and is suitable for a wide range of plain and rolling bearings.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP2K-30 |
| | | ISO 6743 | ISO-L-XCCFB2 |
| NLGI Grade | | ASTM D217 | 2 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 90-120 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 12 |
| Colour | | Visual | Brown |
| Dropping Point | °C | IP 396 | >180 |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 890 |
| 4-Ball weld load | N | DIN 51350-4 | 2400 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -30 to +120 |
| Maximum short period: | °C | - | +130 |
| Penetration 60 strokes: | | ISO 2137 | 265-295 |

# EPBF GREASE NLGI 3

Product Code 4401

EPBF GREASE NLGI 3 is a lithium thickened lubricating grease based on mineral oil and contains antioxidants, corrosion inhibitors and EP/AW additives.

EPBF GREASE NLGI 3 is a typical multipurpose EP grease which can be used in various applications within given temperature limits.

EPBF GREASE NLGI 3 offers stability, high load carrying capacity and good corrosion protection making it suitable for heavily loaded bearings as well as wet environments.

EPBF GREASE NLGI 3 is a high quality multipurpose grease that can be used in both industrial and automotive applications and is suitable for use in a wide range of plain and rolling bearings.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP3K-30 |
| | | ISO 6743 | ISO-L-XBCFB3 |
| NLGI Grade | | ASTM D217 | 3 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 105 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 12 |
| Colour | | Visual | Brown |
| Dropping Point | °C | IP 396 | >180 |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 910 |
| 4-Ball weld load | N | DIN 51350-4 | 2400 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -30 to +120 |
| Maximum short period: | °C | - | +130 |
| Penetration 60 strokes: | | ISO 2137 | 220-250 |

# EPX GREASE NLGI 2

Product Code 4402

EPX GREASE NLGI 2 is a lithium complex thickened lubricating grease based on mineral oil and contains antioxidants, corrosion inhibitors and EP/AW additives. The lithium complex soap makes EPX GREASE NLGI 2 suitable for applications within a very wide temperature range and especially applications at elevated temperatures. The complex soap structure also gives EPX GREASE NLGI 2 a high degree of mechanical stability. This enhances the performance in vibrating housings and prolongs re-lubrications intervals.

EPX GREASE NLGI 2 is a modern high performance product setting a new standard for a truly universal grease suitable for both industrial and automotive applications.

EPX GREASE NLGI 2 all-round properties make it the primary choice for various types of bearing applications including heavy load conditions.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP2N-30 |
| | | ISO 6743 | ISO-L-XCDEB2 |
| NLGI Grade | | ASTM D217 | 2 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 200 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 14 |
| Colour | | Visual | Brown |
| Dropping Point | °C | IP 396 | >250 |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 910 |
| 4-Ball weld load | N | DIN 51350-4 | 3000 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -30 to +140 |
| Maximum short period: | °C | - | +220 |
| Penetration 60 strokes: | | ISO 2137 | 265-295 |
| Penetration 100 strokes: | | ISO 2137 | +40 |
| SKF Emcor WWO distilled water | | ISO 11007mod | 0-0 |
| Copper Corrosion 24 hrs @ 100°C | | ASTM D4048 | 1b |
| Oil separation 168 hrs @ 40°C | | IP 121 | 4% |
| Water resistance | | DIN 51807-1 | 1-90 |
| 4-ball wear scar 1 hr @ 400 N | mm | DIN 51350-5 | 0.6 |
| Flow pressure @ -30°C | hPa | DIN 51805 | <1400 |

# EPHT GREASE NLGI 2

Product Code 4404

EPHT GREASE NLGI 2 is a bentone clay thickened lubricating grease based on mineral oil.

EPHT GREASE NLGI 2 contains antioxidants and EP/AW additives. The inorganic thickener makes EPHT GREASE NLGI 2 suitable for applications within a very wide temperature range and especially applications at elevated temperatures.

EPHT GREASE NLGI 2 is a high performance product suitable for both industrial and automotive applications.

EPHT GREASE NLGI 2 all-round properties make it suitable for various types of bearing applications, including temperature peaks up to 200°C.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP2N-30 |
| | | ISO 6743 | ISO-L-XCDAB2 |
| NLGI Grade | | ASTM D217 | 2 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 475 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 31 |
| Colour | | Visual | Brown |
| Dropping Point | | IP 396 | Not applicable |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 920 |
| 4-Ball weld load | N | DIN 51350-4 | 2600 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -30 to +150 |
| Maximum short period: | °C | - | +200 |
| Penetration 60 strokes: | | ISO 2137 | 265-295 |
| Penetration 100 strokes: | | ISO 2137 | +55 |
| Copper Corrosion 24 hrs @ 100°C | | ASTM D4048 | 1a |
| Oil Separation 168 hrs @ 40°C | | IP 121 | 3% |
| Oxidation Stability 100 hrs @ 100°C | kPa | ASTM D942 | 50 |
| Flow pressure @ -30°C | hPa | DIN 51805 | <1400 |

# EPWR GREASE NLGI 2.5

Product Code 4405

EPWR GREASE NLGI 2.5 is a lithium-calcium thickened lubricating grease based on mineral oil.

EPWR GREASE NLGI 2.5 contains antioxidants, corrosion inhibitors and EP/AW additives. The thickener, together with the base oil, makes EPWR GREASE NLGI 2.5 suitable for the lubrication of slow moving and heavily loaded bearings.

EPWR GREASE NLGI 2.5 has excellent water resistance, good load carrying capacity and endures high shock loads.

EPWR GREASE NLGI 2.5 is suitable for heavily loaded agricultural & industrial applications where water wash is problematic.

EPWR GREASE NLGI 2.5 is also suitable for heavy-duty vehicles working outdoors in wet and dirty conditions.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Classification: | | DIN 51502 | KP2.5K-20 |
| | | ISO 6743 | ISO-L-XBCHB2.5 |
| NLGI Grade | | ASTM D217 | 2.5 |
| Base Oil Viscosity @ 40°C | mm²/s | ISO 12058 | 465 |
| Base Oil Viscosity @ 100°C | mm²/s | ISO 12058 | 27 |
| Colour | | Visual | Brown |
| Dropping Point | °C | IP 396 | >180 |
| Approximate Density @ 20°C | kg/m³ | IPPM-CS/03 | 920 |
| 4-Ball weld load | N | DIN 51350-4 | 3200 |
| Temperature Range | | | |
| Continuous operation: | °C | - | -20 to +120 |
| Maximum short period: | °C | - | +130 |
| Penetration 60 strokes: | | ISO 2137 | 245-275 |
| Penetration 100 strokes: | | ISO 2137 | +40 |
| SKF Emcor WWO distilled water | | ISO 11007mod | 2-2 |
| Copper Corrosion 24 hrs @ 100°C | | ASTM D4048 | 1b |
| Oil Separation 168 hrs @ 40°C | | IP 121 | 3% |
| Water resistance | | DIN 51807-1 | 1-90 |
| 4-ball wear scar 1 hr @ 400 N | mm | DIN 51350-5 | 0.7 |
| Flow pressure @ -35°C | hPa | DIN 51805 | <1400 |

## CHAINSAW OIL 68

Product Code 4500

CHAINSAW OIL 68 is a high quality oil specially developed to lubricate the chain of chain saws.

CHAINSAW OIL 68 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties:

- Very good adhesive strength.
- Excellent lubricating properties, helps to prevent premature chain failure
- Extend working life.
- The specially selected additives also inhibit rust.

CHAINSAW OIL 68 is NOT suitable to lubricate the engine

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 68 |
| Density @15°C | kg/m³ | ASTM D4052 | 883 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 67.8 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.0 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -18 |

## CHAINSAW OIL 100

Product Code 4387

CHAINSAW OIL 100 is a high quality chain saw oil, CHAIN SAW OIL 100 based on paraffinic base stocks fortified with a special “tackiness agent” to provide an extreme adhesive strength towards the chain, thus minimising oil loss and providing excellent lubricating properties.

CHAINSAW OIL 100 is especially developed to lubric CHAIN SAW OIL 100 ate the chain of chain saws chain of chain saws to prevent it from breaking or getting jammed.

CHAINSAW OIL 100 is NOT suitable to lubricate the engine.

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 100 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 889 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 100 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.3 |
| Viscosity Index | | ASTM D2270 | 98 |
| Flash Point (COC) | °C | ASTM D92 | 230 |
| Pour Point | °C | ASTM D7346 | -18 |

## CHAINSAW OIL 150

Product Code 4388

CHAINSAW OIL 150 is a high quality chain saw oil, based on paraffinic base stocks fortified with a special "tackiness agent" to provide an extreme adhesive strength towards the chain, thus minimising oil loss and providing excellent lubricating properties.

CHAINSAW OIL 150 is especially developed to lubricate the chain of chain of chain saws chain saws to prevent it from breaking or getting jammed.

CHAINSAW OIL 150 is NOT suitable to lubricate the engine.

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 150 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 892 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 150 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.8 |
| Viscosity Index | | ASTM D2270 | 98 |
| Flash Point (COC) | °C | ASTM D92 | 245 |
| Pour Point | °C | ASTM D7346 | -15 |

## CHAINSAW OIL 220

Product Code 4473

CHAINSAW OIL 220 is a high quality chain saw oil, based on paraffinic base stocks fortified with a special "tackiness agent" to provide an extreme adhesive strength towards the chain, thus minimising oil loss and providing excellent lubricating properties.

CHAINSAW OIL 220 is especially developed to lubricate the chain of chain saws to prevent it from breaking or getting jammed.

CHAINSAW OIL 220 is NOT suitable to lubricate the engine.

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 220 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 898 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 220 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point (COC) | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | <-15 |

## CHAINSAW OIL 320

Product Code 4474

CHAINSAW OIL 320 is a high quality chain saw oil, based on paraffinic base stocks fortified with a special "tackiness agent" to provide an extreme adhesive strength towards the chain, thus minimising oil loss and providing excellent lubricating properties.

CHAINSAW OIL 320 is especially developed to lubricate the chain of chain saws to prevent it from breaking or getting jammed.

CHAINSAW OIL 320 is NOT suitable to lubricate the engine.

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 320 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 902 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 320 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point (COC) | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | <-15 |

## CHAINSAW OIL BIO 68

Product Code 4508

CHAINSAW OIL BIO 68 is a high quality bio-degradable oil specially developed to lubricate the chains of industrial equipment.

CHAINSAW OIL BIO 68 is formulated with fully renewable high quality vegetable oil stocks in combination with a special additive technology to achieve the following performance:

- Very good adhesive strength.
- Excellent lubricating properties, helps to prevent premature chain failure
- Extend working life.
- The specially selected additives also inhibit rust.
- Extremely low pour point

CHAINSAW OIL BIO 68 is NOT suitable to lubricate the engine

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | ISO 3448 | 68 |
| Density @15°C | kg/m³ | ASTM D4052 | 928 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 75 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 15 |
| Viscosity Index | | ASTM D2270 | 210 |
| Flash Point COC | °C | ASTM D92 | >275 |
| Pour Point | °C | ASTM D7346 | -27 |
| VKA wearing- / weldingload | N | DIN 51350-2/3 | 1800/2000 |
| Radio Carbon method c14 | % | ASTM 6866 | 95 |

# COMPRESSOR OIL SYNTH 32 Product Code 4412

COMPRESSOR POWER SYNTH 32 is an advanced fully synthetic ashless air compressor lubricant developed for use in rotary compressors of screw or vane design, reciprocating compressors and centrifugal compressors.

COMPRESSOR POWER SYNTH 32 is suited single or multiple stage rotary screw or vane, centrifugal compressors and reciprocating compressors of various OEMs including Hydrovane, Atlas Copco, Compare, and Worthington.

COMPRESSOR POWER SYNTH 32 is based on high quality Polyalphaolefin (PAO) base oil in combination with an unique additive package to ensure the following properties:

- Outstanding thermo-oxidative stability.
- Excellent anti-wear protection leads to longer oil and equipment life.
- Low varnish and carbon forming tendency help in reducing maintenance cost.
- Extra high viscosity index.
- Excellent low temperature fluidity for use in wide operating temperature range
- Zinc-free formulation ensures excellent filterability by minimizing oil filter blockage in wet condition.
- Excellent low volatility characteristics give low oil.
- Improved surface properties results in very good anti-foaming and air release properties and superior demulsibility.
- Offers excellent protection against rust and corrosion.
- Compatible with mineral lubricants and also with seals and paints normally used with mineral oils.

**Exceeds: DIN 51506 VDL, ISO 6743-3-DAB/DAJ**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 32 |
| Density @15°C | kg/m³ | ASTM D4052 | 833 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 6.2 |
| Viscosity Index | | ASTM D2270 | 145 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -57 |
| FZG A/8, 3/90°C | | DIN 51354-2 | >12 |
| Demulsibility @54°C, max | min | DIN 51599 | Pass |

# COMPRESSOR OIL SYNTH 46 Product Code 4413

COMPRESSOR POWER SYNTH 46 is an advanced fully synthetic ashless air compressor lubricant developed for use in rotary compressors of screw or vane design, reciprocating compressors and centrifugal compressors. COMPRESSOR POWER SYNTH 46 is suited for single or multiple stage rotary screw or vane, centrifugal compressors and reciprocating compressors of various OEMs including Hydrovane, Atlas Copco, Compare, and Worthington.

COMPRESSOR POWER SYNTH 46 is based on high quality Polyalphaolefin (PAO) base oil in combination with an unique additive package to ensure the following properties:

- Outstanding thermo-oxidative stability.
- Excellent anti-wear protection leads to longer oil and equipment life.
- Low varnish and carbon forming tendency help in reducing maintenance cost.
- Extra high viscosity index.
- Excellent low temperature fluidity for use in wide operating temperature range
- Zinc-free formulation ensures excellent filterability by minimizing oil filter blockage in wet condition.
- Excellent low volatility characteristics give low oil.
- Improved surface properties results in very good anti-foaming and air release properties and superior demulsibility.
- Offers excellent protection against rust and corrosion.
- Compatible with mineral lubricants and also with seals and paints normally used with mineral oils.

**Exceeds: DIN 51506 VDL, ISO 6743-3-DAB/DAJ**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 46 |
| Density @15°C | kg/m³ | ASTM D4052 | 839 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.9 |
| Viscosity Index | | ASTM D2270 | 145 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -57 |
| FZG A/8, 3/90°C | | DIN 51354-2 | >12 |
| Demulsibility @54°C, max | min | DIN 51599 | Pass |

# COMPRESSOR OIL SYNTH 68 Product Code 4414

COMPRESSOR POWER SYNTH 68 is an advanced fully synthetic ashless air compressor lubricant developed for use in rotary compressors of screw or vane design, reciprocating compressors and centrifugal compressors. COMPRESSOR POWER SYNTH 68 is suited single or multiple stage rotary screw or vane, centrifugal compressors and reciprocating compressors of various OEMs including Hydrovane, Atlas Copco, Compare, and Worthington.

COMPRESSOR POWER SYNTH 68 is based on high quality Polyalphaolefin (PAO) base oil in combination with an unique additive package to ensure the following properties:

- Outstanding thermo-oxidative stability.
- Excellent anti-wear protection leads to longer oil and equipment life.
- Low varnish and carbon forming tendency help in reducing maintenance cost.
- Extra high viscosity index.
- Excellent low temperature fluidity for use in wide operating temperature range
- Zinc-free formulation ensures excellent filterability by minimizing oil filter blockage in wet condition.
- Excellent low volatility characteristics give low oil.
- Improved surface properties results in very good anti-foaming and air release properties and superior demulsibility.
- Offers excellent protection against rust and corrosion.
- Compatible with mineral lubricants and also with seals and paints normally used with mineral oils.

**Exceeds: DIN 51506 VDL, ISO 6743-3-DAB/DAJ**

| Properties | Unit | Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 68 |
| Density @15°C | kg/m³ | ASTM D4052 | 839 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 7.9 |
| Viscosity Index | | ASTM D2270 | 145 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -57 |
| FZG A/8, 3/90°C | | DIN 51354-2 | >12 |
| Demulsibility @54°C, max | min | DIN 51599 | Pass |

# COMPRESSOR OIL VDL 46 Product Code 4381

COMPRESSOR OIL 46 is a high performance ashless air compressor oil specially designed to meet the stringent requirements of major compressor manufacturers.

COMPRESSOR OIL VDL 46 is suited for reciprocating air-, rotary screw and vane compressors. Also used in circulating oil systems, plain and rolling element bearings, lightly loaded Gear sets, etc

COMPRESSOR OIL VDL 46 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties.

- Excellent thermo- and oxidation stability
- Improved equipment reliability, availability and efficiency.
- Low ash and carbon forming tendency ensures improved valve performance
- Reduced potential for fires and explosions in the discharge systems.
- Exceptional wear and rust protection.
- Superior demulsibility reduces oil carryover and corrosion, maintains lubrication efficiency.
- Reduces sludge formation and improves life of coalesces

**Exceeds: DIN 51506 VBL/VCL/BDL, ISO 6743 DAA/DAB/DAG/DAH**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 46 |
| Density @15°C | kg/m³ | ASTM D4052 | 879.2 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 46.6 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 6.7 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -24 |
| FZG A/8, 3/90°C | | DIN 51354-2 | 12 |
| Demulsibility @54°C, max | min | DIN 51999 | 30 |

## COMPRESSOR OIL VDL 68 Product Code 4382

COMPRESSOR POWER 68 is a high performance ashless air compressor oil specially designed to meet the stringent requirements of major compressor manufacturers.

COMPRESSOR OIL VDL 68 is suited for reciprocating air-, rotary screw and vane compressors. Also used in circulating oil systems, plain and rolling element bearings, lightly loaded Gear sets, etc

COMPRESSOR OIL VDL 68 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties.

- Excellent thermo- and oxidation stability
- Improved equipment reliability, availability and efficiency.
- Low ash and carbon forming tendency ensures improved valve performance
- Reduced potential for fires and explosions in the discharge systems.
- Exceptional wear and rust protection.
- Superior demulsibility reduces oil carryover and corrosion, maintains lubrication efficiency.
- Reduces sludge formation and improves life of coalesces

**Exceed: DIN 51506 VBL/VCL/BDL, ISO 6743 DAA/DAB/DAG/DAH**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 68 |
| Density @15°C | kg/m³ | ASTM D4052 | 883.7 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 71.2 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.1 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -21 |
| FZG A/8, 3/90°C | | DIN 51354-2 | 12 |
| Demulsibility @54°C, max | min | DIN 51999 | 30 |

## COMPRESSOR OIL VDL 100 Product Code 4383

COMPRESSOR POWER 100 is a high performance ashless air compressor oil specially designed to meet the stringent requirements of major compressor manufacturers.

COMPRESSOR OIL VDL 100 is suited for reciprocating air-, rotary screw and vane compressors. Also used in circulating oil systems, plain and rolling element bearings, lightly loaded Gear sets, etc

COMPRESSOR OIL VDL 100 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties.

- Excellent thermo- and oxidation stability
- Improved equipment reliability, availability and efficiency.
- Low ash and carbon forming tendency ensures improved valve performance
- Reduced potential for fires and explosions in the discharge systems.
- Exceptional wear and rust protection.
- Superior demulsibility reduces oil carryover and corrosion, maintains lubrication efficiency.
- Reduces sludge formation and improves life of coalesces

**Exceeds: DIN 51506 VBL/VCL/BDL, ISO 6743 DAA/DAB/DAG/DAH**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 100 |
| Density @15°C | kg/m3 | ASTM D4052 | 888.7 |
| Kin. Viscosity @40°C | mm2/s | ASTM D7042 | 100.3 |
| Kin. Viscosity @100°C | mm2/s | ASTM D7042 | 11.1 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -18 |
| FZG A/8, 3/90°C | | DIN 51354-2 | 12 |
| Demulsibility @54°C, max | min | DIN 51999 | 30 |

## COMPRESSOR OIL VDL 150 Product Code 4384

COMPRESSOR POWER 150 is a high performance ashless air compressor oil specially designed to meet the stringent requirements of major compressor manufacturers.

COMPRESSOR OIL VDL 150 is suited for reciprocating air-, rotary screw and vane compressors. Also used in circulating oil systems, plain and rolling element bearings, lightly loaded Gear sets, etc

COMPRESSOR OIL VDL 150 is based on high quality mineral base oil in combination with an unique additive package to ensure the following properties.

- Excellent thermo- and oxidation stability
- Improved equipment reliability, availability and efficiency.
- Low ash and carbon forming tendency ensures improved valve performance
- Reduced potential for fires and explosions in the discharge systems.
- Exceptional wear and rust protection.
- Superior demulsibility reduces oil carryover and corrosion, maintains lubrication efficiency.
- Reduces sludge formation and improves life of coalesces

**Exceeds: DIN 51506 VBL/VCL/BDL, ISO 6743 DAA/DAB/DAG/DAH**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Class | | | 150 |
| Density@15°C | kg/m³ | ASTM D4052 | 893 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 150.9 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.4 |
| Viscosity Index | | ASTM D2270 | 99 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |
| FZG A/8, 3/90°C | | DIN 51354-2 | 12 |
| Demulsibility @54°C, max | min | DIN 51999 | 30 |

## HYDRAULIC OIL HV 15 Product Code 4349

HYDRAULIC OIL HV 15 is an universal HVI mineral high grade EP oil for use in heavy duty hydraulic systems and light duty gearboxes, bearings and general lubrication. Not suitable for turbine application.

HYDRAULIC OIL HV 15 is formulated with high quality refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance.

- Excellent stability against oxidation.
- High Viscosity Index.
- Very good protection against wear.
- Good water demulsibility.
- Very good foaming properties.
- Very effective to rust and corrosion.
- Very good thermal stability.

**Exceeds: AFNOR NFE-48-603, ISO 11158 HV, DIN 51524/3 HVLP, Eaton Vickers M-2950-S/I-386, Sauer Danfoss 520L0463**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 15 |
| Density@15°C | kg/m³ | ASTM D4052 | 869 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 14.9 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 3.9 |
| Viscosity Index | | ASTM D2270 | 167 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Water Separability @54°C | minutes | ASTM D1401 | Pass |
| Demulsility @54°C | minutes | ASTM D892 | Pass |

# HYDRAULIC OIL HV 22

Product Code 4359

HYDRAULIC OIL HV 22 is an universal HVI mineral high grade EP oil for use in heavy duty hydraulic systems and light duty gearboxes, bearings and general lubrication. Not suitable for turbine application.

HYDRAULIC OIL HV 22 is formulated with high quality refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance.

- Excellent stability against oxidation.
- High Viscosity Index.
- Very good protection against wear.
- Good water demulsibility.
- Very good foaming properties.
- Very effective to rust and corrosion.
- Very good thermal stability.

**Exceeds: AFNOR NFE-48-603, ISO 11158 HV, DIN 51524/3 HVLP, Sauer Danfoss 520L0463, Eaton Vickers M-2950-S/I-386**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 22 |
| Density@15°C | kg/m³ | ASTM D4052 | 872 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 21.9 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.8 |
| Viscosity Index | | ASTM D2270 | >170 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -42 |
| Water Separability @54°C | Minutes | ASTM D1401 | Pass |
| Demulsility @54°C | Minutes | ASTM D892 | Pass |

# HYDRAULIC OIL HV 32

Product Code 4358

HYDRAULIC OIL HV 32 is an universal HVI mineral high grade EP oil for use in heavy duty hydraulic systems and light duty gearboxes, bearings and general lubrication. Not suitable for turbine application.

HYDRAULIC OIL HV 32 is formulated with high quality refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance.

- Excellent stability against oxidation.
- High Viscosity Index.
- Very good protection against wear.
- Good water demulsibility.
- Very good foaming properties.
- Very effective to rust and corrosion.
- Very good thermal stability.

**Exceeds: AFNOR NFE-48-603, ISO 11158 HV, DIN 51524/3 HVLP, Denison HF-0, Cincinatti P-68, Sauer Danfoss 520L0463, Eaton Vickers M-2950-S/I-386**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 32 |
| Density@15°C | kg/m³ | ASTM D4052 | 856 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 32.3 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 6.7 |
| Viscosity Index | | ASTM D2270 | 173 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Water Separability @54°C | Minutes | ASTM D1401 | Pass |
| Demulsility @54°C | Minutes | ASTM D892 | Pass |

# HYDRAULIC OIL HV 46

Product Code 4360

HYDRAULIC OIL HV 46 is an universal HVI mineral high grade EP oil for use in heavy duty hydraulic systems and light duty gearboxes, bearings and general lubrication. Not suitable for turbine application.

HYDRAULIC OIL HV 46 is formulated with high quality refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance.

- Excellent stability against oxidation.
- High Viscosity Index.
- Very good protection against wear.
- Good water demulsibility.
- Very good foaming properties.
- Very effective to rust and corrosion.
- Very good thermal stability.

**Exceeds: AFNOR NFE-48-603, ISO 11158 HV, DIN 51524/3 HVLP, Denison HF-1, Cincinatti P-70, Sauer Danfoss 520L0463, Eaton Vickers M-2950-S/I-386**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 46 |
| Density@15°C | kg/m³ | ASTM D4052 | 873 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 45.6 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 10.8 |
| Viscosity Index | | ASTM D2270 | 238 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Water Separability @54°C | Minutes | ASTM D1401 | Pass |
| Demulsility @54°C | Minutes | ASTM D892 | Pass |

# HYDRAULIC OIL HV 68

Product Code 4362

HYDRAULIC OIL HV 68 is an universal HVI mineral high grade EP oil for use in heavy duty hydraulic systems and light duty gearboxes, bearings and general lubrication. Not suitable for turbine application.

HYDRAULIC OIL HV 68 is formulated with high quality refined mineral base stocks in combination with a special EP-additive technology to achieve the following performance:

- Excellent stability against oxidation.
- High Viscosity Index.
- Very good protection against wear.
- Good water demulsibility.
- Very good foaming properties.
- Very effective to rust and corrosion.
- Very good thermal stability.

**Exceeds: AFNOR NFE-48-603, ISO 11158 HV, DIN 51524/3 HVLP, Denison HF-2, Cincinatti P-69, Sauer Danfoss 520L0463, Eaton Vickers M-2950-S/I-386**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 68 |
| Density@15°C | kg/m3 | ASTM D4052 | 878 |
| Kin. Viscosity @40°C | mm2/s | ASTM D7042 | 69.5 |
| Kin. Viscosity @100°C | mm2/s | ASTM D7042 | 11.4 |
| Viscosity Index | | ASTM D2270 | 173 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -39 |
| Water Separability @82°C | Minutes | ASTM D1401 | Pass |
| Demulsility @54°C | Minutes | ASTM D892 | Pass |

# HYDRAULIC OIL HV 100

Product Code 4355

HYDRAULIC OIL HV 100 is a premium quality anti wear hydraulic oils developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HV 100 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HV 100 is formulated with field proven thermally stable, zinc based anti wear additives.

HYDRAULIC OIL HV 100 provides excellent water demulsibility as well as de-aeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HV 100 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/3 HVLP, ISO 11158 HV, AFNOR NFE 48-603 HV**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 100 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 882 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 90-110 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | >155 |
| Flash Point (COC) | °C | ASTM D92 | >195 |
| Pour Point | °C | ASTM D7346 | -24 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <5 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <60 |

# HYDRAULIC OIL HVZF 22

Product Code 4373

HYDRAULIC OIL HVZF 22 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HVZF 22 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HVZF 22 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HVZF 22 provides excellent water demulsibility as well as de-aeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HVZF 22 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/3 HVLP, ISO 11158 HV, AFNOR NFE 48-603 HV**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 22 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 841 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 19.8-24.2 |
| Viscosity Index | | ASTM D2270 | >150 |
| Flash Point | °C | ASTM D92 | >175 |
| Pour Point | °C | ASTM D7346 | -36 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <5 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <40 |

# HYDRAULIC OIL HVZF 32

Product Code 4375

HYDRAULIC OIL HVZF 32 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HVZF 32 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HVZF 32 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HVZF 32 provides excellent water demulsibility as well as de-aeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HVZF 32 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/3 HVLP, ISO 11158 HV, AFNOR NFE 48-603 HV**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 32 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 875 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 7.0 |
| Viscosity Index | | ASTM D2270 | >150 |
| Flash Point | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | -36 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <5 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <40 |

# HYDRAULIC OIL HVZF 46

Product Code 4363

HYDRAULIC OIL HVZF 46 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HVZF 46 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HVZF 46 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HVZF 46 provides excellent water demulsibility as well as de-aeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HVZF 46 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/3 HVLP, ISO 11158 HV, AFNOR NFE 48-603 HV, Denison HF-1, Cincinnati P-70, Eaton (Vickers), M-2950-S/ I-286-S, Hitachi**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 46 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 875 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 41.4-50.6 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 8.8 |
| Viscosity Index | | ASTM D2270 | >150 |
| Flash Point (COC) | °C | ASTM D92 | >180 |
| Pour Point | °C | ASTM D7346 | -27 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <10 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <40 |

## HYDRAULIC OIL HVZF 68

Product Code 4377

HYDRAULIC OIL HVZF 68 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HVZF 68 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HVZF 68 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HVZF 68 provides excellent water demulsibility as well as de-aeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HVZF 68 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/3 HVLP, ISO 11158 HV, AFNOR NFE 48-603 HV**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 68 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 881 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 12.0 |
| Viscosity Index | | ASTM D2270 | >150 |
| Flash Point | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | -24 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <10 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <60 |

## HYDRAULIC OIL HM 22

Product Code 4351

HYDRAULIC OIL HM 22 is a high performance anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under moderate to severe conditions in mobile and industrial services.

HYDRAULIC OIL HM 22 oil is formulated with carefully selected base stocks fortified with additives to provide excellent protection towards wear, rust and oxidation.

HYDRAULIC OIL HM 22 is formulated with field proven thermally stable, zinc based anti wear additives.

HYDRAULIC OIL HM 22 provides excellent water demulsibility as well as de-aeration.

HYDRAULIC OIL HM 22 effectively protects against rust and oxidation.

**Exceeds: DIN 51524/2 HLP, ISO 11158 HM, AFNOR NFE 48-603 HM**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 22 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 861 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 19.8-24.2 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 4.3 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >175 |
| Pour Point | °C | ASTM D7346 | -39 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <5 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <40 |

## HYDRAULIC OIL HM 32

Product Code 4352

HYDRAULIC OIL HM 32 is a high performance anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under moderate to severe conditions in mobile and industrial services.

HYDRAULIC OIL HM 32 oil is formulated with carefully selected base stocks fortified with additives to provide excellent protection towards wear, rust and oxidation.

HYDRAULIC OIL HM 32 is formulated with field proven thermally stable, zinc based anti wear additives.

HYDRAULIC OIL HM 32 provides excellent water demulsibility as well as de-aeration.

HYDRAULIC OIL HM 32 effectively protects against rust and oxidation.

**Exceeds: ISO 11158 HM, DIN 51524/2 HLP, AFNOR NFE 48-603 HM,**
**Sauer Danfoss 520L0463, Eaton (Vickers) M-2950-S/M 2952-S/I-286-S, Bosch Rexroth 07 075**
**vane, piston & gear pumps, Denison–TP 30560: HF-0, Cincinnati Machine: P-68**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 32 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 871 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 28.8-35.2 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 5.4 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >195 |
| Pour Point | °C | ASTM D7346 | -39 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <4 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <30 |

# HYDRAULIC OIL HM 46

Product Code 4354

HYDRAULIC OIL HM 46 is a high performance anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under moderate to severe conditions in mobile and industrial services.

HYDRAULIC OIL HM 46 oil is formulated with carefully selected base stocks fortified with additives to provide excellent protection towards wear, rust and oxidation.

HYDRAULIC OIL HM 46 is formulated with field proven thermally stable, zinc based anti wear additives.

HYDRAULIC OIL HM 46 provides excellent water demulsibility as well as de-aeration.

HYDRAULIC OIL HM 46 effectively protects against rust and oxidation.

**Exceeds: ISO 11158 HM, DIN 51524/2 HLP, AFNOR NFE 48-603, HM Sauer Danfoss 520L0463, Eaton(Vickers)M-2950 S/M 2952-S/I-286-S, Bosch Rexroth 07 075 vane, piston & gear pumps, Denison–TP 30560: HF-1 Cincinnati Machine: P-70**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 46 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 877 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 41.4-50.6 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 6.8 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >205 |
| Pour Point | °C | ASTM D7346 | -36 |
| FZG Fail Load Stage, minimum | | DIN 51354-2 | 11 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <5 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <30 |

# HYDRAULIC OIL HM 68

Product Code 4356

HYDRAULIC OIL HM 68 is a high performance anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under moderate to severe conditions in mobile and industrial services.

HYDRAULIC OIL HM 68 oil is formulated with carefully selected base stocks fortified with additives to provide excellent protection towards wear, rust and oxidation.

HYDRAULIC OIL HM 68 is formulated with field proven thermally stable, zinc based anti wear additives.

HYDRAULIC OIL HM 68 provides excellent water demulsibility as well as de-aeration.

HYDRAULIC OIL HM 68 effectively protects against rust and oxidation.

**Exceeds: ISO 11158 HM, DIN 51524/2 HLP, AFNOR NFE 48-603 HM Sauer Danfoss 520L0463, Eaton(Vickers)M-2950-S/M 2952-S/I-286-S, Bosch Rexroth 07 075 vane, piston & gear pumps, Denison–TP 30560: HF-2, Cincinnati Machine: P-69**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 68 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 885 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 61.2-74.8 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 8.7 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >205 |
| Pour Point | °C | ASTM D7346 | -33 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <8 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <30 |

# HYDRAULIC OIL HM 100

Product Code 4357

HYDRAULIC OIL HM 100 is a high performance anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under moderate to severe conditions in mobile and industrial services.

HYDRAULIC OIL HM 100 oil is formulated with carefully selected base stocks fortified with additives to provide excellent protection towards wear, rust and oxidation.

HYDRAULIC OIL HM 100 is formulated with field proven thermally stable, zinc based anti wear additives.

HYDRAULIC OIL HM 100 provides excellent water demulsibility as well as de-aeration.

HYDRAULIC OIL HM 100 effectively protects against rust and oxidation.

**Exceeds: DIN 51524/2 HLP, ISO 11158 HM, AFNOR NFE 48-603 HM**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 100 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 889 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 90-110 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.2 |
| Viscosity Index | | ASTM D2270 | >97 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | -30 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <14 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <60 |

# HYDRAULIC OIL HMZF 22

Product Code 4364

HYDRAULIC OIL HMZF 22 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HMZF 22 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HMZF 22 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HMZF 22 provides excellent water demulsibility as well as de-aeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HMZF 22 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/2 HLP, ISO 11158 HM, AFNOR NFE 48-603 HM, Eaton (Vickers), M-2950-S/ I-286-S**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 22 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 866 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 19.8-24.2 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 4.3 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >185 |
| Pour Point | °C | ASTM D97 | -24 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <3 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <10 |

# HYDRAULIC OIL HMZF 32

Product Code 4353

HYDRAULIC OIL HMZF 32 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HMZF 32 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HMZF 32 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HMZF 32 provides excellent water demulsibility as well as deaeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HMZF 32 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/2 HLP, ISO 11158 HM, AFNOR NFE 48-603 HM, Eaton(Vickers) M-2950-S/I-286-S**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 32 |
| Density @ 15°C | kg/m3 | ASTM D4052 | 871 |
| Kinematic Viscosity @ 40°C | mm2/s | ASTM D7042 | 28.8-35.2 |
| Kinematic Viscosity @ 100°C | mm2/s | ASTM D7042 | 5.5 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >195 |
| Pour Point | °C | ASTM D7346 | -18 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <10 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <40 |

# HYDRAULIC OIL HMZF 46

Product Code 4365

HYDRAULIC OIL HMZF 46 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HMZF 46 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HMZF 46 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HMZF 46 provides excellent water demulsibility as well as deaeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HMZF 46 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/2 HLP, ISO 11158 HM, AFNOR NFE 48-603 HM, Eaton(Vickers) M-2950-S/I-286-S**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 46 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 874 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 41.1-50.6 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 6.8 |
| Viscosity Index | | ASTM D2270 | >98 |
| Flash Point (COC) | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | -24 |
| Air Release Value @ 50°C | minutes | DIN 51381 | <5 |
| Demulsibility @ 54°C | minutes | DIN 51599 | <30 |

# HYDRAULIC OIL HMZF 68

Product Code 4371

HYDRAULIC OIL HMZF 68 is a premium quality zinc free anti wear hydraulic oil developed for use in high pressure hydraulic systems operating under varying temperatures where small viscosity changes with fluctuating temperatures are preferred.

HYDRAULIC OIL HMZF 68 oil is formulated with carefully selected base stocks fortified with additives and a very shear stable viscosity index improver to impart excellent protection towards wear, rust and oxidation. The viscosity improver reduces the viscosity decrease with rising temperatures.

HYDRAULIC OIL HMZF 68 is formulated with field proven thermally stable, zinc free based anti wear additives.

HYDRAULIC OIL HMZF 68 provides excellent water demulsibility as well as deaeration and effectively protects against rust and oxidation.

HYDRAULIC OIL HMZF 68 can be used in hydraulic systems in stationary and mobile hydraulic systems, as well as for general machine lubrication.

**Exceeds: DIN 51524/2 HLP, ISO 11158 HM, AFNOR NFE 48-603 HM, Eaton (Vickers), M-2950-S/ I-286-S**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 68 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 884 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 8.7 |
| Viscosity Index | | ASTM D2270 | 98 |
| Flash Point (COC) | °C | ASTM D92 | >195 |
| Pour Point | °C | ASTM D7346 | <-15 |
| Air Release Value @ 50°C | minutes | ASTM D51381 | <10 |
| Demulsibility @ 54°C | minutes | ASTM D51599 | <40 |

# BIO-SYNTH HYDRAULIC OIL 46

Product Code 4361

BIO-SYNTH HYDRAULIC OIL 46 is a premium quality biodegradable hydraulic oil for heavy duty hydraulic systems of earthmoving equipment and permanent installations working under severe conditions like high pressures over a wide range of temperatures where pollution of the environment is expected.

BIO-SYNTH HYDRAULIC OIL 46 is developed from easily biologically degradable synthetic ester base oils together with an environmentally friendly additive package to ensure the following properties:

- High and stable Viscosity Index.
- Excellent wear-preventing properties.
- High good activity against corrosion.
- Excellent stability against oxidation.
- Good deaerating and foam suppressing properties.
- Good compatibility with seals and gaskets made from synthetic material.
- Low pour point.
- Good water separation.
- Reduced harm for water and soil during use.

**Exceeds: ISO 15380 HEES, Swedish Standard (SS) 155434, CEC L33-T82 >90% in three weeks**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Grade | | ISO 3448 | 46 |
| Density@15°C | kg/m³ | ASTM D4052 | 915 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 46 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.3 |
| Viscosity Index | | ASTM D2270 | 180 |
| Flash Point COC, min | °C | ASTM D92 | 265 |
| Pour Point | °C | ASTM D7346 | -39 |

## MARINE MGEO 15W-40

Productcode 4287

MARINE MGEO 15W-40 is a mineral based marine engine oil providing good performance in high output , high speed, turbo charged engines operating under severe conditions.

MARINE MGEO 15W-40 has been formulated with carefully selected additives in mineral base stocks, to provide excellent detergency, dispersancy and anti wear performance.

MARINE MGEO 15W-40 has excellent thermo-oxidative stability, controlling deposits and viscosity increase. Excellent soot handling controls soot induced oil thickening and effectively prevents wear.

MARINE MGEO 15W-40 reduces piston deposits, protects against “Bore Polishing”, reduces oil consumption and allows extended drain intervals.

MARINE MGEO 15W-40 is recommended for turbo charged and naturally aspirated diesel engines such as used on board ships and can also be used in marine transmissions requiring an oil with Allison C-4 specifications.

**Exceeds the specifications of: API CG-4/CF, MB 228.3, MAN 271, Volvo VDS, MTU Type 2, Mack EO-L**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 15W-40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 884 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 108 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.5 |
| Low-Temp. Cranking Viscosity @ 20°C | mPa.s | ASTM D5293 | <7000 |
| Viscosity Index | | ASTM D2270 | >135 |
| Flash Point | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | <-27 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 8.7 |
| Sulphated Ash | wt % | ASTM D874 | 1.27 |

## MARINE MGEO SP 15W-40

Productcode 4478

MARINE MGEO SP 15W-40 is a mineral based marine engine oil providing good performance in high output , high speed, turbo charged engines operating under severe conditions.

MARINE MGEO SP 15W-40 has been formulated with carefully selected additives in mineral base stocks, to provide excellent detergency, dispersancy and anti wear performance.

MARINE MGEO SP 15W-40 has excellent thermo-oxidative stability, controlling deposits and viscosity increase. Excellent soot handling controls soot induced oil thickening and effectively prevents wear.

MARINE MGEO SP 15W-40 reduces piston deposits, protects against “Bore Polishing”, reduces oil consumption and allows extended drain intervals.

MARINE MGEO SP 15W-40 is recommended for turbo charged and naturally aspirated diesel engines such as used on board ships and can also be used in marine transmissions requiring an oil with Allison C-4 specifications.

**Exceeds the specifications of: API CI-4/CF, ACEA E7, MB 228.3, MTU Type 2, MAN M 3275, Volvo VDS-3 Cummins 20076/20077/20078, Deutz DQC-III, Caterpillar ECF-1a, Allison C4(level)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 15W-40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 881 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 106 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.3 |
| Cranking Viscosity @ 20°C | mPa.s | ASTM D5293 | <7000 |
| Viscosity Index | | ASTM D2270 | 140 |
| Flash Point (COC) | °C | ASTM D92 | >215 |
| Pour Point | °C | ASTM D7346 | <-24 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 10.5 |
| Sulphated Ash | wt % | ASTM D874 | 1.52 |

# MARINE DDEO 40

Productcode 4467

MARINE DDEO 40 is a good quality monograde engine oil developed for high output, high speed two- and four cycle diesel engines. MARINE DDEO 40 is formulated with quality base stocks and selectively chosen additives to provide excellent wear protection and engine durability and designed to exceed the performance requirements of API CF and are particularly recommended for Detroit Diesel two-cycle diesel engines in marine fleets operating on low sulphur fuels.

MARINE DDEO 40 has excellent detergency thus reducing deposits, sludge build-up & varnish and extends engine life & durability. Superior thermo-oxidative stability assists in controlling oxidative thickening and increases oil life. Antiwear technology protects against scuffing & wear of cylinder liner and walls. Rust inhibitors retard rust & corrosion formation in critical engine parts and adequate TBN level ensures protection against corrosive combustion products.

MARINE DDEO 40 is recommended for high output, high speed two- and four cycle diesel engines in marine fleets operating on low sulphur fuels.

**Exceeds the specifications of: API CF-2/CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 896 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 144 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 7.5 |
| Sulphated Ash | wt % | ASTM D874 | 0.77 |

# MARINE TPEO 312

Productcode 4288

MARINE TPEO 312 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.0%.

MARINE TPEO 312 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 312 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 312 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 312 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 896 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 99 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.5 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 12 |
| Sulphated Ash | wt % | ASTM D874 | 1.6 |

# MARINE TPEO 315

Productcode 4289

MARINE TPEO 315 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 315 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 315 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 315 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 315 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of:**
**API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 898 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 99 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.1 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-21 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 15 |
| Sulphated Ash | wt % | ASTM D874 | 1.9 |

# MARINE TPEO 320

Productcode 4459

MARINE TPEO 320 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 320 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 320 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 320 offers good anti wear properties, superior demulsibility and protecttion against bearing corrosion, has good anti-foam properties and good protection against 'bore polishing' and lacquering.

MARINE TPEO 320 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 902 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 99.3 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.2 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 20 |
| Sulphated Ash | wt % | ASTM D874 | 2.6 |

# MARINE TPEO 330

Productcode 4466

MARINE TPEO 330 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 330 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 330 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 330 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 330 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 907 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 99 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.5 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point (COC) | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 30 |
| Sulphated Ash | wt % | ASTM D874 | 3.7 |

# MARINE TPEO 340

Productcode 4477

MARINE TPEO 340 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 340 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 340 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 340 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore polishing' and lacquering.

MARINE TPEO 340 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 913 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 101 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.3 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 40 |
| Sulphated Ash | wt % | ASTM D874 | 5.1 |

# MARINE TPEO 412

Productcode 4285

MARINE TPEO 412 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.0%.

MARINE TPEO 412 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 412 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 412 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 412 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 902 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 145 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 15.5 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 12 |
| Sulphated Ash | | ASTM D874 | 1.6 wt % |

# MARINE TPEO 415

Productcode 4286

MARINE TPEO 415 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 415 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 415 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 415 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 415 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 903 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 145 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 15.5 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >220 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 15 |
| Sulphated Ash | wt % | ASTM D874 | 1.9 |

## MARINE TPEO 420

Productcode 4460

MARINE TPEO 420 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 420 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 420 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 420 offers good anti wear properties, superior demulsibility and protecttion against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 420 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 906 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 145 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 14.3 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point (COC) | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 20 |
| Sulphated Ash | wt % | ASTM D874 | 2.6 |

## MARINE TPEO 430

Productcode 4290

MARINE TPEO 430 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 430 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 430 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 430 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 430 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of:**
**API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 912 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 145 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 15.1 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point (COC) | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 30 |
| Sulphated Ash | wt % | ASTM D874 | 3.7 |

## MARINE TPEO 440

Productcode 4282

MARINE TPEO 440 is a high quality marine diesel engine oil, developed for high output, medium speed trunk piston diesel engines, running on distillate or light residual fuel with a sulphur content of maximum 1.5%.

MARINE TPEO 440 oil is formulated with high quality paraffinic base stocks and selected additives that provide excellent detergent, dispersant, antiwear and oxidation resistant properties.

MARINE TPEO 440 has very good oxidation stability, excellent dispersant and detergent ability and neutralisation of combustion acids, formed when burning diesel fuel.

MARINE TPEO 440 offers good anti wear properties, superior demulsibility and protection against bearing corrosion, has good anti-foam properties and good protection against 'bore-polishing' and lacquering.

MARINE TPEO 440 is recommended for all high output, medium speed trunk piston marine diesel engines and in certain reduction gear systems where this type of lubricant is specified by the equipment manufacturer.

**Exceeds the specifications of: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 40 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 918 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 145 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 15.0 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | <-18 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 40 |
| Sulphated Ash | wt % | ASTM D874 | 5.1 |

## MARINE SO 307

Productcode 4457

MARINE SO 307 is a very good quality system oil designed for modern highly rated low speed crosshead marine engines including those employing system oil for piston cooling.

MARINE SO 307 is formulated from good quality base oils with the latest additive technology to provide excellent thermal stability and oxidation resistance. MARINE SO 307 has adequate alkalinity to neutralise any strong acids which may enter into the crankcase resulting from the combustion of fuel sulphur.

MARINE SO 307 has excellent thermo-oxidative stability that retards oil degradation and facilitates piston cooling. Improved detergency keeps crankcase clean and superior water separation characteristics result in trouble free operations. Special rust inhibitors protect critical bearing surfaces from rusting and adequate TBN ensures protection against corrosive combustion products. Good load bearing capabilities reduce wear in heavily loaded bearings.

MARINE SO 307 is recommended for crankcase lubrication in the latest highly rated low speed crosshead marine engines including those employing system oil for piston cooling.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 30 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 892 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 101 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 11.1 |
| Viscosity Index | | ASTM D2270 | >90 |
| Flash Point (COC) | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | <-24 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 7 |
| Sulphated Ash | wt % | ASTM D874 | 1 |

# MARINE SO 407

Productcode 4458

MARINE SO 407 is a premium quality trunk piston engine oil designed for use in the modern medium speed diesel engines operating on distillate fuels.

MARINE SO 407 is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Superior detergency ensures piston and crankcase cleanliness.
- Improved anti-wear property minimizes engine wear.
- Excellent thermo-oxidative stability.
- Protection of engine parts against corrosive combustion products.
- Better demulsibility characteristics ensure water.
- Special rust & corrosion inhibitors prevent corrosion of engine parts in severe salt water environment.
- Excellent dispersancy and detergency properties.
- Good protection against “Bore Polishing” and lacquering.

**Exceeds: API CF**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 40 |
| Density@15°C | kg/m³ | ASTM D4052 | 897 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 151 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.7 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |
| Total Base Number | mgKOH/g | ASTM D2896 | 7 |
| Sulphated Ash | %Wt | ASTM D874 | 1.1 |

# MARINE CEO 550

Product Code 4449

MARINE CEO 550 is an extra high performance Marine Cylinder Lubricant (MCL) designed for the latest generation technology of low speed crosshead diesel engines operating on wide range of residual fuels having sulphur content in the range of 1.0%wt to 3.5%wt. MARINE CEO 550 is based on high quality virgin mineral base oils in combination with an unique additive package to ensure the following properties:

- Latest in leading edge technology exceeding marine main engine maker (OEM) current requirements.
- Compliant with MARPOL regulation on marine fuel sulphur content:
  - ECA’s on which fuel sulphur level is capped at 1.0%
  - Global cap of sulphur content upto 3.5%.
- Enhanced additive technology enabling less use of chemical products thus facilitating a lower environmental footprint.
- Proven first class lubrication performance (without sacrificing corrosion control and detergency property even in low feed rate conditions) comparable with 70 BN lubricants.
- Excellent control of the cylinder corrosive pitting maintaining effective hydrodynamic lubricating film on cylinder wall when operating on low to moderate sulphur heavy fuel oils.
- Improved performance with reduced ash level leading to avoid excessive piston top land deposits which may occur when using 70 BN lubricants with low sulphur fuels.
- Excellent detergency minimizing deposits on critical parts viz. pistons, piston rings, ring grooves and cylinder ports.
- Excellent thermo-oxidative stability reducing deposit and sludge formation.
- Enhanced anti-wear property minimizes liner and ring wear leading to reduce maintenance costs.
- Good compatibility with all normal seal materials.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 50 |
| Density@15°C | kg/m3 | ASTM D4052 | 927 |
| Kin. Viscosity @40°C | mm2/s | ASTM D7042 | 201 |
| Kin. Viscosity @100°C | mm2/s | ASTM D7042 | 18,7 |
| Viscosity Index | | ASTM D2270 | 101 |
| Flash Point COC | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | -18 |
| Total Base Number | mgKOH/g | ASTM D2896 | 55 |

# MARINE CEO 570

Product Code 4452

MARINE CEO 570 is an excellent quality cylinder lubricant designed for modern low speed crosshead diesel engines operating on residual fuels having sulphur content in excess of 1%.

MARINE CEO 570 is developed for diesel engines operating with higher pressures & temperatures and longer strokes.

MARINE CEO 570 possesses outstanding acid neutralising capability and provides excellent engine cleanliness and durability.

MARINE CEO 570 has good acid neutralising capability which helps to prolong the life of engine components and superior detergency minimises deposits on critical parts such as pistons, piston rings, ring grooves and cylinder ports. The antiwear property minimises piston ring & cylinder wear leading to reduced maintenance costs and has good compatibility with all normal seal materials.

MARINE CEO 570 is suited for cylinder lubrication of the latest, highly rated low speed cross-head marine diesel engines operating on residual fuels with sulphur contents in excess of 1%. Feed rates recommended by the manufacturer should be maintained as a minimum. Higher feed rates may be required when running new liners and/or rings.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Viscosity Grade | | SAE J300 | 50 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 936 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 212 |
| Kinematic Viscosity @ 100°C | mm²/s | ASTM D7042 | 19.5 |
| Viscosity Index | | ASTM D2270 | 90 |
| Flash Point (COC) | °C | ASTM D92 | >180 |
| Pour Point | °C | ASTM D7346 | <-12 |
| Total Base Number (TBN) | mgKOH/g | ASTM D2896 | 70 |
| Sulphated Ash | wt % | ASTM D874 | 8.96 |

# TURBINE OIL 32

Product Code 4455

TURBINE OIL 32 is a supreme performance turbine oil specially designed for use in non-geared steam turbines, gas turbines and combined cycle gas turbines (CCGT) including the gas turbines operating at high temperatures.

TURBINE OIL 32 is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Outstanding thermal and oxidation stability.
- Prevents sludge formation, controls deposits and minimizes oil degradation.
- Excellent water separation capability resists formation of emulsion and leads to easy removal of excess water from the lubrication system.
- Effective rust and corrosion inhibitors provide long term protection to critical system components.
- Good air release properties and foam control.
- Increased conductivity to prevent build-up of electrostatic charges (microsparks) than can cause fire/explosion hazards.

**Exceeds: ASTM D4304 Type I, DIN 51515-1 (TD), DIN 51515-2 (TG), ALSTOM HTGD 90117 W (non EP), GEK 107395A/27070/32568J/46506E, AIST 125, Solar ES 9-224, Siemens TLV 9013 04 & 05 (non EP), Fives Cincinnati P-38**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 32 |
| Density@15°C | kg/m3 | ASTM D4052 | 859 |
| Kin. Viscosity @40°C | mm2/s | ASTM D7042 | 32.5 |
| Kin. Viscosity @100°C | mm2/s | ASTM D7042 | 5.6 |
| Viscosity Index | | ASTM D2270 | 111 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |
| Copper Corrosion | | ASTM D130 | 1b |
| Air Release Value @50°C | Minutes | ASTM D3427 | <4:00 |
| Total Acid Number | mgKOH/g | ASTM D664 | 0.1 |
| Water separability @54°C | | ASTM D1401 | Pass |
| Oil Stability Test (TOST) | Hrs | ASTM D943 | >6.000 |

# TURBINE OIL 46

Product Code 4454

TURBINE OIL 46 is a supreme performance turbine oil specially designed for use in geared and non-geared steam turbines, gas turbines and combined cycle gas turbines (CCGT) including the gas turbines operating at high temperatures.

TURBINE OIL 46 is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Outstanding thermal and oxidation stability.
- Prevents sludge formation, controls deposits and minimizes oil degradation.
- Superior anti-wear property and load carrying capability provide excellent protection for geared turbines
- Excellent water separation capability resists formation of emulsion and leads to easy removal of excess water from the lubrication system
- Effective rust and corrosion inhibitors provide long term protection to critical system components
- Good air release properties and foam control.
- Increased conductivity to prevent build-up of electrostatic charges (microsparks) than can cause fire/explosion hazards

**Exceeds: ASTM D4304 Type I, DIN 51515-1 (TD), DIN 51515-2 (TG), ALSTOM HTGD 90117 W (non EP), GEK 107395A/27070/32568J/46506E, AIST 125, Solar ES 9-224, Siemens TLV 9013 04 & 05 (non EP), Fives Cincinnati P-55**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 46 |
| Density@15°C | kg/m³ | ASTM D4052 | 865 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 6.7 |
| Viscosity Index | | ASTM D2270 | 106 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -33 |
| FZG A/8, 3 90°C | | DIN 51354-2 | >10 |
| Demulsibility @54°C | | DIN 51599 | pass |
| Total Acid Number | mgKOH/g | ASTM D664 | 0.1 |
| Electrical conductivity | pS/m | | >50 |

# TURBINE OIL 68

Product Code 4453

TURBINE OIL 68 is a supreme performance turbine oil specially designed for use in geared and non-geared steam turbines, gas turbines and combined cycle gas turbines (CCGT) including the gas turbines operating at high temperatures.

TURBINE OIL 68 is based on high quality virgin mineral base oil in combination with an unique additive package to ensure the following properties:

- Outstanding thermal and oxidation stability.
- Prevents sludge formation, controls deposits and minimizes oil degradation.
- Superior anti-wear property and load carrying capability provide excellent protection for geared turbines
- Excellent water separation capability resists formation of emulsion and leads to easy removal of excess water from the lubrication system
- Effective rust and corrosion inhibitors provide long term protection to critical system components
- Good air release properties and foam control.

**Exceeds: ASTM D4304 Type I, DIN 51515-1 (TD), DIN 51515-2 (TG), Alstom HTGD 90117 W (non EP), Fives Cincinnati P-54, GEK 27070,32568J,46506E,107395A, Siemens TLV 9013 04 & 05 (non EP), Solar Turbines ES9-224, AIST 125**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 68 |
| Density@15°C | kg/m³ | ASTM D4052 | 864 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 9.3 |
| Viscosity Index | | ASTM D2270 | 110 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -30 |
| Total Acid Number | mgKOH/g | ASTM D664 | 0.1 |
| Copper Corrosion | | ASTM D130 | 1b |
| Air Release Value @50°C | Minutes | ASTM D3427 | Pass |
| Water separability @54°C | | ASTM D1401 | Pass |
| FZG, Fail Load Stage | | DIN 51534-2 | 10 |
| Oil Stability Test (TOST) | Hrs | ASTM D943 | >10.000 |

# GAS ENGINE OIL LA 40

Product Code 4451

GAS ENGINE OIL LA 40 is a Low Ash high performance Heavy Duty Gas Engine Oil specially designed for use in stationary gas engines which run on natural and/or biogas and operate under severe conditions en high temperatures.

GAS ENGINE OIL LA 40 is based on a high quality hydro processed base oils in combination with a special selected additive package to obtain the following properties:

- Excellent thermal-, nitration-, and oxidation stability.
- Reducing of combustion chamber deposits.
- Minimize ring scuffing.
- Protect against corrosive wear.
- Improving engine performance.

**Approved: Jenbacher**
**Exceeds: API: CF, Waukesha Cogeneration, Dresser Rand Cat II**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 40 |
| Density@15°C | kg/m³ | ASTM D4052 | 894 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 144 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 95 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |
| Total Base Number | mgKOH/g | ASTM D2896 | 6.0 |
| Sulpated Ash | %Wt | ASTM D874 | 0.49 |

# GAS ENGINE OIL MA 40

Product Code 4450

GAS ENGINE OIL MA 40 is a Medium Ash high performance Heavy Duty Gas Engine Oil specially designed for use in stationary gas engines which run on natural and/or biogas and operate under severe conditions and high temperatures.

GAS ENGINE OIL MA 40 is based on a high quality hydro processed base oils in combination with a special selected additive package to obtain the following properties:

- Excellent thermal-, nitration-, and oxidation stability.
- Reducing of combustion chamber deposits.
- Minimize ring scuffing.
- Protect against corrosive wear.
- Improving engine performance.

**Exceeds: API: CF, Waukesha Cogeneration, Dresser Rand Cat II**

**77 recommends this product where following specifications are required:**
**MAN 3271-4, GE Jenbacher for Fuel Class B (Biogas) and C (Landfill gas) Type 2 and 3 all engines, Type 4, Version A, B, Type 6 up to version E**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 40 |
| Density@15°C | kg/m³ | ASTM D4052 | 893 |
| Kin. Viscosity @40°C | mm²/s | ASTM D7042 | 143 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 102 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -15 |
| Total Base Number | mgKOH/g | ASTM d2896 | 8.5 |
| Sulpated Ash | %Wt | ASTM D874 | 0.9 |

# GAS ENGINE OIL ZA 15W-40

Productcode 4456

GAS ENGINE OIL ZA 15W-40 is a premium quality heavy-duty ashless natural gas engine oil specially developed for lubrication of high performance gas engines requiring “ashless” oil. GAS ENGINE OIL ZA 15W-40 is formulated from selected base stocks and a premium additive package to provide good engine cleanliness, thermo-oxidative stability and protection against wear, scuffing and corrosion of engine components. The advanced additive technology of GAS ENGINE OIL ZA 15W-40 is very effective in controlling carbon and ash deposits in combustion chamber and on exhaust and intake ports.

GAS ENGINE OIL ZA 15W-40 controls nitration and oxidation effects to provide extended oil & filter life and clean engines even in severe operating conditions and protects against wear and minimizes ring scuffing during break-in periods. Controls carbon and ash deposits minimizing port plugging in two cycle engines and keeps spark plugs clean.

GAS ENGINE OIL ZA 15W-40 is recommended for naturally aspirated and turbo-charged two-and four-cycle stationary natural gas engines where ashless oils are recommended.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| SAE Grade | | SAE J300 | 15W-40 |
| Density @ 15°C | kg/m3 | ASTM D4052 | 887 |
| Kinematic Viscosity @ 40°C | $mm^2/s$ (cSt) | ASTM D7042 | 96.5 |
| Kinematic Viscosity @ 100°C | $mm^2/s$ (cSt) | ASTM D7042 | 13.8 |
| Viscosity Index | | ASTM D2270 | 145 |
| Flash Point | °C | ASTM D92 | >240 |
| Pour Point | °C | ASTM D7346 | -24 |
| Total Base Number | mgKOH/g | ASTM D2896 | 1.0 |
| Sulphated Ash | wt% | ASTM D874 | <0.01 |

# PSF SYNTH

Product Code 4319

PSF SYNTH is a fully synthetic, high-performance central hydraulic system oil based on advanced technology which shows improved performance regarding viscosity temperature characteristics and simultaneously optimized shear stability. This fully synthetic power steering fluid is NOT suitable for Honda / Acura vehicles.

PSF SYNTH is developed for highly stressed centralized hydraulic systems, power steering systems and shock absorbers which can reach permanent oil temperatures up to approximately 140°C.

PSF SYNTH is based on high quality synthetic base oil in combination with an unique additive package to ensure the following properties:

- Optimized temperature stability
- High oxidation stability
- Proven OEM technology
- Excellent cold temperatures properties
- High shear stability
- Improvement of efficiency possible.

**Exceeds: Chrysler MS-1872, Chrysler MS-5931, Chrysler MS-9602, Chrysler MS-11655, Ford M2C195-A, Ford M2C204-A, GM P/N 88901975, GM P/N 89021184, GM P/N 9985010, GM P/N 9985835, GM P/N 1052884, GM P/N 12345866, Hyundai/ Kia PSF-3, Hyundai/ Kia PSF-4, MB 236.3, MB 345.0, Mitsubishi PS Fluid, Mitsubishi SPIII, Nissan PSF-II, CHF 7.1/11S/202, Saab 30 09 800, Saab 30 32 380, Subaru K0209A0080, Toyota PSF-EH, VW G002000, VW G002012, Volvo 1161529**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Color | | | Green |
| Density@15°C | $kg/m^3$ | ASTM D4052 | 841 |
| Kin. Viscosity @100°C | $mm^2/s$ | ASTM D7042 | 28.8 |
| Kin. Viscosity @100°C | $mm^2/s$ | ASTM D7042 | 6.7 |
| Viscosity Index | | ASTM D2270 | 202 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -69 |


# LHM FLUID

Product Code 4393

LHM FLUID is a high performance hydraulic oil, especially developed for the hydraulic brake-power steering- and suspension systems of Citroën and certain other vehicles.

LHM FLUID complies with the latest demands of Citroën. LHM FLUID has been fortified with additives to withstand oxidation at the high temperatures encountered in the disc braking systems and to protect the system against rust and corrosion.

LHM FLUID shows an extreme fluidity at low temperature, realizing immediate response of the systems under all climatically conditions.

LHM FLUID is a one of a kind hydraulic oil comprising of special base stocks and unique additives to obtain an exceptional high and stable Viscosity Index (VI), and a very low pour point.

WARNING:
LHM FLUID should never be used in brake systems other tha n those described above, where in a BRAKE FLUID DOT 3, 4, 5 or 5.1 is prescribed.

**Exceeds: ISO 7308, PSA B71 2710 or PSA Company (Citroën, Peugeot)**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| Density @ 15°C | $kg/m^3$ | ASTM D4052 | 840 |
| Kinematic Viscosity @ 100°C | $mm^2/s$ | ASTM D7042 | 6.15 |
| Dynamic Viscosity @ -40°C | $mm^2/s$ | ASTM D5293 | 1200 |
| Viscosity Index | | ASTM D2270 | 320 |
| Flash Point (COC) | °C | ASTM D92 | 125 |
| Pour Point | °C | ASTM D7346 | -51 |


# DEF BLUE

Product Code 4485

DEF BLUE is an extremely pure solution, especially developed for the diesel engines with a SCR system. DEF BLUE mainly consists of water and urea. It is injected into exhaust gas to reduce harmful NOx emissions and meet the Euro5 and Euro6 emission standards.

## CHEMICAL COMPOUNDS OF DEF BLUE

DEF BLUE is a solution of urea in demineralized water. DEF BLUE is produced according to ISO standards. This ensures the highest quality of DEF BLUE. DEF BLUE contains approximately 32,5% urea. It is also known as AUS 32 ((NH2)2CO

## DEF BLUE, HOW DOES IT WORK?”

DEF BLUE reduces harmful emissions through a chemical reaction. This chemical reaction occurs when DEF BLUE is injected into exhaust gas inside the catalyst of the diesel engine. Untreated exhaust gasses contain nitrogen oxides (NOx) which are a major air pollutant. DEF BLUE is especially used to reduce emission of this pollutant

**Exceeds: DIN 70070, ISO 22241-1**

| Property | Unit | Typical Value |
|---|---|---|
| Color | | Colorless |
| Density@20°C | kg/m3 | 1090 |
| UREA Content | %Wt | 31.8 – 33.2 |
| pH (10% HS-Solution), max | | 10 |
| Refractive Index @20°C | | 1.3814 – 1.3843 |
| Alkalinity as NH3, max | %Wt | 0.2 |
| Freezing point | °C | -11 |
| Boiling Point | °C | 100 |
| Insoluble matter, max | mg/kg | 20 |

# THERM OIL

Product Code 4389

THERM OIL 32 is a premium quality heat transfer oil intended for use in closed indirect heating systems with expansion tanks temperatures up to 315°C.and for open heating systems provided that the oil temperature does not exceed 180°C

THERM OIL 32 is based on high quality mineral base oil to ensure the following properties:

- Excellent thermal and oxidation stability.
- Minimizes deposit formation and viscosity increase.
- Extended service life and reduced downtime.
- Exceptional resistance to thermal cracking and decomposition enables this oil to
- perform well up to a maximum bulk oil temperature of 315°C with minimal
- interference with heat transfer capability.
- High specific heat and thermal conductivity of this oil provides more rapid heat
- dissipation.
- Superior low temperature fluidity ensures quick circulation at start-up and reduced
- risk of local over-heating.
- Non corrosive to aluminum, steel, copper, brass or bronze.
- Non-toxicity of this oil provides easy disposal of used oil.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 32 |
| Density@15°C | kg/m³ | ASTM D4052 | 868 |
| Kin. Viscosity @100°C | mm²/s | ASTM D7042 | 5.3 |
| Viscosity Index | | ASTM D2270 | 101 |
| Flash Point COC | °C | ASTM D92 | 230 |
| Fire Point | °C | ISO 2592 | 250 |
| Pour Point | °C | ASTM D7346 | -15 |
| Initial Boiling Point | °C | ISO 3771 | >355 |
| Auto Ignition Temperature | °C | DIN 51794 | >360 |
| Total Acid Number | mgKOH/g | ASTM D974 | < 0.05 |

# FORM OIL 10

Productcode 4390

FORM OIL 10 is a concrete mould oil for the construction of houses, buildings, subways and bridges.

FORM OIL 10 is based on high-grade refined base oils containing non-toxic surface active compounds and together with the bleeding water from the concrete, it provides a low interfacial surface tension, which gives a smooth surface finish.

FORM OIL 10 is ready to use, and should be applied as thin as possible on the surface.

FORM OIL 10 enables easy removal from the moulds without damaging the concrete and gives a good rust protection of the steel moulds under normal condition. Has good release characteristics and gives no discolouring of the concrete-surface and can be used where limited heated moulds are adapted. Appliance in a thin layer, by spraying, swabbing or brushing.

Over spill must be removed.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 10 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 850 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 8-12 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >140 |
| Pour Point | °C | ASTM D7346 | <-24 |

# FORM OIL 68

Productcode 4470

FORM OIL 68 is a concrete mould oil for the construction of houses, buildings, subways and bridges.

FORM OIL 68 is based on high-grade refined base oils containing non-toxic surfaceactive compounds and together with the bleeding water from the concrete, it provides a low interfacial surface tension, which gives a smooth surface finish.

FORM OIL 68 is ready to use, and should be applied as thin as possible on the surface.

FORM OIL 68 enables easy removal from the moulds without damaging the concrete and gives a good rust protection of the steel moulds under normal condition. Has good release characteristics and gives no discolouring of the concrete-surface and can be used where limited heated moulds are adapted. Appliance in a thin layer, by spraying, swabbing or brushing.

Over spill must be removed.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 68 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 884 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 61.2-74.8 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >200 |
| Pour Point | °C | ASTM D7346 | <-9 |

# FORM OIL 150

Productcode 4391

FORM OIL 150 is a concrete mould oil for the construction of houses, buildings, subways and bridges.

FORM OIL 150 is based on high-grade refined base oils containing non-toxic surfaceactive compounds and together with the bleeding water from the concrete, it provides a low interfacial surface tension, which gives a smooth surface finish.

FORM OIL 150 is ready to use, and should be applied as thin as possible on the surface.

FORM OIL 150 enables easy removal from the moulds without damaging the concrete and gives a good rust protection of the steel moulds under normal condition. Has good release characteristics and gives no discolouring of the concrete-surface and can be used where limited heated moulds are adapted. Appliance in a thin layer, by spraying, swabbing or brushing.

Over spill must be removed.

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO Viscosity Grade | | ISO 3448 | 150 |
| Density @ 15°C | kg/m³ | ASTM D4052 | 895 |
| Kinematic Viscosity @ 40°C | mm²/s | ASTM D7042 | 135-165 |
| Viscosity Index | | ASTM D2270 | >95 |
| Flash Point | °C | ASTM D92 | >230 |
| Pour Point | °C | ASTM D7346 | <-9 |

# VACUUMPUMP OIL 100

Product Code 4499

VACUUMPUMP OIL 100 is a premium quality vacuum pump oil special develop to lubricate the gearboxes of vacuum pumps.

VACUUMPUMP OIL 100 is based on high quality mineral base oil with a special additive technology to ensure the following properties:

- an excellent protection against wear
- a very good activity against rust and corrosion
- excellent stability against oxidation
- very good deaerating and foam-suppressing properties
- very good demulsification properties
- good compatibility with seals and gaskets made from synthetic material
- a low pour point

**Exceeds: DIN 51524 HLPD**

| Property | Unit | Test Method | Typical Value |
|---|---|---|---|
| ISO VG Grade | | ISO 3448 | 100 |
| Density@15°C | kg/m3 | ASTM D4052 | 888.6 |
| Kin. Viscosity @100°C | mm2/s | ASTM D7042 | 14.5 |
| Viscosity Index | | ASTM D2270 | 96 |
| Flash Point COC | °C | ASTM D92 | >201 |
| Pour Point | °C | ASTM D7346 | -21 |
| Total Acid Number | mgKOH/g | ASTM D974 | < 0.25 |
| FZG Fail Load | | DIN 51354-2 | 11 |
| Air Release Value @50°C | Minutes | DIN 51381 | Pass |

## HAND CLEANER YELLOW

Product Code 4482

(Hand Cleaning Gel)

HAND CLEANER YELLOW is a premium quality hand cleaning paste based on Orange Terpenes, Aloe Vera extracts, Jojoba Esters and effective abrasives.

HAND CLEANER YELLOW is specially developed for removing extremely stubborn industrial soiling. It's unique product formulation easily removes soils such as lubricants, grease, paint, varnish, ink, tar, bitumen and adhesives.

HAND CLEANER YELLOW cleans, moisturises, protects and is dermatologically tested, pHneutral and biodegradable.

HAND CLEANER YELLOW has fresh citrus scent from natural ingredients and is extreme effective due to skin-friendly abrasive and natural ingredients.

Directions for use: Rub a small amount of HAND CLEANER YELLOW onto the hands until dirt loosens, preferably with the use of a dispenser pump. Rinse off with water or wipe off with a towel. Dry hands thoroughly.

Storage: Keep the package of HAND CLEANER YELLOW well closed and store in a cool but frost-free place.

Environment & Safety: Complies with EEC directive 73/404/EEC on biodegradation for surfactants. In addition, the surfactants in the products comply with the criteria for biodegradation set out in Directive 648/2004/EC concerning detergents. Complies with European regulations on cosmetics (76/768/EU).

| Colour: | Yellow |
|---|---|
| pH: | 8.5 |
| Skin Care: | Aloë Vera, Jojoba Oil, Lanolin Derivatives |
| Cleaning: | Surfactants, Solvents, Orange Terpenes |
| Abrasive: | PUR & PE Abrasives |


## HAND CLEANER SPECIAL

Product Code 4483

(Industrial Hand Cleaning Paste)

HAND CLEANER SPECIAL is an very effective solvent-free hand cleaning paste. Made with Aloe Vera extracts, Jojoba Esters and an environmentally friendly abrasive.

HAND CLEANER SPECIAL cleans, protects and moisturizes, is dermatologically tested, pH neutral and biodegradable.

HAND CLEANER SPECIAL is very suitable for removing heavy industrial soiling such as lubricants, grease, tar, adhesives and bitumen.

HAND CLEANER SPECIAL moisturises the skin and keeps hands soft and free from irritation.

Directions for use: Rub a small amount of HAND CLEANER SPECIAL onto the hands until dirt loosens, preferably with the use of a dispenser pump. Rinse off with water or wipe off with a towel. Dry hands thoroughly.

Storage: Keep the package of HAND CLEANER SPECIAL well closed and store in a cool but frost-free place.

Environment & Safety: Complies with EEC directive 73/404/EEC on biodegradation for surfactants. In addition, the surfactants in the products comply with the criteria for biodegradation set out in Directive 648/2004/EC concerning detergents. Complies with European regulations on cosmetics (76/768/EU).

| Colour: | Beige |
|---|---|
| pH: | 8.0 |
| Skin Care: | Aloë Vera Extracts, Jojoba Oil, Lanolin Derivatives |
| Cleaning: | Surfactants |
| Abrasive: | PUR Abrasives |


## HAND CLEANER OANGE

Product Code 4494

(Hand Cleaning Gel)

HAND CLEANER ORANGE is an very effective solvent - free hand cleaning paste. Made with natural Citrus oils, Aloe Vera extracts, Jojoba Esters and an environmentally friendly abrasive.

HAND CLEANER ORANGE is extremely suitable for removing stubborn soiling such as lubricants and sealants.

HAND CLEANER ORANGE is a powerful workshop hand cleaning gel for removing industrial soiling and is formulated with a pleasant fresh fragrance.

HAND CLEANER ORANGE is a classic hand cleaning paste for workshops and factories.

Directions for use: Rub a small amount of HAND CLEANER ORANGE on the hands until dirt loosens, preferably with the use of a dispenser pump. Rinse off with water or wipe off with a towel. Dry hands thoroughly.

Storage: Keep the package of HAND CLEANER ORANGE well closed and store in a cool but frost - free place.

Environment & Safety: Complies with EEC directive 73/404/EEC on biodegradation for surfactants. In addition, the surfactants in the products comply with the criteria for biodegradation set out in Directive 648/2004/EC concerning detergents. Complies with European regulations on cosmetics (76/768/EU).

| Colour: | Orange |
|---|---|
| pH: | 6.5 |
| Skin Care: | Aloe Vera Extracts, Jojoba Oil, Glycerine |
| Cleaning: | Surfactants |
| Abrasive: | PE Abrasives |


## WALL BRACKET FOR HANDCLEANER

Product Code H1001

## DISPOSABLE DISPENSER PUMP

Product Code H1016

## DISPENSER PUMP

Product Code H1022

## RACE CAP

Product Code MERCHA 77002

This a high quality Racing Cap fits every number One.


## POLO SHIRT

Product Code MERCHA 77011 / 77012 / 77013

This high quality polo shirt with embroidered logo is available in L / XL / XXL
Made of 100% cotton


## MONEY-DRUM

Product Code MERCHA 77001

Save money with this 77 lubricants money-drum.


## FLAG

Product Code MERCHA 77003

77Lubricants flag. Dimensions: 150x100cm (width x height)

## PRODUCT GUIDE

Product Code MERCHA 77004

77Lubricants Product Guide. Delivered in a box of 100 pieces.


## PRODUCT DISPLAY

Product Code MERCHA 77005


## BANNER

Product Code MERCHA 77006


## PILLOW

Product Code MERCHA 77007

# LET THE LIONS ROAR

Few animals are as intriguing and majestic as the mighty lion. Its strength, speed and physique make the lion both mesmerising and intimidating. Unfortunately though, the king of the animal kingdom is in danger. Tigers, lions and other big cats are facing extinction and are being hunted, taken captive and killed all around the world. The Lion Foundation wants to give big cats the future they deserve... and would like to hear lions roar on the African plains now and in the future.

The foundation has a large big cat rescue facility in a rural part of the The Netherlands. The facility is housed on the Hoenderdaell Estate, near the town of Anna Paulowna. This is a temporary home for retired circus animals, animals that had to leave zoos for various reasons and animals rescued from poor living conditions. The Lion Foundation is affiliated with partners in South-Africa and other countries to help create rehabilitation and release options for big cats in the rescue facility. Ultimately pure breed animals that are strong enough to live in the wild will one day be returned to the wild. Older animals, animals with handicaps and mixed breed animals will live in large gated reserves in relative freedom. In preparation for their return to the (semi) wild, the foundation has created a special big cat training area at the rescue facility. The foundation is also building a hunting simulator. Once the hunting simulator is completed it will help improve the physical fitness, hunting instinct and quality of life of all the big cats living in captivity at the Lion Foundation rescue facility. Visitors are always welcome at the rescue facility. The Lion Foundation is located in the heart of the Hoenderdaell Estate in Anna Paulowna, Northern Holland. 77 BV supports this initiative. Therefore, 77 Lubricants donates a part of its sales to the Lion Foundation. Buy 77 and let the lions roar!

## FAITES RENTENTIR LE RUGISSEMENT DU LION

Peu d'animaux sont aussi mystérieux, majestueux et puissants que le lion. Sa force, sa vitesse et son physique nous fascinent et nous intimident à la fois. Mais le roi des animaux est en danger. Chassés, capturés puis tués, les tigres, lions et autres grands félins sont en voie de disparition, et ce dans le monde entier. La Fondation du Lion veut rendre à ces nobles félins le futur qu'ils méritent... et entendre à nouveau le lion rugir dans les plaines d'Afrique, aujourd'hui et dans le futur. La fondation dispose d'un grand refuge pour grands félins, situé dans une zone rurale des Pays-Bas, au domaine d'Hoenderdaell, près d'Anna Paulowna. Il s'agit d'un refuge temporaire pour les animaux de cirque à la retraite, les animaux qui ne peuvent rester dans un zoo pour diverses raisons ou des animaux secourus suite à de mauvaises conditions de vie. La Fondation du Lion est affiliée avec des partenaires d'Afrique du Sud et d'autres pays afin de faciliter la réhabilitation et la libération des grands félins du refuge. Au bout du compte, seuls les animaux de race pure et suffisamment forts pour vivre dans la nature y retournent un jour. Les animaux plus âgés, handicapés ou de race mixte vont quant à eux vivre dans de vastes réserves entourées d'un enclos, dans une relative liberté. Pour préparer leur retour vers cette semi-liberté, la fondation a créé dans le refuge une formation spéciale pour félins. La fondation fait actuellement construire un simulateur de chasse. Une fois que le simulateur de chasse sera opérationnel, il aidera à améliorer la santé physique, l'instinct de chasse et la qualité de vie de tous les grands félins vivant en captivité au refuge de la Fondation du Lion. Les visiteurs y sont toujours les bienvenus. La Fondation du Lion est située au cœur du domaine Hoenderdaell d'Anna Paulowna, en Hollande septentrionale. 77 BV soutient cette initiative. C'est pourquoi 77 Lubricants offre une partie de ses bénéfices à la Fondation du Lion. Achetez 77 et faites retentir le rugissement du lion !

## QUE RUJAN LOS LEONES

Existen pocos animales que intrigan y son tan majestuosos como el poderoso león. Con su fuerza, velocidad y físico, el león es fascinante e intimidante. No obstante, el rey del reino animal, lamentablemente, está en peligro. Tigres, leones y otros grandes felinos están en peligro de extinción mientras están siendo perseguidos, capturados y asesinados en todo el mundo. Stichting Leeuw (Fundación León) trabaja para dar a estos grandes felinos el futuro que se merecen y la motivación consiste en el deseo de poder oír a los leones, rugiendo en las sabanas africanas, tanto ahora como en el futuro.

La fundación cuenta con un centro de rescate para grandes felinos en una zona rural de los Países Bajos. El centro está ubicado en la finca Landgoed Hoenderdaell, del pueblo Anna Paulowna. Este es un refugio temporal para animales de circo retirados, animales que tuvieron que abandonar los zoológicos por diversas razones o animales rescatados por encontrarse en malas condiciones de vida. La fundación Stichting Leeuw colabora con socios en Sudáfrica y otros países para facilitar la creación de posibilidades para rehabilitar y liberar los grandes felinos del centro de rescate. A la larga, animales de pura raza serán devueltos a la naturaleza cuando lleguen a ser lo suficientemente fuertes para vivir en libertad. Los animales de edad avanzada, con alguna discapacidad o de raza mixta serán trasladados a grandes reservas cerradas.

En preparación para el retorno a la libertad o semilibertad, la fundación ha creado una zona especial de entrenamiento de felinos grandes en el centro de rescate. La fundación también está construyendo un circuito para la simulación de la caza. Una vez terminado, el simulador de caza ayudará a mejorar condición física, instinto cazador y calidad general de vida de todos los grandes felinos en cautiverio en el centro de rescate de la fundación Stichting Leeuw. Las puertas del centro están siempre abiertas para los visitantes. La fundación Stichting Leeuw está situada en el corazón de la finca Landgoed Hoenderdaell en el pueblo Anna Paulowna de la provincia de Holanda Septentrional. Desde 77 Lubricants apoyamos esta iniciativa donando una parte de las ventas a la fundación Stichting Leeuw. ¡Compre productos 77 y deje que rujan los leones!

STICHTING LEEUW

**A portion of the proceeds from every bottle sold will be donated to the Dutch Lion Foundation. For more information visit www.77lubricants.com.**


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june 2018

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