

## Innovative lubricants need experienced application engineers

Every lubricant change should be preceded by expert consultation on the application in question. Only then the best lubricant system can be selected. Experienced FUCHS engineers will be glad to advise on products for the application in question and also on our full range of lubricants.



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## Reliability in Extremes



## Lubricants for Construction Companies



FUCHS EUROPE SCHMIERSTOFFE GMBH

# YOUR STRONG GLOBAL PARTNER FOR LUBRICANTS



## HOW WE EXCEL

We are a German company whose almost 600 employees manufacture and market a wide range of lubricants and derived specialties. The company, which was founded in 1931 as RUDOLF FUCHS, is located in Mannheim and is a 100 % subsidiary of FUCHS PETROLUB AG, which is the largest independent lubricant manufacturer worldwide.

Our company's degree of specialisation and innovation is way above the industrial average in this field. The full product line includes almost 2,000 lubricants and derived specialties for all walks of life, industrial processes and applications. Our customer's success is also our success. Because partnership to us means passing-on benefits.

The advantage of a strong market presence: FUCHS is the largest independent manufacturer of lubricants in the world. The benefit of premium, innovative products from a full-line manufacturer: With a complete product line as well as tailor-made special solutions, FUCHS has a product for every application. The benefits of reliability: Certified according to ISO/TS 16949:2009 and DIN EN ISO 14001:2004, FUCHS has been continuously upgrading its highly specialised lubricants for decades.

And naturally, partnership for us also means providing our customers with competent support. With comprehensive marketing. With high-performance logistics. With the development of successful service concepts. And qualified consulting. Because together, we can achieve more.

## WHAT INCREASES THE VALUE OF OUR PRODUCTS

**We develop lubricants: application-specific and tailor-made for our customer's processes.** Together we look for the best lubricants for our customers. This cooperation is unique in terms of its form, scope and intensity. **We call it development partnership.** The success of our development partnerships is based on an important fact: FUCHS is not one of the oil-giants.

FUCHS is a multinational, independent lubricant manufacturer. Our independence is the difference. We are open to new solutions, open for visions – the prerequisites for innovations. And innovation is the defining characteristic of FUCHS. In the great majority of our products are individual solutions. Challenge us and see!



ISO/TS 16949:2009  
DIN EN ISO 14001:2004  
BS OHSAS 18001:2007  
REG.NR. 2476



## Make Sure of Your Success.

### The Leading Factory-Fill Manufacturer in Germany.

Almost no one understands the technologies of engines, gearboxes and hydraulic better than FUCHS. Because as the world's largest independent lubricant manufacturer, we concentrate exclusively on lubricants. This has made us the leading factory-fill manufacturer for the German automotive industry. We can always recommend you the best product because we know the technical requirements. For all applications. All the time.

### All Lubricants for Construction.

Whether grease for bearings in vehicles and machinery, or hydraulic oils for all sorts of applications or engine and gear oils for all the vehicles operating on construction sites or quarries – FUCHS is the single source for the best lubricant. Also lubricants, for example, which allow the rationalization of oil grades if a mixed vehicle fleet is operated. Regardless of which FUCHS lubricant you choose: It will save you money – every single day.

### Your Advantage: Lower Operating Costs.

Lubricants are by no means all the same: The high-performance lubricants from FUCHS offer you ultimate reliability at all temperatures, lower oil consumption, significantly lower fuel consumption and specifically extended service intervals. The advantages are tangible: Whenever engines and gearboxes run freer and more reliably, operating costs are lower if only because they consume less. And just 1 % lower fuel consumption means, depending on operating conditions, fuel savings of several hundred Euros per vehicle and year.

Come and see for yourself!



## Our High Performance Product Program for the Most Difficult Applications.



### Engine oils for mixed fleets

#### Premium-Quality

##### TITAN UNIMAX ULTRA MC SAE 10W-40

Premium Motor Oil based on MC-synthesis for all commercial vehicles, off-highway equipment and passenger cars. Substantial rationalisation opportunities for mixed fleets. Prolongation of drain intervals possible with many manufacturers. Good cold starting and lower oil consumption.

#### Specifications/ approvals

ACEA E7/B4/B3/A3  
API CI-4  
GLOBAL DHD-1  
JASO DH-1  
  
CUMMINS CES 20077/8  
DEUTZ DQC III-10  
MACK EO-M PLUS  
MAN M 3275-1  
MB-APPROVAL 228.3  
MB-APPROVAL 229.1  
MTU DDC TYPE-2  
RENAULT RLD / RLD-2  
VOLVO VDS-3

#### FUCHS recommendations

ALLISON C-4  
CUMMINS CES 20071/2/6  
DAF  
VW 500 00/501 01 / 505 00

##### TITAN UNIMAX PLUS MC SAE 10W-40

Ultra High Performance, fuel-economy oil based on MC-synthesis for all commercial vehicles, off-highway equipment and passenger cars. Substantial rationalisation opportunities for mixed fleets. Prolongation of drain intervals possible with some manufacturers. Good cold starting and lower oil consumption.

ACEA E7/B3/A3  
API CH-4  
  
CUMMINS CES 20077  
DEUTZ DQC II-10  
MAN M 3275-1  
MB-APPROVAL 228.3  
MB-APPROVAL 229.1  
RENAULT RD / RD-2  
VOLVO VDS-2

ALLISON C-4  
CUMMINS CES 20071/2/6  
DAF  
MACK EO-M PLUS  
SCANIA

#### High-Quality

##### TITAN UNIVERSAL HD SAE 15W-40

High Performance oil for mixed fleets operated under normal conditions. Good performance in normally aspirated and turbocharged diesel engines.

#### Specifications/ approvals

ACEA A3/B3/B4  
API CG-4/CF/SL  
  
DEUTZ DQC I-02  
MAN 271  
MB-APPROVAL 228.1  
MB-APPROVAL 229.1  
MTU DDC TYPE-2

#### FUCHS recommendations

ACEA E2  
MIL-L-2104 E  
ALLISON C-4  
CASE MS 1120  
DAF  
MACK EO-L  
NH 330 G  
SCANIA  
STEYR A-202  
VOLVO VDS  
VW 501 01/505 00

The information contained in this product information is based on the experience and know-how of FUCHS EUROPE SCHMIERSTOFFE GMBH in the development and manufacturing of lubricants and represents the current state-of-the-art. The performance of our products can be influenced by a series of factors, especially the specific use, the method of application, the operational environment, component pre-treatment, possible external contamination, etc. For this reason, universally-valid statements about the function of our products are not possible. The information given in this product information represents general, non-binding guidelines. No warranty expressed or implied is given concerning the properties of the product or its suitability for any given application.

We therefore recommend that you consult a FUCHS EUROPE SCHMIERSTOFFE GMBH application engineer to discuss application conditions and the performance criteria of the products before the product is used. It is the responsibility of the user to test the functional suitability of the product and to use it with the corresponding care.

Our products undergo continuous improvement. We therefore retain the right to change our product program, the products, and their manufacturing processes as well as all details of our product information sheets at any time and without warning. With the publication of this product information, all previous editions cease to be valid.

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## Our High Performance Product Program for the Most Difficult Applications.



### Engine oils for commercial vehicles

Premium-Quality	Specifications/ approvals	FUCHS recommendations
<b>TITAN CARGO MAXX SAE 5W-30</b>	Premium MAXX Performance, zinc-free, extreme fuel-economy oil for highly-loaded commercial vehicle diesel engines. Specially developed for exhaust after treatment and turbocharger. Optimum cold starting, lower oil consumption and minimized exhaust emissions.	MAN M 3477 MB-APPROVAL 228.51
<b>TITAN CARGO MAXX SAE 10W-40</b>	Premium MAXX Performance, fuel-economy oil for highly-loaded commercial vehicle diesel engines. Specially developed for exhaust after treatment and turbocharger. Good cold starting, lower oil consumption and minimized exhaust emissions.	ACEA E9/E7/E6 API CI-4 CATERPILLAR ECF-1-a  DEUTZ DQC III-10 LA MACK EO-M PLUS MAN M 3477 MB-APPROVAL 228.51 / 235.28 MTU DDC TYPE 3.1 RENAULT RXD/RGD VOITH-RETARDER VOLVO VDS-3 / CNG
<b>TITAN CARGO SL SAE 5W-30</b>	Ultra High Performance, extreme fuel-economy oil for a variety of commercial vehicle diesel engines, formulated with fully-synthetic base oils. Specially developed for extended service intervals. Optimum cold starting and lower oil consumption.	ACEA E7/E4  CUMMINS CES 20076/7 DAF HP 1/HP 2 DEUTZ DQC IV-10 MAN M 3277 MB-APPROVAL 228.5 / MB-APPROVAL 235.28 MTU DDC TYPE-3 RENAULT RXD, SCANIA LDF VOITH-RETARDER VOLVO VDS-3
<b>TITAN CARGO MC SAE 10W-40</b>	Ultra High Performance, fuel-economy oil based on MC-synthesis for a variety of commercial vehicle diesel engines. Specially developed for extended service intervals. Good cold starting and lower oil consumption.	ACEA E7/E4 API CI-4  CUMMINS CES 20077/8 DEUTZ DQC III-10 MACK EO-M PLUS MAN M 3277 MB-APPROVAL 228.5 MTU DDC TYPE-3 RENAULT RXD/RLD-2 VOLVO VDS-3
<b>TITAN CARGO SAE 5W-40</b>	Ultra High Performance, fuel-economy oil, specially developed for commercial vehicle diesel engines with extended service intervals, exhaust after treatment and turbocharger.	ACEA E9/E7 API CJ-4 CAT ECF-2/ECF-3  CUMMINS CES 20081 DETROIT DIESEL DDC 93K218 MACK EO-O PREMIUM PLUS MAN M 3575 MB-APPROVAL 228.31 VOLVO VDS-4 RENAULT RLD-3

High-Quality	Specifications/ approvals	FUCHS recommendations
<b>TITAN TRUCK PLUS SAE 15W-40</b>	Super High Performance oil for a variety of diesel and gasoline engines. Specially for highly-loaded commercial vehicle diesel engines. Lower oil consumption.	ACEA E7, API CI-4/SL GLOBAL DHD-1 CAT ECF-1-a/ECF-2  CUMMINS CES 20076/7/8 DEUTZ DQC III MACK EO-M PLUS MAN M 3275-1 MB-APPROVAL 228.3 MTU DDC TYPE-2 RENAULT RLD / RLD-2 VOLVO VDS-3
<b>TITAN TRUCK SAE 15W-40</b>	Super High Performance oil for a variety of diesel engines. Specially for highly-loaded commercial vehicle diesel engines. Lower oil consumption.	ACEA E7 API CH-4/SL GLOBAL DHD-1  CUMMINS 20076/7 DEUTZ DQC II MACK EO-M PLUS MAN M 3275-1 MB-APPROVAL 228.3 MTU DDC TYPE-2 RENAULT RD/RLD-2 VOLVO VDS-2

### Gear oils for mixed fleets



High-Quality	Specifications/ approvals	FUCHS recommendations
<b>TITAN SUPERGEAR MC SAE 80W-90</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5 SCANIA STO 1:0  MAN M 3343 TYPE M MB-APPROVAL 235.0 ZF TE-ML 02B, 05A, 12E, 16B, 17B, 19B, 21A
<b>TITAN SUPERGEAR MC SAE 80W-140</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5 SCANIA STO 1:0
<b>TITAN GEAR LS SAE 90</b>	High Performance LS (Limited Slip) hypoid gear oil for axles in commercial vehicles and passenger cars with or without limited slip differentials.	API GL-5  ZF TE-ML 05C, 12C, 16E, 21C

## Our High Performance Product Program for the Most Difficult Applications.



### Gear oils for mixed fleets

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN GEAR MP SAE 80</b>	High Performance gear oil for synchronized and non-synchronized manual gearboxes as well as auxiliary drives, axles and differentials in commercial vehicles and passenger cars.	API GL-4  MAN 341 TYPE E1 MAN 341 TYPE Z1 MB-APPROVAL 235.1 ZF TE-ML 02A, 17A	BMW 81 22 9 407 052 BMW 81 22 9 407 053 EATON FORD M2C9008-A VW TL 726 ZF TE-ML 08
<b>TITAN GEAR HYP SAE 90</b>	High Performance gear oil for highly-stressed differentials in commercial vehicles and passenger cars.	API GL-5  MAN 342 TYPE M1 MB-APPROVAL 235.0 ZF TE-ML 05A, 16C, 17B, 19B, 21A	FORD M2C9102-A JOHN DEERE JDM J 11 E OPEL 19 42 387 VW TL 727 ZF TE-ML 07, 08



### Multifunctional gear oils

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN UTTO PRO</b>	Ultra High Performance multifunctional oil for gears, axles and hydraulic systems with improved wear protection and wide range of application temperatures.	API GL-4 SAE J 306: 75W-80  VOLVO WB 101	ALLISON C-4 CASE MS 1207/1209/1210 FORD M2C86-C FORD M2C134-D JOHN DEERE JDM J 20 C /D KOMATSU AXO 80 (KES 07.866) KUBOTA UDT FLUID MASSEY FERGUSON CMS 1135 / 1143 VOLVO WB 102 ZF TE-ML 03E, 03F, 05F, 06K
<b>TITAN UTTO ZF</b>	Super High Performance gear oil for ZF axles with limited-slip differentials. Recommended for construction machinery and material-handling vehicles axles.	ZF TE-ML 05F, 06K, 17E	JOHN DEERE JDM J 14 A/C KOMATSU-HANOMAG VOLVO WB 101 ZF TE-ML 03E
<b>TITAN UTTO TO-4</b>	Super High Performance multifunctional transmission and drive-train lubricants for construction machinery.	API GL-4 CAT TO-4 KOMATSU KES 07.868.1  ZF TE-ML 03C, 07F	ALLISON C-4 DANA EATON

### Automatic Transmission Fluids (ATF)



Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN ATF 5005</b>	Premium ATF for automatic transmissions in motor vehicles. Outstanding base oil quality for optimal cold temperature properties and high ageing stability. Durable friction properties for excellent wet clutch performance.	MAN 339 TYPE V2 MAN 339 TYPE Z2 MB-APPROVAL 236.6 VOITH H55.6336.3X (G 1363) ZF TE-ML 04D, 14B, 16L, 17C	DEXRON III (H) ALLISON TES 295 ALLISON TES 389 BMW 81 22 9 400 272 BMW 81 22 9 400 275 BMW 83 22 0 403 248 BMW 83 22 9 407 738 BMW 83 22 9 407 807 BMW 83 22 9 407 858 BMW 83 22 9 407 859 FORD MERCON V MAN 339 TYPE Z3 OPEL 19 40 707 VOLVO 97341 VW TL 521 62 (G 052 162) ZF TE-ML 02F, 11B, 14C

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN ATF 4000</b>	Ultra High Performance ATF for use in automatic transmissions as well as other ATF applications. Licensed according to DEXRON III (H). Improved low-temperature shifting compared to DEXRON II.	ALLISON C-4 ALLISON TES 389 DEXRON III (H) MAN 339 TYPE V1 MAN 339 TYPE Z1 MB-APPROVAL 236.1 VOITH H55.6335.3X (G 607) VOLVO 97341 ZF TE-ML 04D, 14A, 17C	BMW 81 22 9 400 272 BMW 81 22 9 400 275 BMW 81 22 9 407 738 BMW 83 22 0 403 248 BMW 83 22 9 407 765 BMW 83 22 9 407 807 BMW 83 22 9 407 858 BMW 83 22 9 407 859 CAT TO-2 FORD MERCON OPEL 19 40 707 OPEL 19 40 767 VW TL 521 62 (G 052 162) ZF TE-ML 09, 11B
<b>TITAN ATF 3000</b>	Super High Performance DEXRON II (D) ATF for all automatic transmissions in commercial vehicles, machinery and passenger cars according to manufacturer's documentation.	MAN 339 TYPE V1 MAN 339 TYPE Z1 MB-APPROVAL 236.1 VOITH H55.6335.3X (G 607) ZF TE-ML 02F, 03D, 04D, 14A, 17C	DEXRON II (D) ALLISON C-4 BMW 81 22 9 400 272 BMW 81 22 9 400 275 BMW 81 22 9 407 738 CAT TO-2 FORD MERCON FORD M2C185-A FORD M2C138-CJ FORD M2C166-H FORD M2C9010-A OPEL 19 40 700 OPEL 19 40 707 RENK-DOROMAT VOLVO VW ZF TE-ML 09, 11A
<b>TITAN ATF 10</b>	High Performance ATF for transmissions, power steering systems and hydraulic drives which require a GM-specification TYPE A, Suffix A fluid.	MB-APPROVAL 236.2	TASA MAN 339 TYPE A

## Our High Performance Product Program for the Most Difficult Applications.



### Hydraulic oils

Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN HYD MR 530 MC</b>	Ultra High Performance multigrade hydraulic oil for construction machinery as well as diverse motor vehicle applications.	HVLPD covers SAE 5W to 30 or ISO VG 22-68 (100)	
<b>RENOLIN XtremeTemp</b>	Special hydraulic oil for deep start-up temperatures and wide temperature range based on special semi-synthetic base oils and state-of-the-art additive technology. Excellent shear stability.	DIN 51524-3 ISO 11158-HV	

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN HYD 1030</b>	Super High Performance multigrade hydraulic oil for general machinery and motor vehicle applications.	HVLP according to DIN 51524-3 HV according to ISO 11158	CASE MS 1216



### Central hydraulic fluid

Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN ZH 4300 B</b>	Premium performance central hydraulic fluid formulated with fully-synthetic base oils.	MAN M 3289	BMW 81 22 9 407 758 BMW 82 11 1 468 041 BMW 83 29 0 429 576 CHRYSLER MS-11655b FORD M2C204-A OPEL 19 40 715 OPEL 19 40 766 PSA 5712710 VOLVO 1161529 VW TL 521 46 (G 002 000/ A7/A8/ G 004 000)



### Greases

Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>RENOLIT LZR 2 H</b>	Highly adhesive, Premium Performance-quality, longlife EP grease based on lithium soap for all plain and roller bearings as well as central lubrication systems in commercial vehicles and general machinery. Excellent corrosion protection even in the presence of saltwater, -30 °C to +140 °C.	KP 2 N-30 ISO-L-X-CDIB 2	Südzucker Central lubrication system of Baier & Köppel LINCOLN and WILLY VOGEL
<b>RENOLIT LZR 000</b>	Semi-fluid grease for engine vehicle central lubrication systems. Gear grease for gearboxes in municipal machinery. Observe manufacturer's recommendations, -40 °C to +110 °C.	GP 00/000 G-40 ISO-L-X-DBIB 00/000	MAN 283 Li-P 00/000 MB-APPROVAL 264.0 Schaeffler Central lubrication system of LINCOLN und WILLY VOGEL
<b>RENOLIT FLM 2</b> Also available for use in FUCHS system grease guns. Also in NLGI grade 0 available.	Universal, High Performance grease with solid lubricant additives with excellent wear protection. For the lubrication of commercial vehicles and machinery. Proven under extreme conditions such as in construction machinery, -30 °C to +140 °C.	KPF 2 N-30 ISO-L-X-CDEB 2	Bucyrus, MAN 285 Li-PF 2
<b>RENOLIT CX-HT 2</b> Also available for use in FUCHS system grease guns. Also in NLGI grade 0 available.	Special calcium complex soap-based grease containing MoS <sub>2</sub> and graphite for the lubrication of highly-stressed plain bearings at high temperatures. Excellent protection against corrosion and wear. Recommended for the greasing of gear wheels, -20 °C to +200 °C, NLGI grade 2, also available in spray can as <b>RENOLIT UNLOAD</b> .		
<b>RENOLIT DURAPLEX EP 2</b> Also available for use in FUCHS system grease guns. Also in NLGI grade 1 and 3 available.	Special grease for the long-term lubrication of plain and roller bearings, such as vehicle clutch-release bearings, highly-stressed construction machinery bearings, etc., -30 °C to +160 °C.	KP 2 P-30 ISO-L-X-CEHB 2	
<b>RENOLIT LX-PEP 2</b> Also in NLGI grade 1/2 and 3 available.	Special grease based on lithium complex soaps for longlife applications. Good corrosion protection, thermally and mechanically stable, specially suitable for wheel bearings of cars and trucks, -30 °C to +150 °C.	KP 2 N-30 ISO-L-X-CDEB 2	MAN 284 Li-H 2 MB-APPROVAL 265.1 Schaeffler SAF Holland, John Deere DB-Kenndatenblatt 106 223, Gelenkwellen

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>RENOLIT MP</b>	Standard, multipurpose EP grease. Suitable for low temperatures. -40 °C to +120 °C.	KP 2 K-40	MB-APPROVAL 267.0
<b>RENOLIT MP PLUS</b> Only available for use in FUCHS system grease guns.	High Performance, multipurpose EP grease for plain and roller bearings with excellent adhesion, optimum corrosion protection and very good ageing stability, -30 °C to +120 °C.	KP 2 K-30 ISO-L-X-CCEB 2	
<b>RENOLIT MP 735</b>	High Performance, multipurpose EP wheel bearing grease. NLGI grade 1/2, -40 °C to +120 °C.	KP 2 K-40 ISO-L-X-DCEB 2	MAN 283 Li-P 2 VW TL 735 Stabilus 100 15833

## Our High Performance Product Program for the Most Difficult Applications.

### Brake fluids



High-Quality		Specifications/ approvals	FUCHS recommendations
<b>MAINTAIN DOT 5.1</b>	High Performance brake fluid for hydraulic brake systems and clutch actuation in passenger cars, trucks and motorcycles.	FMVSS NR. 116 DOT 5.1 ISO 4925 CLASS 3/4/5.1 SAE J 1703/J 1704	
<b>MAINTAIN DOT 4</b>	High Performance brake fluid for hydraulic brake systems and clutch actuation in passenger cars, trucks and motorcycles.	FMVSS NR. 116 DOT 3/ DOT 4 ISO 4925 CLASS 3/4 SAE J1703/J1704	FORD M6C62-A FORD M6C9103-A NH 800 A OPEL 19 42 421

### Antifreeze/ Diesel additives





Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>MAINTAIN FRICOFIN LL</b>	Coolant additive based on monoethylene glycol. Free from nitrite, amine, phosphate and silicates.	ASTM D 3306, D 4985 BS 6580 KSM 2142 FORD WSS-M97-B44-D  DAF 74002 DEUTZ TR 0199-99-1115 MAN 324 SNF MB-APPROVAL 325.3 MWM TR0199-99-2091	AFNOR NFR 15-601, SAE J1034, NATO S-759 CUMMINS (ISBe engines at DAF and Leyland) GM 6277M, IRISBUS, JASO M325, JIS K2234 KOBELCO, KOMATSU (different colour and ready to use) LIEBHERR MD 1-36-130 PSA B 71 5110 RENAULT Type D VW TL 774 D/F (different colour), VOLVO 128 6083/002 (=VOLVO TRUCKS, VOLVO CE, from MY 2005) WAUKESHA, YANMAR
<b>MAINTAIN FRICOFIN</b>	Coolant additive based on monoethylene glycol. Free from nitrite, amine and phosphate.	ASTM D 3306-05, ASTM D 4985 AFNOR NF R 15-601 BS 6580:1982, SAE J1034  DEUTZ JENBACHER TA 1000-0201 MAN 324 NF MAN 324 NF PRITARDER MB-APPROVAL 325.0 MTU MTL 5048 PN-C 40007:2000 VOITH TURBO 172.00225010	BMW N 600 69.0 BOMAG LIEBHERR TLV 035/ TLV 23009 A OPEL/GM B 040 0240 VW TL 774-C (G 11)
<b>MAINTAIN DIESEL EFFECT</b>	Fuel additive concentrate improving Diesel fuel properties for singular as well as constant treatment.		
<b>MAINTAIN WINTERFIT</b>	Diesel fuel and heating oil additive concentrate to prevent waxing and plugging at low temperatures.		



## Our High Performance Product Program for the Most Difficult Applications.



### PLANTO Lubricants

Engine oil	Specifications/ approvals	FUCHS recommendations
<b>PLANTOMOT SAE 5W-40</b> High Performance energy conserving SAE 5W-40 engine oil. Perfect for vehicles powered by bio-diesel. Rapidly biodegradable		ACEA E3/B3 API CG-4 KUBOTA SISU ZETOR
Rapidly biodegradable gear-/ hydraulic oil	Specifications/ approvals	FUCHS recommendations
<b>PLANTO HYTRAC PLUS</b> Special UTTO fluid for tractor gearboxes with or without wet brakes.	SAE 10W-30 SAE 80	Diverse makes of tractors
Rapidly biodegradable hydraulic oils	Specifications/ approvals	FUCHS recommendations
<b>PLANTO ENVIRO HYD 46 HVI</b>  Environmentally compatible hydraulic fluid based on saturated esters. Awarded the European Eco Label ("Euro Marguerite").	ISO 15380: HEES 46 EEL 2005/360 / EG	
<b>PLANTOSYN 3268</b>  Rapidly biodegradable, universal multigrade hydraulic oil based on fully saturated synthetic esters. Awarded the Blue Angel environmental seal.	ISO VG 32-68 ISO 15 380 HEES FENDT KDM 28/2006 O&K BAUMASCHINEN	BOSCH REXROTH AG CASE MS 1230 CAT BF-1 KRAMER ALLRAD NH 636 BS PALFINGER TIMBERJACK VALMET
Rapidly biodegradable greases	Specifications/ approvals	FUCHS recommendations
<b>PLANTOGEL 2 S</b> Rapidly biodegradable multipurpose grease, based on synthetic esters.	KPE 2 K-40 ISO-L-X-DCEB 2 MAN 283 Li-P 2-B Bundeswehr GY 3095 SKF Lincoln RWEL	DELIMON LINCOLN
<b>PLANTOGEL 2 FS</b> Rapidly biodegradable EP grease with graphite additives, -30 °C to +120 °C.	KPFE 2 K-30 ISO-L-X-CCEB 2 Dematic RWEL	
<b>PLANTOGEL 000 S</b> Rapidly biodegradable semi-fluid EP grease for central lubrication systems of motor vehicles, industrial machinery and machine tools. Gear grease for gearboxes also in municipal machinery. Observe manufacturer's recommendations, -40 °C to +120 °C.	GPE 00/000 K-40 ISO-L-X-DCEB 00/000 MAN 283 Li-P 00/000 WILLY VOGEL VOLVO	

## An Easy Guide to Engine Oils and Their Specifications.

There are all sorts of engine oils with all sorts of specifications. What the most important engine oil specifications mean are shown below:

### ACEA

European ACEA classifications use letters to categorize engine oils by application. ACEA E stands for commercial diesel engines.

- E1 invalid since March 2000.
- E2 normal applications / normal intervals / largely based on MB 228.1 and MAN 271.
- E3 invalid since October 2004.
- E4 extremely difficult applications / Euro 1, 2 and 3 / extended oil change intervals possible / largely based on MB 228.5 and MAN 3277.
- E5 invalid since October 2004.
- E6 for EGR engines with / without diesel particle filters and SCR NOX engines; recommended for engines fitted with diesel particle filters running on sulphur-free fuel; sulphate ash content < 1% (wt.).
- E7 for engines without diesel particle filters, most EGR engines and most SCR NOX engines; sulphate ash content max. 2% (wt.).
- E9 for Euro 5 engines, EGR and DPF – new category, partially based on the API CJ-4 specification.

### API

#### Direct injection diesel engines

- API CF-4 surpasses API CE in terms of carbon deposits and oil consumption. For full-throttle operating diesel engines (standard exists since 1990).
- API CG-4 for highly-stressed diesel engines and fuel sulphur < 0,5 %. Required for engines designed in line with 1994 exhaust gas regulations.

API CH-4 since September 1998 for 1998 commercial vehicles exhaust thresholds in the USA. Surpasses API CG-4.

API CI-4 since March 2003, for AGR engines meeting TIER II (US exhaust gas thresholds), surpasses CH-4

API CJ-4 valid since 2006, for all highway vehicles fitted with engines complying with USA 2007 exhaust gas standards when using diesel fuel with max. 500 ppm sulphur. Suitable for exhaust gas treatment systems such as particle filters and SCR catalysts.

### JASO

#### JASO DH-1

Is a Japanese specification. All tests are performed on Japanese engines. JASO DH-1 characterizes high performance and wear protection, high-temperature oxidation stability and carbon deposits and other properties to common API classified oils such as API CD in Japanese engines.

#### JASO DH-2

For commercial vehicle diesel engines with exhaust gas treatment. Only for diesel fuel containing under 50 ppm sulphur. For commercial diesel engines with exhaust gas treatment, only for diesel fuels with less than 50 ppm sulphur.

### GLOBAL

#### Global DHD-1

Is the specification which covers the harmonization of the existing specifications ACEA, API and JASO. Tests for Global DHD-1 are based on ACEA, API and JASO tests.