

## 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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Edition: 3/2011 G/15760 www.graphix.me 05/2011

## Rationalization and Cost Savings



## Lubricants for Transport Companies and Municipal Fleets



FUCHS EUROPE SCHMIERSTOFFE GMBH

# YOUR STRONG GLOBAL PARTNER FOR INDUSTRIAL LUBRICANTS



## HOW WE EXCEL

We are a German company whose almost 600 employees manufacture and market a wide range of lubricants and derived specialities. The company, which was founded in 1931 by 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 specialities 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 DIN EN ISO 9001:2008 and ISO/TS 16949:2009, 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. 70 % of our products are less than five years old and 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



## Trust the specialist!

### The Latest Generation of High-tech Lubricants.

A reduction in diesel exhaust pollutants is inevitable if only from an ecological viewpoint alone. Vehicle manufacturers are responding to this challenge with the development of exhaust treatment systems such as particle filters and catalysts. But vehicles fitted with exhaust treatment systems need particularly low-pollutant engine oils if they are to operate reliably. With TITAN CARGO MAXX, we have developed a product which significantly prolongs the life of particle filters without detriment to engine performance and wear protection. With TITAN CARGO PRO GAS 5W-30 we have „set a new bar“ for train intervals of MAN Natural Gas engines 60.000 km!



### 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 Pounds per vehicle and year.

Come and see for yourself!

### New series of gas powered engines. TITAN PRO GAS.

FUCHS has developed a new series of specific engine oils for gas powered engines to meet the needs of the increasing application of gas powered vehicles: TITAN PRO GAS. They guarantee reliable and long lasting operation of the engine. They verified successfully the out-standing capabilities of this new high-performance engine oils. TITAN PRO GAS engine oils are low-emission engine oils. With their special formula the combustion chamber keeps clean and the engine maintains it's designed power output. In times of high fuel-prices more and more drivers are considering a change-over to CNG (Compressed Natural Gas) or LPG (Liquefied Petroleum Gas). With these alternative fuel costs can be significantly reduced. In addition of fuel cost savings, with lower exhaust and CO<sub>2</sub> -emissions CNG- or LPG-operated vehicles can be more environmentally friendly than conventional petrol or diesel vehicles.

However, a LPG- or CNG-operated vehicle needs more than a technical changeover. For reliable operation a specific engine oil is required which is optimized to the particular demands of the gas-powered engine.

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.

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## Our performance program for success.

### Engine oils for mixed fleets



#### Premium-Quality

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

(Formerly known as  
**TITAN UNIC 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

#### 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

### Engine oils for engines operated with natural gas



#### Premium-Quality

**TITAN CARGO  
PRO GAS  
SAE 5W-30**

Premium Performance, zinc-free, extreme fuel-economy oil for highly-supercharged commercial vehicle gas engines as well as diesel engines with exhaust gas after treatment systems. Specially developed for gas powered engines with and without turbo-charger. Optimum cold starting, lower oil consumption and minimized exhaust emissions. For MAN gas engines extended drain intervals are possible depending on engine type.

#### Specifications/ approvals

ACEA E6  
MAN M 3477  
MAN M 3271-3  
MB-APPROVAL 226.9  
MB-APPROVAL 235.28  
VOITH-RETARDER

#### FUCHS recommendations

**TITAN CARGO  
PRO GAS  
SAE 15W-40**

Ultra High Performance engine oil specially developed for highly-loaded gas fuelled engines in commercial vehicles. Optimum cold starting, lower oil consumption and minimized exhaust emissions.

API CF  
CUMMINS CES 20074

API CF-4 / CG-4 / CF-2 /  
CE / CD  
DETROIT DIESEL DDC  
93K216

## Our performance program for success.



### 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 MAXX LD SAE 10W-40</b>	Premium MAXX Performance, fuel-economy oil for highly-loaded commercial vehicle diesel and gas engines. Specially developed to match the requirements of the SCANIA Low Ash specification for EURO V engines fitted with Diesel particulate filter (DPF). Good cold starting, lower oil consumption and minimized exhaust emissions.	ACEA E7/E6/E4 API CI-4 JASO DH-2  SCANIA LA
<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

Premium-Quality	Specifications/ approvals	FUCHS recommendations
<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 CI-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



## Our performance program for success.

### Gear oils for commercial vehicles



Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN CYTRAC SL SAE 75W-90</b>	Premium gear oil for highly-stressed hypoid axles in commercial vehicles formulated with fully-synthetic base oils. Developed for the longest oil change intervals in commercial vehicle axle drives.	<b>API GL-5 SCANIA STO 1:0</b>  MAN 342 TYPE S1 MB-APPROVAL 235.8 ZF TE-ML 12B, 16F, 17B	JOHN DEERE JDM J 11 E/G VOLVO 97312 ZF TE-ML 07, 08
<b>TITAN CYTRAC MB SYNTH SAE 75W-90</b>	Premium gear oil for extended drain intervals in commercial vehicles, specially developed for Mercedes-Benz Actros vehicles, formulated with fully-synthetic base oils. Reduces fuel consumption by improving gearbox efficiency. Suitable for the longest oil change intervals.	<b>API GL-4</b>  MAN 341 TYPE MB MB-APPROVAL 235.11	ZF TE-ML 08
<b>TITAN CYTRAC MAN SYNTH SAE 75W-80</b>	Premium gear oil for extended drain intervals in commercial vehicles manual gearboxes, specially developed for manual and automatic ZF-gearboxes, formulated with fully-synthetic base oils. Reduces fuel consumption by improving gearbox efficiency. Suitable for the longest oil change intervals.	<b>API GL-4</b>  MAN 341 TYPE Z4 ZF TE-ML 02L, 16K	DAF EATON IVECO RENAULT VOLVO 97307
<b>TITAN CYTRAC LD SAE 75W-80</b>	Ultra High Performance gear oil for extended oil change intervals in commercial vehicles fitted with integral intertarders or supplementary retarders.	<b>API GL-4</b>  EATON MAN 341 TYPE E3 MAN 341 TYPE Z3 ZF TE-ML 02D	DAF VOLVO 97305 ZF TE-ML 08
<b>TITAN CYTRAC HSY SAE 75W-90</b>	Ultra High Performance gear oil for commercial vehicle manual transmissions and axle drives formulated with fully-synthetic base oils.	<b>API GL-4/GL-5</b>  ZF TE-ML 05B, 12B, 16F, 17B, 19C, 21B	DAF MAN M 3343 TYPE S JOHN DEERE JDM J 11 E/G SCANIA STO 1:0 ZF TE-ML 07
<b>TITAN GEAR HYP LD SAE 80W-90</b>	Super High Performance axle oil specially developed for Mercedes-Benz commercial vehicles. Offering enhanced thermal stability and fuel-economy potential.	<b>API GL-5 API MT-1</b>  MAN 342 TYPE M2 MB-APPROVAL 235.20 ZF TE-ML 05A, 12E, 16B, 17B, 19B, 21A	MIL-PRF-2105 E ARVIN MERITOR AXLES MACK GO-J JOHN DEERE JDM J 11 E SCANIA STO 1:0 ZF TE-ML 07A

### 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.	<b>API GL-4/GL-5 SCANIA STO 1:0</b>  MAN M 3343 TYPE M MB-APPROVAL 235.0 ZF TE-ML 02B, 05A, 12E, 16B, 17B, 19B, 21A	CASE MS 1316 FORD M2C197-A JOHN DEERE JDM J 11 E NH 520 A SDFG OP 1705 STEYR B-101 ZF TE-ML 07, 08
<b>TITAN SUPERGEAR MC SAE 80W-140</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	<b>API GL-4/GL-5 SCANIA STO 1:0</b>	JOHN DEERE JDM J 11 E OPEL 19 42 386 RENAULT VI ZF TE-ML 08
<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.	<b>API GL-5</b>  ZF TE-ML 05C, 12C, 16E, 21C	CASE MS 1317 MIL-L-2105 D FORD M2C104-A JOHN DEERE JDM J 11 F LIEBHERR NH 520 B
<b>TITAN GEAR MP SAE 80</b>	High Performance gear oil for synchronised and non-synchronised manual gearboxes as well as auxiliary drives, axles and differentials in commercial vehicles and passenger cars.	<b>API GL-4</b>  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.	<b>API GL-5</b>  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



## Our performance program for success.

### 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
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### Hydraulic oils



Premium-Quality		Specifications/ approvals	FUCHS recommendations
<b>RENOLIN B-HVI SERIES 15HVI, 32 HVI, 46 HVI, 68 HVI</b>	High quality lubricating and hydraulic oils for various applications where high viscosity index and good load carrying capacity are required. Especially recommended where a low start-up viscosity at low temperatures and high viscosity at high temperatures is required.		The products meet or exceed the requirements according to: DIN 51 524-3, HVL ISO 6743-4, HV DENISON HF 0 BOSCH REXROTH VICKERS US STEEL CINCINNATI MILACRON

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>RENOLIN B SERIES</b>	Lubricating and hydraulic oils with additives to improve ageing resistance, corrosion prevention and wear protection.		The RENOLIN B RANGE products fulfill and surpass the requirements according to: DIN 51 524: HLP ISO 6743-4: HM DENISON HF1, HF2, HF 0 VICKERS I 286-S, M 2950-S CINCINNATI MACHINE P68, P69, P70 US STEEL 127, 136 AFNOR NFE 48690 (dry) and NFE 48691 (wet)

### Central hydraulic fluids



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 S712710 VOLVO 1161529 VW TL 521 46 (G 002 000/ A7/A8/ G 004 000)

High-Quality		Specifications/ approvals	FUCHS recommendations
<b>TITAN PSF</b>	Super High Performance power steering fluid approved by Mercedes-Benz for passenger cars and commercial vehicles.	MB-APPROVAL 236.3	

## Our performance program for success.



### Greases

Premium-Quality		Specifications/ approvals
<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 UNILOAD</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 Schaeffer, SAF Holland John Deere DB-Kenndatenblatt 106 223, Gelenkwellen
<b>RENOLIT EXTREME LOAD 2</b>	Non heavy metal EP long life lithium grease with special additive treatment highly suited to applications where water wash-out could be a problem	Formulated to Ford Specifications SM1C 1020B and WSD M1C 227A

High-Quality		Specifications/ approvals
<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 LX-EP2</b>	Non leaded, lithium complex EP grease capable of operating at higher temperatures than normal lithium greases	Approved to Ford Motor Co. specifications WSD-M1C-228A and SAM 1C 9111A. Approved to Leyland Bus specification GX
<b>RENOLIT MO-2</b>	Molybdenum disulphide grease for high load applications.	Formulated to Ford specification ESA M1C 47A
<b>RENOLIT CX-12</b>	Calcium sulphate complex grease for heavily loaded applications. Developed to work under severe conditions.	
<b>RENOLIT EP SERIES NLGI 000, 00, 0, 1, 2</b>	High specification general purpose greases suitable for many application areas	

### 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 DP</b>	Coolant additive based on monoethylene glycol. Free from nitrite, amine and phosphate.	ASTM D3306 SAE J 1034	SCANIA TB 1451 VW TL 774-G
<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 LA MAXX 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 hydraulic oils	Specifications/ approvals	FUCHS recommendations
<b>PLANTOSYN 46 HVI</b>	Rapidly biodegradable, High Performance hydraulic fluid based on saturated synthetic esters.	ISO 15380: HEES 46
<b>PLANTOHYD S RANGE ISO VG 15, 22, 46</b>	Environmentally aware, High Performance lubricating and hydraulic oils based on special synthetic esters. Can be used universally in the temperature range -35 °C to +90 °C.	ISO 15380: HEES
<b>PLANTOHYD 40N</b>	Environmentally compatible hydraulic and lubricating oil based on natural raw materials	ISO 15380: HETG DIN 51 519: ISO VG 46

Rapidly biodegradable lubricants	Specifications/ approvals	FUCHS recommendations
<b>PLANTOGEL 2 S</b>	Rapidly biodegradable EP grease based on synthetic esters for plain and roller bearings. Water resistant, easily pumpable in central lubrication systems, -40 °C to +120 °C.	KPE 2 K-40 ISO-L-X-DCEB 2  MAN 283 Li-P 2-B Bundeswehr GY 3095 SKF Lincoln RWE

## 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 categorise 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.