



On Highway Transport Lubricants



Protect your machinery, for a long and reliable life.

The leading OEM supplier in Germany.

Almost nobody understands engines, gearboxes and hydraulic lubrication better than FUCHS.

As the world's largest independent manufacturer of lubricants, we concentrate exclusively on lubricants.

Because we know and understand the technical demands, we can always offer you the best possible product.

For all of your lubricant demands.

All the time.



All the lubricants for on highway fleets.

Greases for vehicle and machinery bearings, hydraulic oils for a variety of applications or engine and gear oils for all the vehicles and machines.

With FUCHS you get the perfect lubricant from just one source enabling a rationalisation of oil grades for your entire vehicle and machinery fleet.

Regardless of what FUCHS lubricant you choose: you will benefit from your decision.

Every day.

Your advantages: Lower operating costs and increase reliability.

Lubricants are not just lubricants: Along with ultimate reliability at all temperatures, our high performance lubricants also offer a noticeable reduction in fuel consumption and extended oil change intervals.

The benefits are obvious: More efficient gearboxes and engines results in lower operating costs, simply from decreased down time and lower fuel consumption.

Depending on usage, just 1% less fuel consumption can generate savings of hundreds of dollars per vehicle per year.

For us, the operational reliability of your machinery and the protection of your investment is our highest priority.

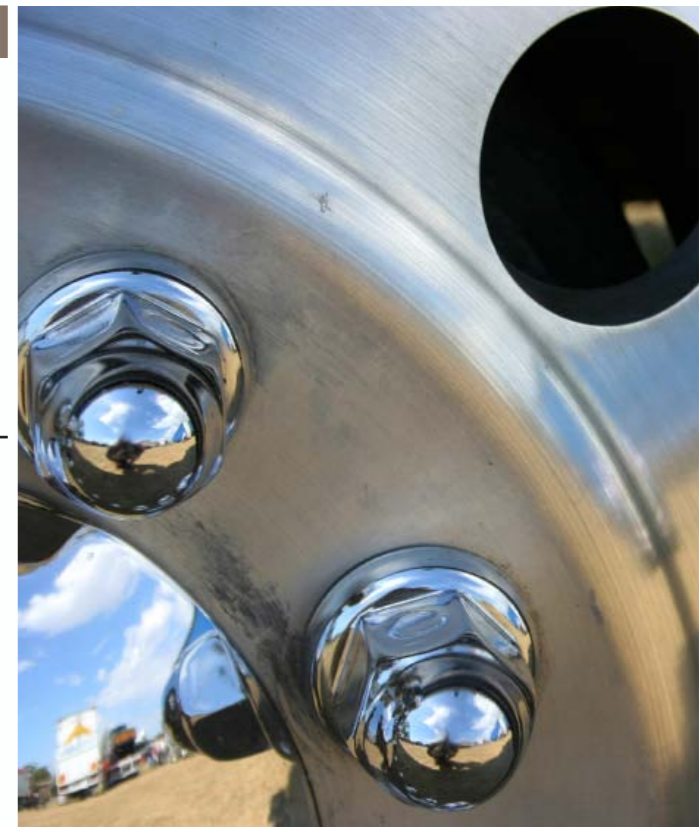


Products for the most demanding applications:



Engine Oils

Premium	Tested to and recommended by:	Advanced	Tested to and recommended by:
<p>TITAN CARGO 15W-40</p> <p>Ultra high-performance, fuel-economy oil for a variety of commercial vehicle diesel engines. Specially developed for Volvo with extended service intervals, exhaust after treatment and turbocharger.</p> <p>Protecting exhaust gas treatment systems with very low sulphated ash levels and low content levels of phosphorus and sulphur.</p> <p>Excellent wear protection, even under constant full load due to the new additive and base oil technology.</p> <p>Highest neutralization potential (TBN) in its class. Durable protection against aggressive acids and corrosion during the whole oil drain interval.</p> <p>Reduced content of heavy metals, minimizes contaminant emissions.</p> <p>Prevents deposits in the engine and turbocharger due to excellent soot handling properties. This results in high levels of performance, reliability and low maintenance costs.</p> <p>Rationalization of the newest VOLVO, MACK and RVI engine oil specifications in a single product.</p>	<p>Specifications ACEA E9/E7 API CJ-4/CI-4 PLUS/CI-4 CAT ECF-3</p> <p>Approvals CUMMINS CES 20081 DETROIT DIESEL DDC 93K218 IMACK EO-O PREMIUM PLUS MAN M 3575 / 3275-1 MB-APPROVAL 228.31 RENAULT RLD-3 VOLVO VDS-4</p> <p>FUCHS Recommendations ALLISON C-4</p>	<p>TITAN UNIVERSAL HD SAE 15W-40</p> <p>Titan Universal HD is a high performance lubricant for diesel & petrol engines, with and without turbochargers.</p> <p>Equally suited for highway & construction vehicles</p> <p>Designed to meet the requirements of European equipment</p> <p>Contains high detergency level to ensure maximum engine cleanliness and minimal bore polishing or ring sticking</p>	<p>Specifications ACEA A3/B3/B4 API CG-4/CF/SL</p> <p>Approvals DEUTZ DQC I-02 MAN 271 MB-APPROVAL 228.1 / 229.1 MTU DDC TYPE-2</p> <p>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</p>
<p>TITAN ULTRALUBE SAE 15W-40</p> <p>Titan Ultralube is a heavy duty diesel engine oil that has been developed for use under the most arduous conditions in both on and off highway applications.</p> <p>Titan Ultralube contains an advanced formula that meets the latest API and ACEA specifications</p> <p>Suitable for European, American & Japanese diesel engines</p> <p>Unlike most other oils on the market Titan Ultralube allows for product rationalisation as you can eliminate stocking separate oils for American and European engines.</p>	<p>Specifications ACEA E3/E5/E7/A3/B3/B4 API CI-4 SL</p> <p>FUCHS Recommendations CUMMINS CES 76 VOLVO-VDS-2 MACK EO-M PLUS CAT ECF 1-a RENAULT RLD-2 ZF TE-ML 07C MB 228.3, 228.1, 229.1</p>		
<p>TITAN CARGO MAXX SAE 10W-40</p> <p>Contains new additive technology and carefully selected synthetic base oils to provide full performance retention for the long term.</p> <p>Provides further protection to exhaust after treatment systems, shielding against clogging and contamination. Developed for the latest generation of heavy duty European diesel engines in commercial vehicles.</p>	<p>Specifications ACEA E9/E7/E6 API CI-4 CATERPILLAR ECF-1-a</p> <p>Approvals 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, "B" VOLVO VDS-3 / CNG</p> <p>FUCHS Recommendations CUMMINS CES 20077 DAF MAN M 3277 CRT</p>		
<p>TITAN CARGO MC SAE 10W-40</p> <p>Titan CARGO MC is a fully synthetic Ultra high performance lubricant, that was designed to gain extra fuel economy in highly stressed, high rated diesel engines.</p> <p>Suits all highly stressed diesel engines with and without turbochargers including trucks, buses, agricultural, construction, industrial equipment, vans and cars.</p> <p>Developed to improve the performance and efficiency of modern logistic and transportation companies by increasing fuel economy</p>	<p>Specifications ACEA E7/E4 API CI-4</p> <p>Approvals CUMMINS CES 20077/8 DEUTZ DQC III-10 MACK EO-M PLUS MAN M 3277 MB-APPROVAL 228.5 / 235.27 MTU DDC TYPE-3 RENAULT RXD/RLD-2 SCANIA LDF-2 VOITH-RETARDER "A" VOLVO VDS-3</p> <p>FUCHS Recommendations DAF IVECO 18-1804 SDFG OM-1901A</p>		



Products for the most demanding applications:

Gear & Transmission Oils



Premium		Tested to and recommended by:
TITAN GEAR SYN 50	<p>Synthetic transmission lubricant designed for extended drain and severe service in heavy-duty manual transmissions, which require a non-EP gear or transmission lubricant.</p> <p>TITAN GEAR SYN 50 contains anti-wear additives that reduces wear and promotes longer transmission and lubricant life.</p> <p>TITAN GEAR SYN 50 performs well at extended drain intervals.</p> <p>Meets extended warranty requirements of Eaton and Arvin Meritor</p>	<p>Specifications API MT-1 Eaton PS-164 REV 7 ArvinMeritor O-81(pending)</p> <p>FUCHS Lubricants Mack TO-A-PLUS International TMS 6816 ZF TE-ML 02L (pending)</p>
TITAN GEAR SYN SAE 80W-140	<p>Heavy duty, extreme pressure lubricant that is formulated with a synthetic base stock which provides a high viscosity index & exceptionally low pour point.</p> <p>Proven high & low temperature performance that exceeds conventional 85W-140 hypoid gear lubricants.</p>	<p>Specifications ArvinMeritor O-80, O-76-B Dana SHAES-256, SHAES-234</p> <p>FUCHS Lubricants Mack GO-J International TMS 6816 API MT-1, GL-5 MIL-PRF-2105E, MIL-L-2105D</p>
TITAN SUPERGEAR HTB SAE 85W-140	<p>The unique borate additive technology used in HTB has the ability to reduce operating temperatures in highly loaded and stressed diffs and gearboxes.</p> <p>The multigrade specification has CRI (corrosion and rust inhibitor) technology which gives added protection in the harshest environments.</p>	<p>Specifications API GL-5 / GL-4</p>

Advanced		Tested to and recommended by:
TITAN SUPERGEAR 80W-90	<p>TITAN SUPERGEAR 80W-90 is mineral universal gear oil for use in manual transmissions and axle gear boxes in both passenger cars and commercial vehicles.</p> <p>Good cold flow properties. This supports easy cold starting and easy shifting in the warm-up period. Improved lubrication and excellent protection against wear even during short-distance winter operation.</p> <p>Excellent corrosion protection, with providing a defense against rust and attacking of non-ferrous metals.</p>	<p>Specifications API GL-4 / GL-5</p> <p>Approvals MAN 342 TYPE M2 ZF TE-ML 05A / 12E / 16B / 17B / 19B</p> <p>FUCHS Recommendations MIL-L-2105 D</p>
TITAN UTTO TO 450/60	<p>A heavy duty transmission and final drive fluid used in a wide range of applications such as automotive, mining, agricultural, and earthmoving.</p>	<p>Specifications CATERPILLAR TO-4 ALLISON C4 ZF TE-ML 01/03 KOMATSU EATON KOMATSU DRESSER API GL-4</p>

Specialty		Tested to and recommended by:
TITAN CYTRAC SERIES	<p>TITAN CYTRAC series is a comprehensive range of high performance synthetic hypoid gear oils.</p> <p>TITAN CYTRAC series considerably lowers the oil temperature in gear boxes</p> <p>Due to the excellent viscosity behaviours the TITAN CYTRAC series ensures optimum transmission lubrication over a wide temperature range, even at very high and very low outside temperatures</p> <p>TITAN CYTRAC series significantly extends oil change intervals which drastically reduces downtime, maintenance and waste oil disposal costs.</p>	<p>Specifications CYTRAC LD 75W-80: API GL-4 MAN 341 TL ZF TE-ML 02D DAF Renault IVECO EATON CYTRAC MB SYNTH: API GL-4 MB 235.11 & MB 235.4 VW TL-52157 CYTRAC SL 75W-90: API GL-5 MAN 342 SL Plus MB 235.8 SCANIA STO 1:0 DAF VOLVO RENAULT</p>

Coolants

Premium		Tested to and recommended by:
MAINTAIN FRICOFIN	<p>Long life antifreeze and corrosion inhibitor for all liquid cooled internal combustion engines in cars, vans, trucks, buses, construction and industrial machinery.</p> <p>MAINTAIN FRICOFIN is nitrite, amine and phosphate free as demanded by many European Original Equipment Manufacturers.</p> <p>MAINTAIN FRICOFIN can be used when manufacturers recommend their "own" brand of anti-freeze.</p>	<p>Specifications ASTM D 3306-05 ASTM D 4985 AFNOR NF R 15-601 IBS 6580:1992</p> <p>Approvals DEUTZ JENBACHER TA 1000-0201 MAN 324 NF MAN 324 NF PRITARDER MB-APPROVAL 325.0 MTU MTL 5048 PN-C 40007:200</p> <p>FUCHS Recommendations BMW N 600 69.0 BOMAG Liebherr TLV 035;TVL 23009 A OPEL/GM B 040 0240 VW TL 774-C (G 11)</p>

Advanced		Tested to and recommended by:
MAINTAIN HDD	<p>Premium universal fully formulated antifreeze/antiboil coolant premix for all water-cooled engines</p> <p>TITAN HDD COOLANT is a true universal mixed fleet heavy-duty engine coolant for use in all water cooled engines, meets or exceeds requirements of ESI for all major Original Equipment Manufacturers</p> <p>TITAN HDD is available in premix and concentrate</p>	<p>Specifications ASTM D-3306, D-4985, D-6210 Caterpillar EC1 Cummins 14603 Detroit Diesel 7SE 298 DaimlerChrysler MS 7170, MS 9769 Ford ESE-M97B44A, ESE-M97B18-C, Ford WSSM97B51-A1 Freightliner 48-2288D GM 1825M, 1899M, GM Heavy Truck Hyundai JIS K2234 Kenworth RO26-170-97 Landrover MACK Trucks AS 2108-2004 Type A</p> <p>Approvals MAN 324 MTU MTL 5048 app C New Holland WSN-M97B18-D PACCAR Peterbilt 8502.002 Perkins</p> <p>FUCHS Recommendations Saab-Scania 6901 SAE J1034, J1941 TMC RP 329 Volvo Heavy Truck (Approved) White Star US Federal A-A-870-A</p>

Greases



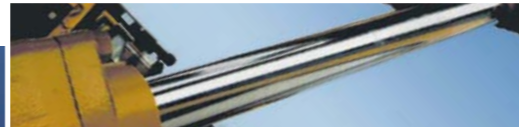
Premium		Tested to and recommended by:
LARGERMEISTER XXL	<p>LARGERMEISTER XXL is an all round grease that can be used for lubrication of heavy-loaded plain and roller bearings in all types of earthmoving machines, specially when subjected to severe operating conditions like high loads and elevated temperatures.</p> <p>LARGERMEISTER XXL can be used as universal grease in areas where lithium or lithium complex soap greases are used.</p> <p>In these cases with LARGERMEISTER XXL the re-lubrication intervals can often be increased significantly.</p>	<p>FUCHS Recommendations NLG2</p>
RENOLIT POLIPLEX	<p>RENOLIT POLIPLEX SERIES is an all-round lithium complex grease that represents the most advanced lubricating technology which has been formulated for conditions of extreme pressure & temperature.</p> <p>Also ideal for general purpose applications contains a "tacky additive" that increases water resistance & improves lubrication on worn parts</p>	<p>FUCHS Recommendations NLG1 NLG2</p>

Advanced		Tested to and recommended by:
RENOLIT XTB	<p>Long life multipurpose grease that has been specially designed for eXTreme Bearing applications.</p> <p>RENOLIT XTB 2 is suitable for a variety of automotive applications, including wheel bearing and general chassis lubrication</p> <p>Blue coloured lithium complex grease which has been formulated to provide improved oxidation, wear protection and corrosion resistance compared to conventional greases</p>	<p>FUCHS Recommendations NLG2</p>
RENOLIT LEP2HD	<p>RENOLIT LEP 2 HD is a heavy duty extreme pressure grease that protects against component wear under severe conditions.</p> <p>Excellent resistance to water washout ensures lubrication is maintained under extremely wet conditions.</p>	<p>FUCHS Recommendations NLG2</p>

Specialty		Tested to and recommended by:
RENOLIT HDCE2	<p>RENOLIT HD CE2 a high quality heavy duty extreme pressure grease that was specially formulated for earthmoving and construction equipment operating under arduous conditions.</p> <p>RENOLIT HD CE2 grease is especially suited to applications including hammers, bucket pins and bushes and plain bearing applications of excavators, dump trucks and various other applications where parts are subjected to oscillating movements, vibrations and shockloads.</p> <p>Protects against corrosion even under extreme wet conditions.</p>	<p>FUCHS Recommendations NLG2</p>



Products for the most demanding applications:



Hydraulic Oil

Premium	Tested to and recommended by:	Advanced	Tested to and recommended by:
RENOLIN B HVI RANGE High performance hydraulic oil series with a high viscosity index that reduces energy consumption. Protects against wear and maintains designed viscosity under a wider operating temperature range.	Specifications DIN 51 524-3, HVLP ISO 6743-4, HV Denison HF0 Bosch Rexroth Vickers US Steel Cincinnati Milacron	RENOLIT B PLUS RANGE The Renolin B range is a series of high quality HLP hydraulic oils and CLP Lubricating Oils. RENOLIN B series of oils improve resistance to ageing increase service life. They provides extended greasing intervals whilst improving wear & corrosion protection as well as oxidation resistance.	Specifications AFNOR E48-603 Cincinnati Milacron P-68, P-69, P-70 US Steel 136, 127 Denison HF-1, HF-2, HF-0 Racine, variable volume vane pumps Ford M-6C32 AFNOR E48- Cincinnati Milacron P-68, P-69, P-70 US Steel 136, 127 Denison HF-1, HF-2, HF-0 Racine, variable volume vane pumps Ford M-6C32

Cleaners

Premium	Tested to and recommended by:	Advanced	Tested to and recommended by:
RENOCLEAN FLEETWASH Renoclean Fleetwash is a detergent based heavy duty vehicle wash with "quick-break" properties. Renoclean Fleetwash was formulated to effectively clean heavy equipment such as dump trucks, cranes, prime movers, trailers, dozers and excavators. Renoclean Fleetwash is highly effective for removing most soils including dirt, mud, grime, oil and soot.	Specifications Biodegradable AS 4351.2 ISO 7827	RENOCLEAN ORANGE Renoclean Orange is a quality hand cleaner that has been developed for the effective cleaning of heavily soiled, oily and grease covered hands. Renoclean Orange leaves hands feeling smooth and clean without the greasy feeling that many other cleaners leave behind. The natural citrus, lanolin and coconut oils found in Renoclean Orange help replenish dry cracked skin whilst leaving the skin feeling and smelling refreshed. Renoclean Orange provides a rich creamy lather when worked into the hands. While being gentle on the hands, the beads within Renoclean Orange provides an abrasive aid in the removal of tough oil and grease stains without irritating the skin. Renoclean Orange can be used in all applications where an effective hand cleaner is required, whether it is in a mechanical workshop to an office washroom or even at home.	
RENOCLEAN DEGREASER 9110 Renoclean Degreaser 9110 is a solvent based degreasing solution developed to dissolve oil and grease residues. Renoclean Degreaser 9110 is suitable for heavy duty degreasing operations where a versatile solvent based cleaner is required. It does not effect any common metals and is easily removed by rinsing with cold water.			

This guide explains the different lubricants available for your equipment and what the specifications mean.

Engine oils

A variety of different engine oils which fulfil a range of specifications are available. The table here shows what lubricant types are implied by the most important engine oil specifications:

ACEA

The various engine oil applications are characterized by letters following the European ACEA classifications.

ACEA E is for diesel engines in commercial vehicles and thus for tractors, harvesters, etc.

- E1 Became invalid in March 2000
- E2 Normal use / normal intervals / largely based on MB 228.1 and MAN 271
- E3 Heavy-duty use / Euro 1 and 2 / extended intervals possible / largely based on MB 228.3 and MAN M 3275
- E4 Very heavy-duty use / Euro 1, 2 and 3 / extended intervals possible / largely based on MB 228.5 and MAN M 3277
- E5 Heavy-duty use / Euro 1, 2 and 3 / extended intervals possible / performance similar to E3, additional wear test on American engines
- E6 Called low-ash oils with low ash contents for engines fitted with exhaust treatment systems, e.g. diesel particulate filters. Otherwise, the same performance as ACEA E4.
- E7 Follow-on category for E3 and E5 heavy-duty use / Euro 1, 2, 3 and 4 extended intervals possible. For engines fitted with particulate filters and/or exhaust treatment systems.
- E9 Super High Performance Diesel (SHPD) engine oil with SAPS limitations. Recommended for standard oil drain intervals in commercial vehicles with exhaust gas after treatment systems like DPF, EGR and SCR running under severe conditions in combination with low sulphur Diesel fuel.

Gear oils

A variety of different gear oils which fulfil a range of specifications are available. The table here shows what lubricant types are implied by the most important gear oil specifications:

API Classifications

The American Petroleum Institute (API) has created a gear oil classification system which allows categorization according to application conditions. API gear oil classifications are used internationally.

API Gear Oil Classifications	Operating Conditions	Type of Gearbox
API GL-1	Low bearing loads and sliding speeds. No longer valid.	Axle drives with bevel gears, worm drives, manual gearboxes.
API GL-2	Higher loads than API GL-1. No longer valid.	Worm drives which can be operated with API GL-1 oils.
API GL-3	Moderately high loads and speeds. No longer valid.	Axle drives with bevel gears, manual gearboxes.
API GL-4	High speed/low torque or low speed/high torque. No longer valid.	Manual gearboxes, hypoid axles, axle with slightly off-set pinions.
API GL-5	High speed/shock loads or high speed/ low torque or low speed/high torque. Currently valid.	Hypoid axles, manual gearboxes, axles with considerably off-set pinions.
MT-1	Spur gear, dog-engaged gear boxes	Non-synchromesh manual gear boxes

API

Diesel engines (C = Commercial): 4-stroke engines
 API CC No longer valid. For commercial vehicles with older engines (up to about 1985).
 API CD No longer valid. For commercial vehicles with older engines (up to about 1990).

Indirect injection diesel engines
 API CF Especially for diesel engines with indirect injection (swirl chamber). Also suitable for fuel sulphur > 0.5% (Standard exists since 1994).

Direct injection diesel engines
 API CE Heavy-duty and turbocharged diesel engines. Improved characteristics regarding oil consumption, oil thickening, piston coking and wear.
 API CF-4 Surpasses API CE regarding piston coking and oil consumption. For higher-speed diesel engines (Standard exists since 1990).
 API CG-4 For high performance diesel engines and fuel sulphur < 0.5%. Required for engines complying with German 1994 emission regulations.
 API CH-4 Since September 1998, for 1998 emission regulations for trucks in the USA. Surpasses API CG-4.
 API CI-4 Since March 2003, for engine emissions according to TIER II (US exhaust emission regulations), Surpasses CH-4.
 API CI-4+ Introduced in 2004, identifies oils formulated to provide a higher level of protection against soot-related viscosity increase and viscosity loss due to shear in diesel engines.
 API CJ-4 Introduced in 2006 for high speed, four stroke engines emissions designed to meet 2007 model year on-highway exhaust emission standards. Surpasses CI-4 PLUS

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