

Lubricants for Construction Companies



MOVING YOUR WORLD



A white sports car is shown from the rear, driving on a road that curves through a landscape. In the background, several large wind turbines are visible, and a prominent, snow-capped mountain rises against a blue sky with scattered white clouds. The foreground shows a rocky, green hillside.

FUCHS LUBRICANTS

Keeping the world moving, that is what drives us. We don't just develop lubricants; we develop efficient and sustainable lubrication solutions.

We partner with our customers, provide insights and move their world - with unconditional reliability. It is the basis of our work, aspiration, and promise, both internally and externally.

What can we move for you?



FUCHS LUBRICANTS

Facts and figures

Company: FUCHS LUBRICANTS (UK) plc, a company of the FUCHS Group

UK manufacturing site: Hanley, Stoke-on-Trent

Certifications: ISO 9001, IATF 16949, EN 9100, ISO 14001, ISO 50001 and ISO 45001

(detailed certifications at www.fuchs.com/uk)

CO₂ neutral production*

Since 1931, we have been pursuing the same goal: to keep the world moving. With innovative and technological lubricant solutions that have a sustainable impact on the future. Unconditional reliability is our top priority, it is the foundation of our company and basis for everything that defines us.

Reliability is both a driver and a demand. And it's a promise to all our customers in the fields of automotive suppliers and OEMs, mechanical engineering, metal processing, mining and exploration, aerospace, energy, construction and transport, agriculture and forestry, as well as the paper, steel, metal, cement, forging and food industries, but also qualified lubricant dealers, car dealerships and workshops.

Long-term experience, high development strength and the fulfillment of far-reaching standards are the basis for the special quality of our world-leading product brands. We deliver solutions that are simply more efficient and therefore more sustainable. We always think in holistic solutions. For the development of individual solutions, we enter into an intensive customer dialog with you. This is the way we live up to our claim of moving your world.

MOVING YOUR WORLD

*Partially also based on compensation







LOWER OPERATING COSTS, HIGHER MACHINE AVAILABILITY.

Lubricants are not always the same: With the high performance lubricants from FUCHS, you can rely on highest reliability at all temperatures, lower oil consumption, significant fuel savings and specifically extended oil change intervals. The advantage is obvious: Whenever engines or gearboxes run freely and reliably, operating costs are reduced and the availability increased.

Challenge us.

Engine Oils

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Engine Oils				
TITAN CARGO MAXX II SAE 5W-30 	Premium MAXX Performance Engine Oil with new XTL-Technology. Specially developed for vehicles with modern exhaust after treatment and turbocharger. Optimum cold starting properties and ageing stability for extreme fuel-economy over the whole drain-interval.	ACEA E11, E9, E8, E7, E6, E4 API CK-4/CJ-4 CAT ECF-3 JASO DH-1/DH-2/DL-0	CUMMINS CES 20081 CUMMINS CES 20086 DEUTZ DQC IV-18 LA MACK EOS-4.5 MAN M 3677 MAN M 3775 MAN M 3777 MB-APPROVAL 228.31 MB-APPROVAL 228.51 MB-APPROVAL 228.52 MTU DDC TYPE 2.1 MTU DDC TYPE 3.1 RENAULT RLD-3 SCANIA LDF-4 VOLVO VDS-4.5	DETROIT DIESEL 93K218 DETROIT DIESEL 93K222 IVECO 18-1804 CLASSE TLS E6 LH-00-ENG LA MAN M 3271-1 MAN M 3477 MAN M 3575 RENAULT RLD-4 SCANIA LA
TITAN CARGO MAXX II SAE 10W-40 	Premium MAXX Performance Engine Oil with new XTL-Technology. Specially developed for vehicles with modern exhaust after treatment and turbocharger. Good cold starting properties and ageing stability for fuel-economy over the whole drain-interval.	ACEA E11, E9, E8, E7, E6, E4 API CK-4/CJ-4 CAT ECF-3 JASO DH-1/DL-0 JASO DH-2	CUMMINS CES 20081 CUMMINS CES 20086 DEUTZ DQC IV-18 LA MACK EOS-4.5 MAN M 3775 MB-APPROVAL 228.31 MB-APPROVAL 228.51 MB-APPROVAL 228.52 MTU DDC TYPE 2.1 MTU DDC TYPE 3.1 RENAULT RLD-3 SCANIA LA VOLVO VDS-4.5	DETROIT DIESEL 93K218 DETROIT DIESEL 93K222 IVECO 18-1804 CLASSE TLS E9 IVECO 18-1809 CLASSE NG2 LH-00-ENG LA MAN M 3271-1 MAN M 3477 MAN M 3575 RENAULT RLD-4 VOITH-RETARDER „B“
TITAN CARGO MAXX SAE 5W-30 	Premium engine oil with the innovative XTL®-Technology developed for commercial vehicles. Offers maximum fuel economy over the whole drain interval due to outstanding oxidation and ageing stability. Guarantees optimum protection for modern diesel particulate filters and catalysts and provides improved durability. Oil consumption and turbocharger deposits are significantly reduced. This new technology offers maximum performance over the entire temperature range and ensures good cold start properties even at very low temperatures.	ACEA E9/E7/E6/E4 API CJ-4 CAT ECF-3 JASO DH-2 SCANIA LA	DEUTZ DQC IV-10 LA MACK EO-O PREMIUM PLUS MAN M 3677 MTU DDC TYPE 3.1 RENAULT RLD-3 SCANIA LDF-4 VOLVO VDS-4	CUMMINS CES 20081 IVECO 18-1804 CLASSE TLS E6 MAN M 3271-1 MAN M 3477 MAN M 3575 MB 228.31 MB 228.51
TITAN CARGO MAXX SAE 10W-40 	Premium engine oil with the innovative XTL®-Technology developed for commercial vehicles. Offers maximum fuel economy over the whole drain interval due to outstanding oxidation and ageing stability. Guarantees optimum protection for modern diesel particulate filters and catalysts and provides improved durability. Oil consumption and turbocharger deposits are significantly reduced. This new technology offers maximum performance over the entire temperature range and ensures good cold start properties even at very low temperatures.	ACEA E9/E7/E6/E4 API CJ-4 JASO DH-2 CAT ECF-3	DEUTZ DQC IV-10 LA MACK EO-O PREMIUM PLUS MAN M 3271-1 MB-APPROVAL 228.31 MB-APPROVAL 228.51 RENAULT RLD-3 SCANIA LA VOLVO VDS-4	CUMMINS CES 20081 DETROIT DIESEL 93K218 IVECO 18-1804 CLASSE TLS E9 IVECO 18-1809 CLASSE NG2 MAN M 3477 MAN M 3575 VOITH-RETARDER "B"

Engine Oils

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Engine Oils				
TITAN CARGO MAXX SAE 10W-30	Premium MAXX Performance Engine Oil specially developed for vehicles with modern exhaust after treatment and turbocharger. Good cold starting properties and excellent ageing stability for fuel-economy over the whole drain-interval. Specially developed for use in modern EURO VI commercial vehicles with exhaust after treatment systems. Offers impressive performance over the entire temperature range and ensures good cold start properties even at low temperatures.	ACEA E9/E7/E6 API CK-4/SN CAT ECF-3	DEUTZ DQC IV-18 LA MACK EOS-4.5 MAN M 3677 MB-APPROVAL 228.51 MTU DDC TYPE 3.1 RENAULT RLD-3 SCANIA LA VOLVO VDS-4.5	CUMMINS CES 20086 DETROIT DIESEL 93K218 DETROIT DIESEL 93K222 JASO DH-2 MAN M 3477 RENAULT RLD-4
TITAN CARGO FLEX LD SAE 10W-40	Premium Performance, extreme fuel-economy engine oil, specially developed for commercial vehicles with modern exhaust after treatment systems and turbocharger. Offers good cold starting and lower oil consumption.	ACEA E9, E7, E6 API CK-4/SN CAT ECF-3 JASO DH-2	DEUTZ DQC IV-18 LA MACK EOS-4.5 MAN M 3775 MB-APPROVAL 228.31 MB-APPROVAL 228.51 MTU DDC TYPE 3.1 RENAULT RLD-3 VOLVO VDS 4.5	CUMMINS CES 20086 DETROIT DIESEL 93K222 IVECO 18-1804 TLS E9 MAN M 3477/3575 RENAULT RLD-4 SCANIA LA
TITAN CARGO FLEX K-4 SAE 5W-30	Premium Performance, extreme fuel-economy engine oil, specially developed for commercial vehicles with modern exhaust after treatment systems and turbocharger. Offers good cold starting and lower oil consumption.	ACEA E9, E7, E6 API CK-4 CAT ECF-3 JASO DH-2	DEUTZ DQC IV-18 LA MACK EOS-4.5 MB-APPROVAL 228.51 RENAULT RLD-3 VOLVO VDS 4.5	CUMMINS CES 20086 DETROIT DIESEL 93K222 IVECO 18-1804 TLS E9
TITAN CARGO SL SAE 5W-30	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 FORD WSS-M2C212-A1	DEUTZ DQC IV-10 MACK EO-N MAN M 3277 MB-APPROVAL 228.5 MB-APPROVAL 235.28 MTU DDC TYPE 3 RENAULT RXD/RLD-2 SCANIA LDF-3 VOITH RETARDER "B" VOLVO VDS-3	CUMMINS CES 20077 IVECO 18-1804 CLASSE TFE SCANIA LDF-2
TITAN CARGO LD3 SAE 10W-40	Ultra High Performance fuel economy engine oil for Scania Euro 6 vehicles. Specially developed for extended service intervals. Also suitable for Euro 4 and Euro 5 engines without diesel particulate filters. The SAE Class 10W-40 ensures reliable all-seasons use. Suitable for the longest oil change intervals.	ACEA E7/E4	MACK EO-N MAN M 3277 MB-APPROVAL 228.5 RENAULT RLD-2 SCANIA LDF-3 VOLVO VDS-3	API CF
TITAN CARGO MC SAE 10W-40	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 GLOBAL DHD-1	CUMMINS CES 20077/8 DETROIT DIESEL 93K215 DEUTZ DQC III-10 MACK EO-M PLUS MACK EO-N MAN M 3277 MB-APPROVAL 228.5 MTU DDC TYPE 3 RENAULT RXD/RLD-2 SCANIA LDF-2 VOLVO VDS-3	IVECO 18-1804 SDFG OM-1901A

Engine Oils

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Engine Oils				
TITAN CARGO SAE 5W-40	Ultra High Performance, fuel economy engine oil, specially developed for commercial vehicle diesel engines with extended service intervals, exhaust after treatment and turbocharger.	ACEA E9 API CK-4/CJ-4/SN CAT ECF-3	CUMMINS CES 20086 DEUTZ DQC III-10 LA FORD M2C171-F1 MACK EO-S 4.5 MAN M 3775 MB-APPROVAL 228.31 MTU DDC TYPE 2.1 RENAULT RLD-3 VOLVO VDS-4.5	DETROIT DIESEL 93K222 MAN M 3575 RENAULT RLD-4
TITAN CARGO SAE 10W-30	Ultra High Performance, revolutionary diesel engine oil designed for commercial vehicles. A new base oil matrix with very high oxidation stability provides the highest levels of performance regarding engine durability in highly stressed commercial vehicle engines. Developed for compliance with the current and future American emission legislation (EPA). Particularly advantageous in vehicles fitted with exhaust gas treatment systems such as Diesel Particulate Filter (DPF), Diesel Oxidation Catalyst (DOC), high rate of Exhaust Gas Recirculation (EGR), two stage turbo charging and SCR-catalyst (Selective Catalyst Reduction) or any combination of the given technologies.	ACEA E9 API CK-4 / CJ-4 CAT ECF-3 JASO DH-2	CUMMINS CES 20086 DEUTZ DQC III-10 LA FORD M2C171-F1 MACK EO-S 4.5 MAN 3775 MB-APPROVAL 228.31 MTU DDC TYPE 2.1 RENAULT RLD-3 VOLVO VDS-4.5	DETROIT DIESEL 93K222 MAN M 3575
TITAN CARGO SAE 15W-40	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.	ACEA E9 API CK-4 / CJ-4 / SN CAT ECF-3 JASO DH-2	CUMMINS CES 20086 DETROIT DIESEL 93K222 DEUTZ DQC III-10 LA FORD M2C171-F1 MACK EO-S 4.5 MAN M 3775 MB-APPROVAL 228.31 MTU DDC TYPE 2.1 RENAULT RLD-3 VOLVO VDS-4.5	MAN M 3575 RENAULT RLD-4
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.	ACEA E7/B4/B3/A3 API CI-4, GLOBAL DHD-1 JASO DH-1	CUMMINS CES 20077/8 DETROIT DIESEL 93K215 DEUTZ DQC III-10 MACK EO-M PLUS MAN M 3275-1 MB-APPROVAL 228.3 MB-APPROVAL 235.27 MTU DDC TYPE 2 RENAULT RLD/RLD-2 VOITH-RETARDER "A" VOLVO VDS-3	ALLISON C-4 CAT ECF-2 CUMMINS CES 20071/2/6 MB 229.1 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	DEUTZ DQC II-10 MAN M 3275-1 MB-APPROVAL 228.3 MB-APPROVAL 235.27 MTU DDC TYPE 2 RENAULT RD/RD-2 VOITH-RETARDER "A" VOLVO VDS-2	ALLISON C-4 CUMMINS CES 20071/2/6/7 MACK EO-M PLUS MB 229.1

Engine Oils

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Engine Oils				
TITAN TRUCK PLUS SAE 15W-40	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 DETROIT DIESEL 93K215 DEUTZ DQC III-10 MACK EO-N, MAN M 3275-1 MB-APPROVAL 228.3 MTU DDC TYPE 2 RENAULT RLD/RLD-2 VOLVO VDS-3	ALLISON C-4 CAT TO-2 CASE MS 1121 CUMMINS CES 20071/2 IVECO 18-1804 CLASSE T2 E7 NH 330H
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.	ACEA A3/B3 API SL	DEUTZ DQC I-02 MB-APPROVAL 229.1 MTU DDC TYPE 2	ACEA E2 API CF-4/CF MIL-L-2104 E ALLISON C-4, CASE MS 1120 MACK EO-L, NH 330G MAN 271, STEYR A-202 VOLVO VDS VW 501 01/505 00
Monograde Engine Oils				
TITAN UNIVERSAL HD SAE 10W	High Performance Monograde Engine Oil for gasoline and diesel engines. Specially developed for off-road vehicles. Depending upon manufacturer regulation also in other aggregates applicable.	–	MAN 270 ZF TE-ML 03B (ZF002013)	ACEA E2 API CF-4/SG MIL-L-2104 D ALLISON C-4 CAT TO-2 MB 228.0 ZF TE-ML 02C
TITAN UNIVERSAL HD SAE 20W-20	High Performance Monograde Engine Oil for gasoline and diesel engines. Specially developed for off-road vehicles. Depending upon manufacturer regulation also in other aggregates applicable.	–	MB-APPROVAL 235.27 VOITH-RETARDER "A"	ACEA E2 API CF-4/SG ALLISON C-4 MAN 270 MAN 228.0 MIL-L-2104 D CAT TO-2 ZF TE-ML 02C
TITAN UNIVERSAL HD SAE 30	High Performance Monograde Engine Oil for gasoline and diesel engines. Specially developed for off-road vehicles. Depending upon manufacturer regulation also in other aggregates applicable.	–	DEUTZ DQC I-02 MTU DDC TYPE 2 ZF TE-ML 04B (ZF001189)	ACEA E2 ALLISON C-4 API CF-4/SG MAN 270 MAN 228.2 MIL-L-2104 D CAT TO-2 ZF TE-ML 02C
TITAN UNIVERSAL HD SAE 40	High Performance Monograde Engine Oil for gasoline and diesel engines. Specially developed for off-road vehicles. Depending upon manufacturer regulation also in other aggregates applicable.	–	DEUTZ DQC I-02 MTU DDC TYPE 2 ZF TE-ML 04B (ZF001189)	ACEA E2 API CF-2/CF-4/SG ALLISON C-4 MAN 270 MB 228.2 MB 235.12 MIL-L-2104 D ALLISON C-4 CAT TO-2 ZF TE-ML 02C
TITAN UNIVERSAL HD SAE 50	High Performance Monograde Engine Oil for gasoline and diesel engines. Specially developed for off-road vehicles. Depending upon manufacturer regulation also in other aggregates applicable.	–	DEUTZ DQC I-02 MAN M 3275-2	ACEA E2 API CF-4/SG ALLISON C-4 CAT TO-2 MB 228.0 MIL-L-2104 D ZF TE-ML 02C

Gear Oils

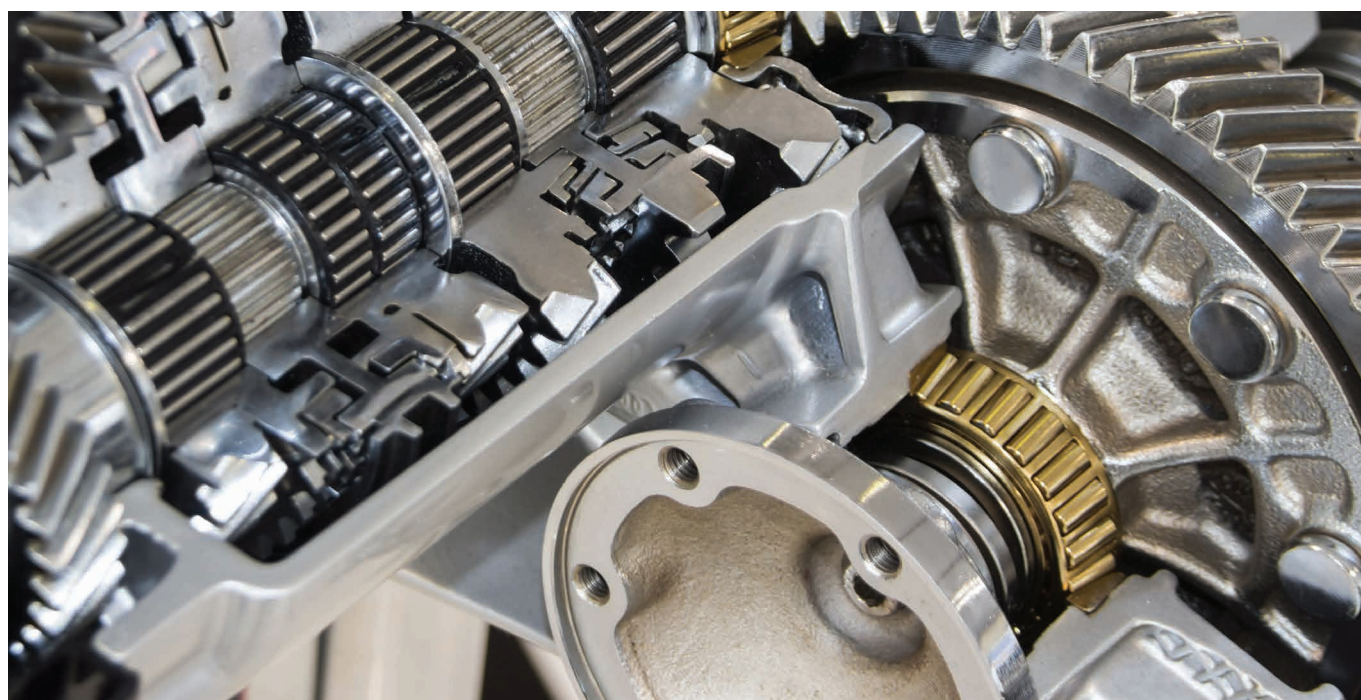


Product	Description	Specifications	Approvals	FUCHS Recommendations
Transmission and Gear Oils				
TITAN CYTRAC TD SAE 75W-80	Premium Performance Gear Oil for highly-stressed manual transmissions and hypoid axles in commercial vehicles formulated with fully-synthetic base oils. Developed for the longest oil change intervals.	API GL-4/GL-5 API MT-1 SAE J2360	DETROIT DIESEL 93K219.01 MAN 341 TYPE Z2 MAN 342 TYPE S1 MB-APPROVAL 235.8 SCANIA STO 1:0 SCANIA STO 2:0A FS SCANIA STO 1:1G VOLVO 97312 ZF TE-ML 02B, 05A, 12L, 12N, 16F, 17B, 19C, 21A (ZF003341)	JOHN DEERE JDM J11E JOHN DEERE JDM J11G MAN 341 TYPE E3 MAN 342 TYPE M3
TITAN CYTRAC MAT SAE 75W-80	Premium Performance Gear Oil for gear boxes in commercial vehicles, specially developed for manual and automatic ZF-gear boxes, formulated with selected base oils. Reduces fuel consumption by improving gearbox efficiency. Suitable for the longest oil change intervals and compatible with Carbon-Synchronizers.	API GL-4	MAN 341 TYPE Z4 ZF TE-ML 01L, 02L, 16K (ZF003373)	MAN 341 TYPE E3 MAN 341 TYPE Z3 MAN 341 TYPE Z5 VOLVO 97305 VOLVO 97307 ZF TE-ML 01E, 02D, 02E, 08, 16P
TITAN CYTRAC HSY SAE 75W-90	Ultra High Performance Gear Oil for commercial vehicle manual transmissions and axle drives formulated with fully-synthetic base oils.	API GL-4/GL-5	EvoBus 26.000-032 EvoBus 26.000-037 ZF TE-ML 05A, 12L, 12N, 16F, 17B, 19C, 21A	MAN 341 TYPE E3 / Z2 MAN 342 TYPE M3 MAN M 3343 TYPE S JOHN DEERE JDM J11E JOHN DEERE JDM J11G SCANIA STO 1:0 ZF TE-ML 05B, 07, 21B
TITAN CYTRAC SL SAE 75W-90	Premium Performance 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.	API GL-5	MAN 342 TYPE S1 SCANIA STO 1:0	JOHN DEERE JDM J11E JOHN DEERE JDM J11G MB 235.8 VOLVO 97312 ZF TE-ML 05B, 07, 08, 12B, 16F, 17B
TITAN GEAR HYP LD SAE 80W-90	Super High Performance Gear Oil specially developed for Mercedes-Benz commercial vehicles. Offering enhanced thermal stability and fuel-economy potential.	API GL-5 API MT-1 SAE J2360	DETROIT DIESEL 93K219.02 EvoBus 26.000-032 EvoBus 26.000-034 JOHN DEERE JDM J11E MAN 341 TYPE GA1 MAN 342 TYPE M3 MB-APPROVAL 235.20 SCANIA STO 1:0 VOLVO 97321 ZF TE-ML 05A, 12L, 12M, 16B, 17B, 19B, 21A (ZF000645)	MIL-PRF-2105 E ARVIN MERITOR 0-76-D MACK GO-J ZF TE-ML 07A
TITAN SUPERGEAR PLUS SAE 80W-90	Ultra High Performance Gear Oil for extended oil change intervals.	API GL-4/GL-5 SAE J2360	MAN 342 TYPE M2 MB-APPROVAL 235.6 VOLVO 97321 ZF TE-ML 05A, 07A, 08, 12E, 16B, 16C, 17B, 19B, 21A (ZFXXXXXX)	MB 235.0 MIL-L-2105 D/E VOLVO 97310 NH 520A STEYR B-101

Gear Oils

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Transmission and Gear Oils				
TITAN SUPERGEAR MC SAE 80W-90	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5	DTFR 12B100 EvoBus 26.000-032 EvoBus 26.000-034 MAN 341 TYPE Z2 MAN 342 TYPE M2 MB-APPROVAL 235.0 SCANIA STO 1:0 SCANIA STO 1:1 G ZF TE-ML 02B, 05A, 12L, 12M, 16B, 17H, 19B, 21A (ZF000722)	API MT-1 CASE MS 1316 FORD WSP-M2C197-A JOHN DEERE JDM J11E MAN M 3343 TYPE M MAN 341 TYPE E2 NH 520A SDFG OP 1705 STEYR B-101 VOLVO 97310 ZF TE-ML 07, 08
TITAN SUPERGEAR MC SAE 80W-140	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5	SCANIA STO 1:0 ZF TE-ML 05A, 12M, 16C, 21A (ZF006028)	API MT-1 JOHN DEERE JDM J 11 E OPEL 19 42 386 RENAULT VI VOLVO 97310 ZF TE-ML 08
TITAN GEAR HYP SAE 85W-140	High Performance Gear Oil for highly stressed differentials in commercial vehicles and passenger cars	API GL-5	-	MIL-L-2105D ZF TE-ML 07, 08
TITAN GEAR MP SAE 80	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.	API GL-4	MB-APPROVAL 235.1 ZF TE-ML 17A (ZF000654)	BMW MTF 1 (BMW 81 22 2 339 384) BMW 81 22 9 407 052 BMW 81 22 9 407 053 FORD M2C9008-A VW TL 726 ZF TE-ML 08
TITAN GEAR MP SAE 80W-90	Modern multipurpose gear oil for synchronised and non-synchronised manual gearboxes in cars and commercial vehicles.	API GL-4	-	-



Multifunctional Oils



Product	Description	Specifications	Approvals	FUCHS Recommendations
Multifunctional Oils				
TITAN UTTO PRO 102	Premium Performance Multifunctional Oil for gears, axles and hydraulic systems with improved wear protection and wide range of application temperatures. Specially developed and approved for VOLVO axles with built-in wet brakes in construction machinery.	API GL-4 SAE J306: 75W-75	VOLVO WB 102	ALLISON C-4 CASE MS 1207/1209/1210 CATERPILLAR TO-2 FORD M2C86-C FORD ESN-M2C 134-D JCB 4000/0500 - JCB 4000/2200 JOHN DEERE JDM J20C JOHN DEERE JDM J20D KOMATSU AXO 80 (KES 07.866) KUBOTA UDT FLUID MASSEY FERGUSON CMS M 1145, 1143, 1135 VOLVO WB 101 ZF TE-ML 03E, 05F, 06K, 17E, 21F, SAE J300: 0W-20
TITAN UTTO PLUS	Ultra High Performance Multifunctional Oil for gears, axles and hydraulic systems on construction and agricultural machinery with or without wet brakes and limited slip differentials.	SAE J300: 5W-30	-	SAE J306: 75W-80 CASE MS 1207/1209/1210 FORD M2C86-C, M2C134-D JOHN DEERE JDM J20C JOHN DEERE JDM J20D JOHN DEERE JDM J14 KOMATSU KES 07.866 KUBOTA UDT FLUID MASSEY FERGUSON CMS M 1143, 1135 STEYR 397.88.0001 VOLVO WB 101
TITAN UTTO	Superior, High Performance universal tractor transmission oil designed to meet the latest and most severe specification introduced by original equipment manufacturers.	API GL-4	-	ALLISON C-4 CASE MS 1230, 1210, 1209, 1207, 1206 CNH MAT 3505, 3506, 3509, 3525, 3526, 2640 FORD M2C-86B / C M2C-134D JOHN DEERE J20C KUBOTA UDT MASSEY FERGUSON CMS M1145, 1143, 1141 1135 NEW HOLLAND NH 410B VOLVO VME WB101 ZF TE ML 03E, 05F, 06K, 17E, 21F
TITAN UTTO ZF	Super High Performance Gear Oil for ZF axles with limited-slip differentials. Recommended for construction machinery and material-handling vehicles axles.	API GL-4	ZF TE-ML 05F, 06K, 17E, 21F (ZF000661)	VOLVO WB 101 ZF TE-ML 03E
TITAN UTTO TO-4 SAE 10W	Super High Performance multifunctional hydraulic, transmission and drive-train lubricants for construction machinery.	API GL-4 CAT TO-4	ZF TE-ML 03C (ZF002186)	ALLISON C-4 KOMATSU KES 07.868.1
TITAN UTTO TO-4 SAE 30	Super High Performance multifunctional hydraulic, transmission and drive-train lubricants for construction machinery.	API GL-4 CAT TO-4	ZF TE-ML 03C, 07F (ZF002185)	ALLISON C-4 ALLISON TES-439 KOMATSU KES 07.868.1
TITAN UTTO TO-4 SAE 50	Super High Performance multifunctional hydraulic, transmission and drive-train lubricants for construction machinery.	API GL-4 CAT TO-4		KOMATSU KES 07.868.1

Automatic Transmission Fluids

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Automatic Transmission Fluids				
TITAN ATF 5500	Premium Performance ATF for automatic transmission in motor vehicles. Outstanding base oil quality for optimal cold temperature properties and high ageing stability. Durable friction properties for excellent shift performance.	–	EVOBUS 27.000-017 MAN 339 TYPE V1/V2/V3/Z3/Z12 MB-APPROVAL 236.9 VOITH 150.014524.xx VOLVO 97341 ZF TE-ML 04D, 14C, 16M, 16S, 20C, 25C (ZF001797)	DEXRON III (H) ALLISON TES 295 ALLISON TES 389 IVECO 18-1807 CLASSE AG3/I MAN 339 TYPE Z4 VOITH H55.6336.xx
TITAN ATF 4000	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.	–	DEXRON III (H) DTFR 13C100 (MB 236.1) MAN 339 TYPE L1 MAN 339 TYPE V1 MAN 339 TYPE Z1 MB-APPROVAL 236.1 MB-APPROVAL 236.9 VOITH H55.6335.xx VOLVO 97341 ZF TE-ML 04D, 14A (ZF000728)	ALLISON C-4 ALLISON TES 389 BMW 81 22 9 400 272 BMW 81 22 9 400 275 BMW 83 22 0 403 248 BMW 83 22 9 407 765 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 VOLVO 97340 VW TL 521 62 ZF TE-ML 02F, 03D, 09, 11B, 17C

Central Transmission Fluids

TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Central Transmission Fluids				
TITAN CHF 11S Formerly know as PENTOSIN CHF 11S	Premium Performance power steering and central Hydraulic Fluid with a wide application and approval profile for various manufacturers.	FORD WSS-M2C204-A	CHRYSLER MS-11655B DTFR 31B120 (MB 345.0) EVOBUS 39.060-001 MAN M 3289 MB-APPROVAL 345.0 PSA S712710 ZF TE-ML 02K (ZF004744) VW TL 52 146 (G 002 000)	BENTLEY JNV862564F BMW 81 22 9 407 758 BMW 82 11 1 468 041 BMW 83 29 0 429 576 FENDT X 902 011 622 IVECO 18-1807 CLASSE APU OPEL B 040 0070 PORSCHE 000 043 203 33 SAAB 3032 380 VOLVO 1161529
PENTOSIN LHM+ Formerly know as PENTOSIN LHM+	Ultra High Performance Central Hydraulic Fluid for use in the comfort and safety area of PSA vehicles.	–	PSA B71 2710	IVECO 18-1823 NH 610A SDFG OF1611S CNH MAT 3630

Hydraulic Oils

RENOLIN / TITAN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Hydraulic Oils				
RENOLIN XTREMETEMP	AW hydraulic and lubricating oils with a high viscosity index. The shear-stable, high viscosity index (HVI) guarantees a low viscosity at low startup temperatures and a good low temperature flowability of the oil. Good air release with a high ageing stability offering good corrosion protection.	DIN 51524-3 (2006): HVLP ISO 6743-4: HV DENISON HF-0 -T6H20C: Hybridpumpe BOSCH REXROTH TEREX VICKERS 35VQ-25/ V104C: VANE PUMPS US STEEL 127, 136 CINCINNATI MILACRON P68, P69, P70	–	–
RENOLIN XTREMETEMP PLUS	AW hydraulic and lubricating oils with a high viscosity index. The shear-stable, high viscosity index (HVI) guarantees a low viscosity at low startup temperatures and a good low temperature flowability of the oil. Good air release with a high ageing stability offering good corrosion protection. Improved anti-stick-slip performance.	DIN 51524-3 (2006): HVLP ISO 6743-4: HV DENISON HF0 – T6H20C: Hybridpumpe BOSCH REXROTH TEREX VICKERS 35VQ-25/ V104-C: VANE PUMPS US STEEL 127, 136 CINCINNATI MILACRON P68, P69, P70	–	–
RENOLIN B-HVI SERIES 15HVI 32 HVI 46 HVI 68 HVI	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 51524-3, HVLP ISO 6743-4, HV ISO 11158, DENISON HF0 BOSCH REXROTH VICKERS US STEEL CINCINNATI MILACRON	–	–
RENOLIN B RANGE	Lubricating and hydraulic oils with additives to improve ageing resistance, corrosion prevention and wear protection.	Products fulfill & surpass the requirements according to: DIN 51524-2: HLP ISO 6743-4: HM DENISON HF 1, HF 2, HF 0 VICKERS I 286-S, M 2950-S CINCINNATI MACHINE P68, P69, P70 US STEEL 127, 136	–	Well known pump manufacturers have approved these oils, e.g DENISON BOSCH REXROTH SAUER DANFOSS
TITAN UNIVERSAL HD SAE 10W	High Performance, engine oil based hydraulic oil for applications where this type of oil is recommended.	–	MAN 270 ZF TE-ML 03B	ACEA E2 API CF-4/SG MB 228.0 MIL-L-2104 D ALLISON C-4 CAT TO-2 ZF TE-ML 02C

Greases

RENOLIT

Product	Description	Specifications	Approvals	FUCHS Recommendations
Greases				
MEISSELPASTE	Copper-coloured special paste for socket tools and bushings of hydraulic hammers	-	-	-
RENOLIT LX-PEP 2 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	—
RENOLIT PU-FH 300	Polyurea grease with excellent EP and anti-wear properties based on a high viscosity mineral base oil. Good long life characteristics. Provides very good water resistance and corrosion protection properties. Protects in unfavourable environmental conditions such as aggressive atmospheres and salt water over a wide temperature range.	—	-	—
RENOLIT EXTREME LOAD 2	Non heavy metal EP long life lithium grease with special additive treatment. Highly suited to applications where water wash-out could be a problem.	KPF 2 K-10 L-XBCEB.2	-	Formulated to FORD Specifications SM1C 1020B and WSD M1C 227A
RENOLIT LX-EP2	Non leaded, lithium complex EP grease capable of operating at higher temperatures than normal lithium greases.	KP2 P-30 L-XCEEB 2		—
RENOLIT MO-2	Molybdenum disulphide grease for high load applications.	KPF-2 K-20 L-XBDEB 2	-	—
RENOLIT CXI-2	Calcium sulphonate complex grease for heavily loaded applications. Developed to work under severe conditions.	Ford ESA-M1C 172-A	-	Formulated to FORD Specification ESA M1C 47A
RENOLIT EP SERIES NLGI 000, 00, 0, 1, 2	High specification general purpose greases suitable for many application areas.	KP 000 K-30 KP 00 K-30 KP 0 K-30 KP 1 K-30 KP 2 K-20 L-XBBEB 000/00 L-XCBEB 0 L-XCCEB 1 L-XBCEB 2	-	—
RENOLIT CX-HT 2 Also available in 500gm FUCHS REINER system grease gun cartridge and in NLGI grade 0.	Special calcium complex soap-based grease containing MoS ₂ 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 RENOLIT UNILOAD .	—	-	—

Greases

RENOLIT

Product	Description	Specifications	Approvals	FUCHS Recommendations
Greases				
RENOLIT LZR 000	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	SOLUTIONS LINCOLN TECALEMIT WILLY VOGEL AG (Commercial Vehicles)
RENOLIT MP PLUS Only available in 500gm FUCHS REINER system grease gun cartridge.	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	—	—
RENOLIT FLM 2 Also available in 500gm FUCHS REINER system grease gun cartridge and in NLGI grade 0.	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	MAN 285 LI-PF 2	—
RENOLIT DURAPLEX EP 2 Also available in 500gm FUCHS REINER system grease gun cartridge and in NLGI grade 1 & 3.	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.	—	—	—



Service Products

MAINTAIN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Brake Fluids				
MAINTAIN DOT 514 LV	Premium Performance Brake Fluid for hydraulic brake systems and clutch actuation in passenger cars, trucks and motorcycles.	FMVSS NR. 116 DOT 3/4/5.1 ISO 4925 CLASS 3/4/5-1/6/7 JIS K2233 CLASS 3/4/5/6 SAE J 1703/1704	–	BMW QV 34001 FORD M6C65-A2 FORD M6C62-A FORD M6C9103-A GM Europa GMW 3356 MB 331.0 PSA 571 2114 RENAULT 41-02-001/--H VW TL 766-X, 766-Y, 766-Z
UNIVERSAL BRAKE & CLUTCH FLUID	UNIVERSAL BRAKE & CLUTCH FLUID is a high performance brake and clutch fluid ideal which exceeds the requirements of DOT 4. UNIVERSAL BRAKE & CLUTCH FLUID offers good protection against vaporisation even under arduous conditions.	FMVSS 116 DOT 3/DOT 4 ISO 4925 CLASS 3/4 SAE J1703/J1704	–	JIS K 2233 Types 3 & 4
Antifreeze & Diesel Additives				
MAINTAIN FRICOFIN LL Also available as a 50:50 pre-mix.	Premium Performance Coolant additive based on monoethylene glycol. Free from nitrite, amine, phosphate and silicates. Product dyeing: Orange.	ASTM D 3306 TYPE I ASTM D 6210 TYPE I-FF BS 6580:2010 SAE J814 FORD WSS-M97-B44-D JAGUAR LAND ROVER STJLR.651.5003 FVV HEFT R443 KSM 2142 UNE 26-361-88/1	Bez.Reg.Arnsbg. E62.12.22.64-2011-1 CAT/MWM TR 0199-99-2091 DAF 74002 DEUTZ DQC CB-14 MAN 324 TYP SNF MB-APPROVAL 325.3 MTU MTL 5048	AFNOR NFR 15-601 TYP I AS/NZS 2108:2004 TYPE A ASTM D 4985 SAE J1034 ADE (ATLANTIS DIESEL ENGINES) BAIC GROUP FOTON Q-FPT 2313005-2013 BERGEN ENGINES 2.13.01 CATERPILLAR MAK A4.05.09.01 CHRYSLER MS 12106 CNH MAT 3624 CUMMINS (ISBe Engines at DAF und LEYLAND) CUMMINS CES 14603, CES 14439 DETROIT DIESEL 93K217 FIAT 9.55523 GM GMW 3420 (6277M)/ GME L1301 HYUNDAI MS 591-08 JASO M325, JIS K2234 JOHN DEERE JDM H5 KOMATSU AF-NAC (ready mix) (07.892 (2009) LIEBHERR MD 1-36-130 MACK 014 GS 17009 MAZDA MEZ MN 121 D PSA B 71 5110 RENAULT 41-01-001/- -S TYP D SAAB B 040 1065 SKODA 61-0-0257 TOYOTA TSK 2601G-8A VAUXHALL GME L1301 VW TL 774-D/F (G12+ / Different Colour) VOLVO COOLANT VC5 (STD 418-0001)
MAINTAIN FRICOFIN ESK Also available as a 50:50 pre-mix.	Versatile MEG anti-freeze suitable for all-year round use.	ASTM D4985 BS 6580: 2010		




Service Products

MAINTAIN / RENOLIN

Product	Description	Specifications	Approvals	FUCHS Recommendations
Antifreeze & Diesel Additives				
MAINTAIN FRICOFIN	Coolant additive based on monoethylene glycol. Free from nitrite, amine and phosphate.	AFNOR NF R 15-601 TYPE 1 AS/NZS 2108:2004 TYPE A ASTM D 3306 TYPE I ASTM D 4985 BS 6580:2010 CUNA NC 956-16 SAE J814 SAE J1034	BMW LC-87 CAT/MWM TR 0199-99-2091 DEUTZ DQC CA-14 DTR 29C100 (MB 325.0) JENBACHER TA 1000-0201 MAN 324 TYPE NF MAN 324 TYPE NF PRITARDER MB-APPROVAL 325.0 MTU MTL 5048 PN-C 40007:2000	BMW GS 94000 DAF 74001 LIEBHERR TLV 035/ TLV 23009 A OPEL/GM B 040 0240 VW TL 774-C (G 11) VOITH TURBO 172.00225010
MAINTAIN FRICOFIN HDD	Ultra High Performance engine coolant concentrate based on monoethylene glycol. Free of amines and phosphates with low silicate technology. Product dyeing: Yellow.	ASTM D 3306 TYPE I ASTM D 4985 ASTM D 6210 TYPE I-FF ASTM D 7583 AS/NZS 2108:2 004 TYPE A BS 6580:2010 SAE J814 CHRYSLER MS 7170 CHRYSLER MS 9769 DETROIT DIESEL 7SE298 FORD ESE-M97B44-A FORD ESE-M97B18-C FORD WSS M97B51-A1 GM 1825M & GM 1899M JIS K2234 MACK 014GS17004	MTU MTL 5048	CASE MS 1710 CUMMINS CES 14603 FREIGHTLINER 48-2288D IVECO 18-1830 KENWORTH R026-170-97 MAN 324 TYPE N NEW HOLLAND WSN-M97B18-D PACCAR CS 0185 TMC RP 329
Hydraulic, Compressor & Circulating Oils				
RENOLIN UNISYN OL	Recommended for use in flooded or oil injection screw-type air compressors and turbo compressors (ISO VG 32, 46, 68) and for piston and rotary vane compressors (ISO VG 100, 150). RENOLIN UNISYN OL products should always be used if mineral oil-based products are found to display insufficient thermal stability (resistance to ageing) or poor viscosity-temperature behaviour. Especially recommended in unfavourable conditions and at high temperatures in which other oils fail because they allow coke to form, thus leading to unacceptably short oil life. These oils are also recommended for compressors which are subject to extreme loads.	ISO 6743-3: L-DAA, L-DAB (reciprocating compressors) L-DAG, L-DAH, L-DAJ (rotating compressors) DIN 51506: VDL DIN 51524-2: HLP DIN 51524-3: HVLP	—	—
RENOLIN AC COMPRESSOR OILS	High quality mineral-oil air compressor lubricants. The range of RENOLIN AC COMPRESSOR OILS has been developed to embrace a wide range of equipment maker's specifications and requirements.	All products exceed the requirements of DIN 51506 VD-L test sequence.	—	—

Biodegradable Lubricants

PLANTO

Product	Description	Specifications	Approvals	FUCHS Recommendations
Biodegradable Engine Oil				
PLANTO MOT SAE 10W-40	Low-ash diesel engine oil for modern diesel engines. Biodegradable and especially recommend for use with alternative diesel fuels.	–	DEUTZ DQC IV-18 LA	ACEA E9/E7/E6 API CK-4, CAT ECF-3 CUMMINS CES 20086 DETROIT DIESEL 93K222 JASO DH-2, MACK EOS-4.5 MAN M 3271-1 / 3477 MB 228.51, MTU TYPE 3.1 RENAULT RLD-3/RLD-4 VOLVO VDS-4.5
Biodegradable Gear / Hydraulic Oil				
PLANTO HYTRAC PLUS	Special UTTO fluid for tractor gear boxes with or without wet brakes.	SAE 10W-30 SAE 80	–	CASE MS 1207, 1209 FORD M2C134-D JOHN DEERE JDM J20C NEW HOLLAND NH 410 B MASSEY FERGUSON CMS M1127, 1135, 1143 HLP/HVLP ISO VG 32, 46, 68, 100 (according to DIN 51 524-2 /-3)
Biodegradable Hydraulic Oils				
PLANTOSYN 3268 	Environmentally friendly, high performance hydraulic and lubricating oil based on saturated synthetic esters. It is designed for the toughest demands in construction machinery, earth moving equipment, forestry and agriculture machineries. Suitable also for loading cranes, floor conveyor vehicles and hydraulic platform systems in trucks.	ISO 15380: HEES DIN 51524-3: HVLP DIN 51519: ISO VG 46 EU Ecolabel: DE/027/149	FENDT KDM 28/2006 O&K BAUMASCHINEN	BOSCH REXROTH AG CAT BF-1 KRAMER ALLRAD PALFINGER TIMBERJACK SAUER DANFOSS VALMET/KOMATSU FOREST PONSSE
PLANTOSYN 3268 ECO 	Environmentally friendly, universally usable HVI multigrade hydraulic oil based on synthetic esters (HEES), rapidly biodegradable according to OECD 301 B > 60%.	ISO 15380: HEES DIN 51524-2: HLP DIN 51524-3: HVLP EU Ecolabel: DE/027/149	FENDT KDM 28/2006	–
Biodegradable Grease				
PLANTOGEL ECO 2 S 	Lithium soap. Awarded the EU Ecolabel.	EU ECO LABEL DE/027/273 ISO 12924: ISO-L-XD(L)CEB 2	–	–



FUCHS LUBRICANTS (UK) plc is a member of the Bio-Based & Biodegradable Industries Association (BBIA). For more details on our biodegradable specialities please see the FUCHS PLANTO brochure.

Note

The information contained in this product information is based on the experience and know-how of FUCHS LUBRICANTS 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 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, unless otherwise provided in customer-specific agreements. With the publication of this product information, all previous editions cease to be valid.

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An easy guide to engine oils and their specifications.

Engine oils

There are a wide range of specifications available. The table below shows some of the more widely used and important:

ACEA

ACEA E categories are used to specify the correct engine oil in commercial diesel engines.

- E1** Older diesel engine specification now obsolete.
- E2** Oil for older normally aspirated and turbocharged engines, medium to heavy duty and standard oil drain intervals.
- E3** Heavy duty oil with improved piston cleanliness and bore polishing protection, better dispersancy and improved thermal stability. Recommended for diesel engines meeting Euro I and II emissions operating under harsh conditions and suitable for extended drain.
- E4** Engine oil recommended for highly rated diesel engines meeting Euro I, II, III, IV and V emission requirements. Suitable for certain engines with EGR and SCR NOx reduction systems but not suitable for engines fitted with particulate filters. Capable of extended drain interval subject to manufacturer guidelines.
- E5** Oil with improved properties compared to E3 with further improvements in piston cleanliness, bore polishing, soot handling and turbocharger deposit control.
- E6** Ultra high performance diesel (UHPD), low SAPs engine oil recommended for engine oils up to and including those meeting Euro VI emission requirements operating under very severe conditions. Suitable for engines fitted with particulate filters, EGR and SCR NOx reduction systems. Significant extended drain interval capability subject to manufacturer guidelines.
- E7** Ultra high performance diesel (UHPD) engine oil for engines meeting Euro I, II, III, IV and V emission requirements. Suitable for most engines fitted with EGR and SCR NOx reduction systems but not suitable for engines fitted with particulate filters.
- E9** Ultra high performance diesel (UHPD), mid SAPs engine oil recommended for engine oils up to and including those meeting Euro VI emission requirements operating under very severe conditions including extended drain. Suitable for engines fitted with particulate filters, EGR and SCR NOx reduction systems. Note. Current ACEA categories are E4, E6, E7 and E9.
- DH-1** Is a commercial diesel engine oil specification for older vehicles without exhaust gas treatment devised and for use with higher sulphur content fuels.
- DH-2** Is a commercial diesel engine specification for the latest engines fitted with exhaust gas treatment devices. Only to be used with diesel fuel containing less than 50ppm sulphur.

API

API commercial diesel specifications are classified by the letter C (Compression ignition) followed by a number, detailed and described below.

- CE** Diesel engine oil for older high speed, four stroke, naturally aspirated and turbocharged diesel engines.
- CF** Heavy duty diesel engine oil especially designed for indirect fuel injection but can also be used in other diesel engines. Suitable for fuel sulphur > 0.5%.
- CF-4** Introduced in 1990 for high speed, four stroke diesel engines. Suitable for naturally aspirated and turbocharged engines.
- CG-4** Engine oil for severe duty, high speed, four stroke diesel engines using fuel with sulphur < 0.5% by weight. Introduced for engines meeting 1994 emission standards.
- CH-4** Engine oil introduced for engines meeting 1998 exhaust emission standards. Formulated for use with diesel engines using fuel with sulphur content up to 0.5%.
- CI-4** Introduced in 2002 for engines designed to meet the 2004 EPA exhaust emission standards. Designed for engines fitted with and without EGR systems running on fuel with sulphur levels up to 0.5%.
- CJ-4** Introduced in 2006 for diesel engines designed to meet the 2007 EPA on-highway emissions standards. CJ-4 oils are mid SAPs and designed to be used with fuel sulphur levels up to 500ppm. Oils of this specification can be used in engines fitted with particulate filters and other advanced exhaust treatment devices.
- CK-4** Describes oils for use in high-speed four-stroke cycle diesel engines designed to meet 2017 model year on-highway and Tier 4 non-road exhaust emission standards as well as for previous model year diesel engines.
- FA-4** Describes certain XW-30 oils specifically formulated for use in select high-speed four-stroke cycle diesel engines designed to meet 2017 model year on-highway greenhouse gas (GHG) emission standards.

JASO

Japanese Oil Standards Organisation

GLOBAL

- DHD-1** Is the specification which covers and harmonises some ACEA, API and JASO specifications and tests.

Gear oils

A variety of different gear oils which fulfil a range of specifications are available. The table (*Right*) shows the lubricant types described by the API gear oil specifications.

API CLASSIFICATIONS

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

	Operating Conditions	Type of gearbox
API GL-1	Low bearing loads and low sliding speeds. non EP.	Manual transmission and axles operating under mild conditions.
API GL-2	Higher loads and sliding speeds than API GL-1.	Worm drives, manual gearboxes and some axles operating under moderate loads.
API GL-3	Moderately high loads and sliding speeds.	Certain axle drives, bevel gears and manual gearboxes.
API GL-4	Higher loads and speeds. High speed/low torque or low speed/high torque.	Axles with spiral bevel gears and manual transmission operating under moderate to severe conditions.
API GL-5	High speeds and shock loads. High speed/low torque or low speed/high torque.	High off-set hypoid gears operating under severe operating conditions. Suitable for some manual gearboxes.



FUCHS Lubricants

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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