

**TITAN / RENOLIN / RENOLIT / MAINTAIN**

**Reliability in Extremes  
Lubricants for Construction**



LUBRICANTS.  
TECHNOLOGY.  
PEOPLE.



# LUBRICANTS. TECHNOLOGY. PEOPLE.

We focus consistently on high-quality lubricants and related specialities.

We develop innovative and holistic solutions for a wide variety of applications.

We value the high level of commitment of our employees and their trusting interaction with one another.



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## 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 OHSAS 18001

**References:** One of the leading lubricants OEM for the German automotive industry

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FUCHS is a global Group with German roots that has developed, produced and sold lubricants and related specialties for more than 85 years – for virtually all areas of application and sectors. With 58 companies and almost 5,000 employees worldwide, the FUCHS Group is the leading independent supplier of lubricants.

Across the UK, a team of more than 300 specialists works to guarantee the satisfaction of our customers. Whatever their requirements, FUCHS has the ideal lubricant for their specific applications and processes. In our technology centre we link interdisciplinary expertise in a quick and efficient way – and work on innovative lubricant solutions to meet the demands of today and tomorrow every single day.

In close contact with its customers, FUCHS develops holistic, innovative and custom-made solutions for the most diverse applications. As a lubricant manufacturer, FUCHS stands for performance and sustainability, safety, reliability, efficiency and cost savings. FUCHS represents a promise: technology that pays back.

# MAKE SURE OF YOUR SUCCESS



## The leading factory-fill manufacturer in Germany.

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

## All lubricants for construction.

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

## Your advantage: lower operating costs.

Lubricants are by no means all the same: The high performance lubricants from FUCHS offer you **ultimate reliability at all temperatures, lower oil consumption, significantly lower fuel consumption and specifically extended service intervals**. The advantages are tangible: Whenever engines and gearboxes run freely 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!

# TITAN Engine Oils

		Specifications	Approvals	FUCHS Recommendations
<b>TITAN CARGO MAXX SAE 5W-30</b>  	<p>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.</p>	<p>ACEA E9/E7/E6/E4 API CJ-4 CAT ECF-3 JASO DH-2 SCANIA LA</p>	<p>DEUTZ DQC IV-10 LA DETROIT DIESEL 93K218 MACK EO-O PREMIUM PLUS MAN M 3271-1 MAN M 3477 MAN M 3575 MAN M 3677 MB-APPROVAL 228.31 MB-APPROVAL 228.51 MTU DDC TYPE 3.1/2.1 RENAULT RLD-3 SCANIA LDF-4 VOLVO VDS-4</p>	<p>CUMMINS CES 20081 IVECO 18-1804 CLASSE TLS E6</p>
<b>TITAN CARGO MAXX SAE 10W-40</b>  	<p>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.</p>	<p>ACEA E9/E7/E6/E4 API CJ-4 JASO DH-2 CAT ECF-3</p>	<p>DEUTZ DQC IV-10 LA MACK EO-O PREMIUM PLUS MAN M 3477 MAN M 3271-1 MAN M 3575 MB-APPROVAL 228.31 MB-APPROVAL 228.51 MTU DDC TYPE 3.1/2.1 RENAULT RLD-3 SCANIA LA VOLVO VDS-4</p>	<p>CUMMINS CES 20081 DETROIT DIESEL 93K218 IVECO 18-1804 CLASSE TLS E9 IVECO 18-1809 CLASSE NG2 VOITH-RETARDER "B"</p>
<b>TITAN CARGO MAXX SAE 10W-30</b>	<p>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.</p>	<p>ACEA E9/E7/E6 API CK-4/SN CAT ECF-3</p>	<p>DEUTZ DQC IV-18 LA MACK EOS-4.5 MAN M 3477 MAN M 3677 MB-APPROVAL 228.51 MTU DDC TYPE 3.1 RENAULT RLD-3 SCANIA LA VOLVO VDS-4.5</p>	<p>CUMMINS CES 20086 DETROIT DIESEL 93K218 DETROIT DIESEL 93K222 JASO DH-2 RENAULT RLD-4</p>
<b>TITAN CARGO SL SAE 5W-30</b>	<p>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.</p>	<p>ACEA E7/E4 FORD WSS-M2C212-A1</p>	<p>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</p>	<p>CUMMINS CES 20077 IVECO 18-1804 CLASSE TFE SCANIA LDF-2</p>
<b>TITAN CARGO LD3 SAE 10W-40</b>	<p>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.</p>	<p>ACEA E7/E4</p>	<p>MACK EO-N MAN M 3277 MB-APPROVAL 228.5 RENAULT RLD-2 SCANIA LDF-3 VOLVO VDS-3</p>	<p>API CF</p>

## TITAN Engine Oils

		Specifications	Approvals	FUCHS Recommendations
<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 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
<b>TITAN CARGO SAE 5W-40</b>	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
<b>TITAN CARGO SAE 10W-30</b>	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
<b>TITAN CARGO SAE 15W-40</b>	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
<b>TITAN UNIMAX ULTRA MC SAE 10W-40</b>	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 Engine Oils

		Specifications	Approvals	FUCHS Recommendations
<b>TITAN UNIMAX PLUS MC SAE 10W-40</b>	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
<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 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
<b>TITAN UNIVERSAL HD SAE 15W-40</b>	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 CG-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
<b>TITAN UNIVERSAL HD SAE 10W</b>	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
<b>TITAN UNIVERSAL HD SAE 20W-20</b>	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
<b>TITAN UNIVERSAL HD SAE 30</b>	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
<b>TITAN UNIVERSAL HD SAE 40</b>	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 MB-APPROVAL 228.2 MB-APPROVAL 235.12 MTU DDC TYPE 2 ZF TE-ML 04B (ZF001189)	ACEA E2 API CF-2/CF-4/SG ALLISON C-4 MAN 270 MIL-L-2104 D ALLISON C-4 CAT TO-2 ZF TE-ML 02C
<b>TITAN UNIVERSAL HD SAE 50</b>	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

# TITAN Gear Oils

		Specifications	Approvals	FUCHS Recommendations
<b>TITAN CYTRAC TD SAE 75W-90</b>	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 SCANIA STO 1:0 SCANIA STO 2:0A FS	DETROIT DIESEL 93K219.01 MAN 341 TYPE Z2 MAN 342 TYPE M3 MAN 342 TYPE S1 MB-APPROVAL 235.8 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
<b>TITAN CYTRAC MAT SAE 75W-80</b>	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 VOLVO 97307 ZF TE-ML 01L, 02L, 16K (ZF003373)	MAN 341 TYPE E3 MAN 341 TYPE Z3 VOLVO 97305 ZF TE-ML 02D, 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.	API GL-4/GL-5	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
<b>TITAN CYTRAC SL SAE 75W-90</b>	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 SCANIA STO 1:0	MAN 342 TYPE S1	JOHN DEERE JDM J11E JOHN DEERE JDM J11G MB 235.8 VOLVO 97312 ZF TE-ML 05B, 07, 08, 12B, 16F, 17B
<b>TITAN GEAR HYP LD SAE 80W-90</b>	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 SCANIA STO 1:0	DETROIT DIESEL 93K219.02 MAN 341 TYPE GA1 MAN 342 TYPE M3 MB-APPROVAL 235.20 ZF TE-ML 05A, 12L, 12M, 16B, 17B, 19B, 21A (ZF000645)	MIL-PRF-2105 E ARVIN MERITOR 0-76-D MACK GO-J JOHN DEERE JDM J11E ZF TE-ML 07A
<b>TITAN SUPERGEAR MC SAE 80W-90</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5 SCANIA STO 1:0	MAN 341 TYPE Z2 MAN 342 TYPE M2 MB-APPROVAL 235.0 ZF TE-ML 02B, 05A, 12L, 12M, 16B, 17H, 19B, 21A (ZF000722)	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
<b>TITAN SUPERGEAR MC SAE 80W-140</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5 SCANIA STO 1:0	-	JOHN DEERE JDM J 11 E OPEL 19 42 386 RENAULT VI VOLVO 97310 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.	API GL-5 SAE J306: 85W-90	ZF TE-ML 05C, 12C, 16E, 21C (ZF000651)	MIL-L-2105 D FORD M2C104-A JOHN DEERE JDM J11F NH 520B VOLVO 97310

# TITAN Gear Oils

		Specifications	Approvals	FUCHS Recommendations
<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.	API GL-4	MB-APPROVAL 235.1 ZF TE-ML 17 A	BMW 81 22 9 407 052 BMW 81 22 9 407 053 FORD M2C9008-A VW TL 726 ZF TE-ML 08
<b>TITAN GEAR MP SAE 80W-90</b>	Modern multipurpose gear oil for synchronised and non-synchronised manual gearboxes in cars and commercial vehicles.	API GL-4	-	-
<b>TITAN GEAR HYP SAE 85W-140</b>	High Performance Gear Oil for highly stressed differentials in commercial vehicles and passenger cars	API GL-5 ZF TE-ML 07, 08	-	-
<b>TITAN GEAR HYP SAE 90</b>	High Performance gear oil for highly stressed differentials in commercial vehicles and passenger cars.	API GL-5 SAE J306: 85W-90	MB-APPROVAL 235.0 ZF TE-ML 16C, 17B, 19B, 21A (ZF000656)	FORD SR-M2C9102-A JOHN DEERE JDM J11E MAN 342 TYP M1 OPEL 19 42 387 VOLVO 97310 VW TL 727 ZF TE-ML 07, 08
<b>TITAN SUPERGEAR MC SAE 80W-90</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5 SCANIA STO 1:0	MAN 341 TYPE Z2 MAN 342 TYPE M2 MB-APPROVAL 235.0 ZF TE-ML 02B, 05A, 12L, 12M, 16B, 17H, 19B, 21A (ZF000722)	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
<b>TITAN SUPERGEAR MC SAE 80W-140</b>	Super High Performance gear oil based on MC-synthesis for extended oil change intervals.	API GL-4/GL-5 SCANIA STO 1:0	-	JOHN DEERE JDM J 11 E OPEL 19 42 386 RENAULT VI VOLVO 97310 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.	API GL-5 SAE J306: 85W-90	ZF TE-ML 05C, 12C, 16E, 21C (ZF000651)	MIL-L-2105 D FORD M2C104-A JOHN DEERE JDM J11F NH 520B VOLVO 97310
<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.	API GL-4	MB-APPROVAL 235.1 ZF TE-ML 17 A	BMW 81 22 9 407 052 BMW 81 22 9 407 053 FORD M2C9008-A VW TL 726 ZF TE-ML 08
<b>TITAN GEAR MP SAE 80W-90</b>	Modern multipurpose gear oil for synchronised and non-synchronised manual gearboxes in cars and commercial vehicles.	API GL-4	-	-

## TITAN Gear Oils

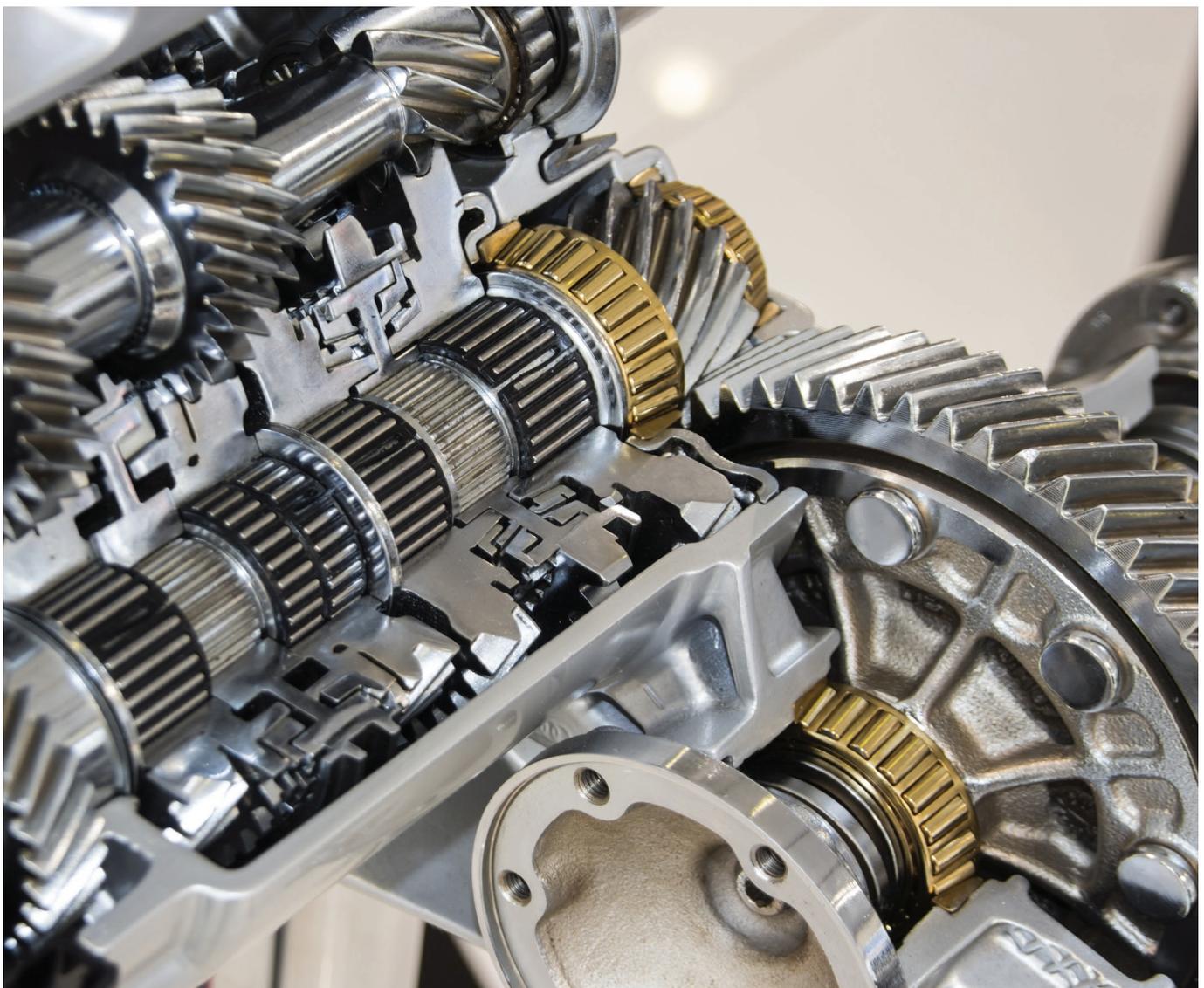
		Specifications	Approvals	FUCHS Recommendations
<b>TITAN GEAR HYP SAE 85W-140</b>	High Performance Gear Oil for highly stressed differentials in commercial vehicles and passenger cars	API GL-5 ZF TE-ML 07, 08	-	-
<b>TITAN GEAR HYP SAE 90</b>	High Performance gear oil for highly stressed differentials in commercial vehicles and passenger cars.	API GL-5 SAE J306: 85W-90	MB-APPROVAL 235.0 ZF TE-ML 16C, 17B, 19B, 21A (ZF000656)	FORD SR-M2C9102-A JOHN DEERE JDM J11E MAN 342 TYP M1 OPEL 19 42 387 VOLVO 97310 VW TL 727 ZF TE-ML 07, 08

## TITAN Gear Oils

Multifunctional		Specifications	Approvals	FUCHS Recommendations
<b>TITAN UTTO PRO</b>	Ultra High Performance Multifunctional Oil for gears, axles and hydraulic systems with improved wear protection and wide range of application temperatures.	API GL-4 SAE J306: 75W-80	VOLVO WB 101	ALLISON C-4 CASE MS 1207/1209/1210 FORD M2C86-C FORD M2C134-D JOHN DEERE JDM J20C JOHN DEERE JDM J20D KOMATSU AXO 80 (KES 07.866) KUBOTA UDT FLUID MASSEY FERGUSON CMS M 1143, 1135 VOLVO WB 102 ZF TE-ML 03E, 03F, 05F, 06K
<b>TITAN UTTO PLUS</b>	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 J306: 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
<b>TITAN UTTO</b>	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 Gear Oils

Multifunctional		Specifications	Approvals	FUCHS Recommendations
<b>TITAN UTTO ZF</b>	Super High Performance Gear Oil for ZF axles with limited-slip differentials. Recommended for construction machinery and material-handling vehicles axles.	API GL-4	ZF TE-ML 05F, 06K, 17E, 21F (ZF000661)	VOLVO WB 101 ZF TE-ML 03E
<b>TITAN UTTO TO-4 SAE 10W</b>	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
<b>TITAN UTTO TO-4 SAE 30</b>	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
<b>TITAN UTTO TO-4 SAE 50</b>	Super High Performance multifunctional hydraulic, transmission and drive-train lubricants for construction machinery.	API GL-4 CAT TO-4		KOMATSU KES 07.868.1



## TITAN Automatic Transmission Fluids

		Specifications	Approvals	FUCHS Recommendations
<b>TITAN ATF 5500</b>	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.	–	MAN 339 TYPE V1/V2/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 MAN 339 TYPE Z4
<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 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)	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 VW TL 52 1 62 ZF TE-ML 02F, 03D, 09, 11B, 17C
<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 L2 MAN 339 TYPE V1 MAN 339 TYPE Z1 MB-APPROVAL 236.1 VOITH H55.6335.xx ZF TE-ML 04D, 14A (ZF000720)	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 ESP-M2C138-CJ FORD ESP-M2C166-H FORD M2C9010-A OPEL 19 40 700 OPEL 19 40 707 RENK-DOROMAT ZF TE-ML 02F, 03D, 09, 11A, 17C
<b>TITAN ATF 10</b>	High Performance ATF for transmissions, power steering systems and hydraulic drives which require a GM-specification TYPE A, Suffix A fluid.	–	MB-APPROVAL 236.2	TASA MAN 339 TYPE A
<b>TITAN ATF 33</b>	Automatic transmission fluid to Ford Motor Company Specification M2C-33G.	Ford ESW M2C-33G ESW M2C-33F		VOLVO 97330

## TITAN Central Transmission Fluids

		Specifications	Approvals	FUCHS Recommendations
<b>TITAN CHF 115</b> Formerly know as PENTOSIN CHF 115	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 MAN M 3289 MB-APPROVAL 345.0 PSA S712710 ZF TE-ML 02K (ZF000832) 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 OPEL B 040 0070 PORSCHE 000 043 203 33 SAAB 3032 380 VOLVO 1161529
<b>PENTOSIN LHM+</b> 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

## **TITAN** | RENOLIN Hydraulic Oils

		<b>Specifications</b>	<b>Approvals</b>	<b>FUCHS Recommendations</b>
<b>RENOLIN XTREMETEMP</b>	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): HVLV 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	–	–
<b>RENOLIN XTREMETEMP PLUS</b>	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): HVLV 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	–	–
<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 51524-3, HVLV ISO 6743-4, HV ISO 11158, DENISON HF0 BOSCH REXROTH, VICKERS US STEEL CINCINNATI MILACRON	–	–
<b>RENOLIN B RANGE</b>	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
<b>TITAN UNIVERSAL HD SAE 10W</b>	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

## RENOLIT Greases

		Specifications	Approvals	FUCHS Recommendations
<b>MEISSELPASTE</b>	Copper-coloured special paste for socket tools and bushings of hydraulic hammers	-	-	-
<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	-
<b>RENOLIT PU-FH 300</b>	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.	-	-	-
<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.	KPF 2 K-10 L-XBCEB.2	-	Formulated to FORD Specifications SM1C 1020B and WSD M1C 227A
<b>RENOLIT LX-EP2</b>	Non leaded, lithium complex EP grease capable of operating at higher temperatures than normal lithium greases.	KP2 P-30 L-XCCEB 2		-
<b>RENOLIT MO-2</b>	Molybdenum disulphide grease for high load applications.	KPF-2 K-20 L-XBDEB 2	-	-
<b>RENOLIT CXI-2</b>	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
<b>RENOLIT EP SERIES NLGI 000, 00, 0, 1, 2</b>	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	-	-
<b>RENOLIT CX-HT 2</b> Also available in 500gm FUCHS REINER system grease gun cartridge and in NLGI grade 0.	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> .	-	-	-

## RENOLIT Greases

		Specifications	Approvals	FUCHS Recommendations
<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	SOLUTIONS LINCOLN TECALEMIT WILLY VOGEL AG (Commercial Vehicles)
<b>RENOLIT MP PLUS</b> 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	–	–
<b>RENOLIT FLM 2</b> 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	–
<b>RENOLIT DURAPLEX EP 2</b> 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.	–	–	–



## MAINTAIN Specialities

Brake Fluids		Specifications	Approvals	FUCHS Recommendations
<b>MAINTAIN DOT 5.1</b>	Ultra High Performance Brake Fluid for hydraulic brake systems and clutch actuation in passenger cars, trucks and motorcycles.	FMVSS NR. 116 DOT 3/4 FMVSS NR. 116 DOT 5.1 ISO 4925 CLASS 3/4/5.1 JIS K2233 CLASS 3/4 SAE J 1703/J 1704	–	MB 331.0 VW TL 766-Y
<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 4 SAE J1703/J1704	–	–
<b>UNIVERSAL BRAKE &amp; CLUTCH FLUID</b>	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		Specifications	Approvals	FUCHS Recommendations
<b>MAINTAIN FRICOFIN LL</b> 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)
<b>MAINTAIN FRICOFIN ESK</b> Also available as a 50:50 pre-mix.	Versatile MEG anti-freeze suitable for all-year round use.	ASTM D4985 BS 6580: 2010		

# MAINTAIN | RENOLIN Specialities

Antifreeze / Diesel Additives		Specifications	Approvals	FUCHS Recommendations
<b>MAINTAIN FRICOFIN</b>	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 GS 94000 (BMW N 600 69.0) CAT/MWM TR 0199-99-2091 DEUTZ DQC CA-14 JENBACHER TA 1000-0201 MAN 324 TYPE NF MAN 324 TYPE NF PRITARDER MB-APPROVAL 325.0 MTU MTL 5048 PN-C 40007:2000 VOITH TURBO 172.00225010	DAF 74001 LIEBHERR TLV 035/ TLV 23009 A OPEL/GM B 040 0240 VW TL 774-C (G 11)
<b>MAINTAIN FRICOFIN HDD</b>	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 CAT EC-1 CUMMINS CES 14603 DETROIT DIESEL 93K217 (NOAT) FREIGHTLINER 48-2288D IVECO 18-1830 KENWORTH R026-170-97 MAN 324 TYPE N NEW HOLLAND WSN-M97B18-D PACCAR CS 0185 TOYOTA Motor Corp. RP 329
Hydraulic, Compressor and Circulating Oils		Specifications	Approvals	FUCHS Recommendations
<b>RENOLIN UNISYN OL</b>	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	–	–
<b>RENOLIN AC COMPRESSOR OILS</b>	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.	–	–

## PLANTO Biodegradable Lubricants

Biodegradable Engine Oil		Specifications	Approvals	FUCHS Recommendations
<b>PLANTO MOT SAE 10W-40</b>	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 E7/E6 API CK-4

Biodegradable Gear / Hydraulic Oil		Specifications	Approvals	FUCHS Recommendations
<b>PLANTO HYTRAC PLUS</b>	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		Specifications	Approvals	FUCHS Recommendations
 <b>PLANTOSYN 3268</b>	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
 <b>PLANTOSYN 3268 ECO</b>	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		Specifications	Approvals	FUCHS Recommendations
 <b>PLANTOGEL ECO 2 S</b>	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.

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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
<b>API GL-1</b>	Low bearing loads and low sliding speeds. non EP.	Manual transmission and axles operating under mild conditions.
<b>API GL-2</b>	Higher loads and sliding speeds than API GL-1.	Worm drives, manual gearboxes and some axles operating under moderate loads.
<b>API GL-3</b>	Moderately high loads and sliding speeds.	Certain axle drives, bevel gears and manual gearboxes.
<b>API GL-4</b>	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.
<b>API GL-5</b>	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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