

AGRIFARM 
EXPERTISE IN ALL FIELDS



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Agricultural Lubricants
1/2007



Protect your machinery, for long and reliable life.

The leading OEM in Germany.

Almost nobody understands engines, gearboxes and hydraulics better than FUCHS. As the world's largest independent manufacturer of lubricants, we concentrate exclusively on lubricants. This has made us the largest OEM in the German commercial vehicle industry and to a leading partner in the agricultural sector. 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 agricultural fleets.

Greases for vehicle and machinery bearings, hydraulic oils for a variety of applications or engine and gear oils for all the vehicles on your farm and on your fields – with FUCHS you get the perfect lubricant from just one source enabling a rationalisation of oil grades for your entire vehicle and machinery fleet. For example, the multifunctional UTTO and STOU oils. Read more about this in the technical section at the end of this brochure.

Regardless which FUCHS lubricant you choose: You will benefit from your decision every day.

Your advantages: Lower operating costs and greater reliability.

Lubricants are not just lubricants: Along with ultimate reliability at all temperatures, high-performance lubricants from FUCHS also offer lower oil consumption, a noticeable reduction in fuel consumption and specifically extended oil change intervals. The benefits are obvious: More efficient gearboxes and engines results in lower operating costs. Simply from the lower fuel consumption. Depending on usage, just 1% less fuel consumption can generate savings of many hundred Euros per vehicle per year.

Moreover, the use of multifunctional oils (MFO/STOU) eliminates the risks of using the wrong lubricant because a machine may require just one lubricant. STOU or MFOs can be used in engines, gearboxes and hydraulic systems. For us, the operational reliability of your machinery and the protection of your investment is the highest priority.



Products for the most demanding applications:

Multifunctional Oils / STOU



Premium	Tested to and recommended by	Basic	Tested to and recommended by
AGRIFARM STOU 10W-40 MC PRO	SHPD multifunctional oil (STOU/MFO) containing the latest MC-synthesis base oils as well as special and new generation additives, for engines, manual gearboxes, wet brakes and hydraulics in tractors, harvesters, construction machinery and commercial vehicles; also for limited-slip differentials and axles.	ACEA E5/E3 API CH-4 API GL-3/GL-4/ GL-5 for agricultural machinery DIN 51524 T3 AFNOR NFE 48603 HV ALLISON C-4 CASE MS 1207/1210 CATERPILLAR CAT TO-2 CUMMINS DEUTZ FORD M2C159-C FORD M2C86-A FORD M2C134-C JDM J 20C MAN M 3275 MAT 3525/3526 MB 228.3 MF M 1135/1139 1143/1144/1145 New Holland 82009201/2/3 PERKINS STOU/MFO UTTO (TOU) ZF TE-ML 06B, 06F, 07B	ACEA E2 API CF-4/SG API GL-3/GL-4/ GL-5 for agricultural machinery DIN 51524 T3 AFNOR NFE 48603 HV ALLISON C-4 CASE MS 1207/1210 CAT TO-2 FORD M2C159-C FORD M2C86-A FORD M2C134-C JDM J 20C JDM J 27 MAN 271 MAT 3525/3526 MB 227.1 MF M 1135/1139 1143/1144 New Holland 82009201/2/3 STOU/MFO UTTO (TOU) ZF TE-ML 06B, 06F, 07B
AGRIFARM STOU 10W-40 MC	MC-synthesis, multifunctional, fuel-economy oil (STOU/MFO) for engines, manual gearboxes, wet brakes, hydraulics and turbo-drives in tractors and other agricultural machinery.	ACEA E2 API CF-4/SG API GL-3/GL-4/ GL-5 for agricultural machinery DIN 51524 T3 AFNOR NFE 48603 HV ALLISON C-4 CASE MS 1207/1210 CAT TO-2 FORD M2C159-C FORD M2C86-A FORD M2C134-C JDM J 20C JDM J 27 MAN 271 MAT 3525/3526 MB 227.1 MF M 1135/1139 1143/1144 New Holland 82009201/2/3 STOU/MFO UTTO (TOU) ZF TE-ML 06B, 06F, 07B	ACEA E2 API CF-4/SG API GL-4 DIN 51524 T3 AFFNOR NFE 48603 HV ALLISON C-4 CASE MS 1207/1210 CAT TO-2 FORD M2C159-C FORD M2C86-A FORD M2C134-C JDM J 20C JDM J 27 MB 227.1 MF M 1135/1139 1143/1144 New Holland 82009201/2/3 STOU/MFO ZF TE-ML 06B, 06F, 07B
AGRIFARM STOU 15W-40	Multipurpose lubricant for engines, gearboxes, hydraulics and gearbox/hydraulic systems both with or without integrated wet brakes.	ACEA E2 API CC/CD/CE/SE/SF API GL-3/GL-4 FORD M2C159-C JDM J 27 MB 227.1 MIL-L-2104 D ZF TE-ML 06	API CC/CD/CE/SE/SF API GL-3/GL-4 FORD M2C159-C JDM J 27 MB 227.1 MIL-L-2104 D ZF TE-ML 06
AGRIFARM STOU 15W-30	Multipurpose lubricant for engines, gearboxes, hydraulics and gearbox/hydraulic systems both with or without integrated wet brakes.	ACEA E2 API CC/CD/CE/SE/SF API GL-3/GL-4 FORD M2C159-C JDM J 27 MB 227.1 MIL-L-2104 D ZF TE-ML 06	API CC/CD/CE/SE/SF API GL-3/GL-4 FORD M2C159-C JDM J 27 MB 227.1 MIL-L-2104 D ZF TE-ML 06

The products listed here are just a part of our entire product line. Additional specialities are available on request. Edition 02/2007.



Products for the most demanding applications:

Engine Oils



Premium		Tested to and recommended by
AGRI FARM MOT 10W-40	AGRI FARM MOT 10W-40 is an advanced, high-performance engine oil incorporating the latest conception of the SAE grade 10W-40. It was developed for advanced diesel engines which made high demands on service intervals and engine cleanliness. AGRI FARM MOT 10W-40 is recommended for normally aspirated and turbocharged engines.	ACEA E7/E5/E3 API CI-4 CAT ECF-1 CAT TO-2 CUMMINS CES 2007 1/2/6/7/8 DAF GLOBAL DHD-1 IVECO MACK EO-M PLUS MAN M 3275 MB 228.3/229.1 MTU DDC Type-2 SCANIA (Euro 4) VOLVO VDS-3

Basic		Tested to and recommended by
AGRI FARM MOT 15W-40	AGRI FARM MOT 15W-40 is a super-long-life, all-season, SHPD oil for normally aspirated and turbocharged diesel engines in tractors and other machinery which make high demands on service intervals and engine cleanliness.	ACEA E7/E5/E3 API CI-4 ALLISON C-4 CAT TO-2 CUMMINS CES 2007 1/2/6/7/8 GLOBAL DHD-1 MACK EO-M PLUS MAN M 3275 MB 228.3 MTU DDC Type-2 RENAULT RD/RLD VOLVO VDS-3

Gearbox-Hydraulic Oils



Premium		Tested to and recommended by
AGRI FARM UTTO MP	Gearbox-hydraulic fluid for corresponding systems fitted with integrated wet brakes and/or wet clutches in agricultural and other machinery.	ISO VG 32-68 ALLISON C-4 CASE MS 1207/1209/1210 CAT TO-2 FORD M2C86-C FORD M2C134-D HVL/HVLP-D/HLP JDM J 20C MAT 3525 MF M 1127/1135/1141/1143 STEYR 397.88.0001 ZF TE-ML 03E, 05F

Basic		Tested to and recommended by
AGRI FARM UTTO LN	AGRI FARM UTTO LN was developed as a problem-solver for tractors in which conventional UTTO oils led to noisy wet brakes.	API GL-4 ISO VG 32-68 UTTO (TOU) e.g. New Holland, FIAT, FORD, CASE IH, John Deere, MF a.o.

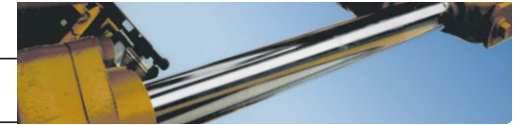
Gear Oils



Premium		Tested to and recommended by
AGRI FARM GEAR 80W-90	Multigrade gear oil for synchromesh and non-synchromesh gearboxes as well as axles, power distributors, intermediary and auxiliary gearboxes in vehicles and machinery.	API GL-4/GL-5 MIL-L-2105 D
AGRI FARM GEAR 85W-140	Multigrade gear oil for synchromesh and non-synchromesh gearboxes as well as axles, power distributors, intermediary and auxiliary gearboxes in vehicles and machinery.	API GL-4/GL-5 MIL-L-2105 D

Basic		Tested to and recommended by
AGRI FARM LS 90	Special EP gear oil for axles fitted with limited-slip differentials in agricultural and other machinery.	API GL-5 Limited Slip ZF TE-ML 05C, 12C, 16E

Hydraulic Oil



Premium		Tested to and recommended by
AGRI FARM HYDRATEC HVI 46	EP lubricating and hydraulic oil with a high viscosity index.	DIN 51524 T3: HVLP ISO 6743-4: HV ISO VG 46 AFNOR NFE 48603 HV

Greases



Premium		Tested to and recommended by
AGRI FARM PROTEC 2	Based on lithium/calcium soap, selected base oils and special additives, AGRI FARM PROTEC 2 is a high-quality, ageing-resistant long-life grease. It provides good EP performance, good wear and corrosion protection, excellent water resistance, good working stability and displays good adhesion to metals.	ISO-L-X-BCHB 2 KP 2 K-20
AGRI FARM HITEC 2	AGRI FARM HITEC 2 is an all-round, lithium complex soap grease for long-term lubrication. It displays good thermal and mechanical resistance, good working stability, water-resistance and out-standing corrosion protection.	ISO-L-X-BEHB 2 KP 2 P-20

Basic		Tested to and recommended by
AGRI FARM FLOWTEC 000	AGRI FARM FLOWTEC 000 is a high-quality, ageing resistant semi-fluid grease based on a lithium soap, selected base oils and special additives offering excellent corrosion protection. It is temperature-stable, provides good EP performance, reduces wear, is water-resistant, displays good adhesion to metals and is fully suitable for central lubrication systems even at low temperatures.	ISO-L-X-DBIB 00/000 GP 00/000 G-40

Milking Machine Oil



		Tested to and recommended by
AGRI FARM MILKING MACHINE OIL	AGRI FARM MILKING MACHINE OIL is an universal milking machine oil and was specially developed for use in the vacuum pumps of milking machines. It contains additives which protect against wear and corrosion and combat foaming. These features increase the functional reliability of such systems.	ALFA LAVAL WESTFALIA

Chain Saw Oil



		Tested to and recommended by
AGRI FARM CHAIN SAW OIL	AGRI FARM CHAIN SAW OIL is a high-viscosity, highly-adhesive lubricant specially developed for all chain saws with pressurized chain oiling.	DOLMAR, STIHL HUSQUARNA, SLO

This guide explains the different lubricants available for agricultural machinery 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.

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.

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.

Special agricultural lubricants (STOU / UTTO)

These are the oils used primarily in the gearboxes and hydraulic systems of tractors and other agricultural machinery with or without wet brakes. Our STOU and UTTO.

Both were developed for use in gearboxes and in hydraulic systems, irrespective of whether the brakes of the machine are wet or dry.

In addition, STOU / MFOs can also be used in engines.

The following applies in principle: A STOU is a UTTO with engine use performance! This is a simple differentiation. The table on the right offers an overview.

Limited Slip (LS)

LS oils are also included in special agricultural lubricants. These are gear oils for limited slip differentials which guarantee perfect functionality and low noise under all loads.

Equipment	UTTO	STOU	MFO
Internal combustion engines (with or without turbocharging)		●	●
Manual gearboxes (SAE 80W)	●	●	●
Gearboxes and gear-box-hydraulic systems with or without integrated wet brakes	●	●	●
Hydraulic systems	●	●	●
Final drives	●	●	●
Final drives with off-set pinions			●

UTTO = Universal Tractor Transmission Oil
STOU = Special Tractor Oil Universal
MFO = Multifunctional Oil

Important OEM Specifications in Agriculture

Manufacturer	Specification	Lubricant Type
CASE	MS 1207	UTTO SAE 10W-30
	MS 1209	UTTO SAE 10W-40
	MS 1316	Gear oil, SAE 80W-90, SAE 85W-140, API GL-5
	MS 1317	Gear oil, SAE 80W-140 with wet brakes
	MAT 3525	UTTO
FORD	M2C159-B	STOU, SAE 10W-30, 15W-30, 20W-40
	M2C86-C	UTTO (Europe)
	M2C134-D	UTTO (USA)
JOHN DEERE	JD J 20 C	UTTO, SAE 10W-30
	JD J 27	STOU, SAE 10W-30, SAE 15W-40
MASSEY FERGUSON	M 1139	STOU, SAE 15W-40
	M 1144	STOU, SAE 5W-30 to 20W-40, API CD
	M 1135	UTTO
	M 1143	UTTO
	M 1145	STOU / UTTO
ZF	ZF TE-ML 06 B/C/D/F	STOU
	ZF TE-ML 06 E/K	UTTO
New Holland	NH 405	UTTO, SAE 5W-20
	NH 410 A	UTTO, SAE 20W-30, SAE 10W-30
	NH 410 B	UTTO, SAE 10W-30
	NH 410 C	UTTO optimized for wet brakes
	NH 420	UTTO as NH 410 B and NH 410 C
	NH 520 B	LS gear oil, SAE 85W-90
	NH 524 A	Gear oil, SAE 85W-140