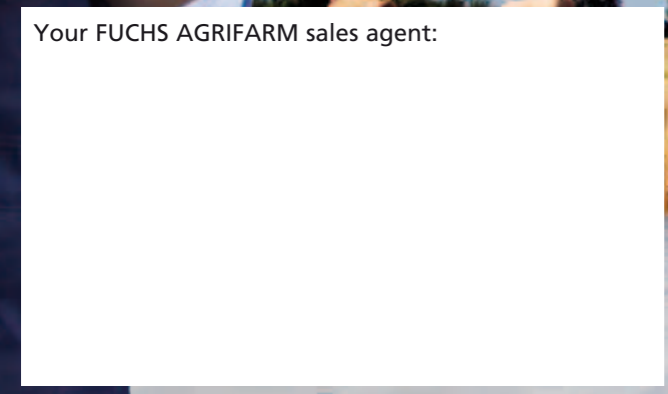




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Agricultural Lubricants 2011



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

High Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM STOU MC PRO SAE 10W-40	Ultra high-performance multifunctional oil (STOU/MFO) of the latest generation for agricultural vehicles. SAE J300: SAE 10W-40 SAE J306: SAE 75W-90 DEUTZ DQC III	ACEA E7(E5/E3),E4 API CI-4, API GL-3/GL-4/API GL-5 in tractors* MAN 3275 AFNOR NFE 48603 HV ALLISON C-4 CASE MS 1207, 1209, 1210, 1230 CNH MAT 3505, 3509, 3525, 3526 DIN 51524-3: HVLP (-D) FNHA 2C-200.00, 201.00 FORD M2C48-C3, M2C86-B, M2C134-D, M2C159-B/C JOHN DEERE JDM J20 C NEW HOLLAND 82009201/2/3 NH 030C, NH 330G, HN 330H, NH 410B, HN 420A, NH 526C MASSEY FERGUSON CMS M 1145 (1135/1139/1143/1144) ZF TE-ML 06A, 06B, 06C, 06F, 06L, 07B * without HOLMER
Medium Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM STOU MC SAE 10W-40	Super high-performance multifunctional low-friction oil (STOU / MFO) based on MC-base-oil technology for engines, manual gearboxes, wet brakes, hydraulics and turbo-drives in tractors and other agricultural and other commercial vehicles. SAE J300: SAE 10W-40 SAE J306: SAE 75W-90 API CG-4 API GL-4 DEUTZ DQC I ZF TE-ML 06B, 06F, 07B	API GL-5 in tractors* ACEA E3 MAN 271 AFNOR NFE 48603 HV ALLISON C-4 CASE MS 1207, 1209, 1210, 1230 CNH MAT 3505, 3509, 3525, 3526 DIN 51524-3: HVLP (-D) FORD M2C134-D M2C159-B/C FNHA 2C-200.00, 201.00, FORD M2C48-C3, M2C-86 B John Deere JDM J 20 C NEW HOLLAND 82009201/2/3 NH030C, NH330G, NH410B, NH420A, NH 526C MASSEY FERGUSON CMS M 1145 (1135/1139/1143/1144) ZF TE-ML 06A, 06C, 06L * without HOLMER
AGRIFARM STOU MC SAE 10W-30	MC-synthesis super high performance multifunctional, fuel-economy oil (STOU/MFO) for engines, manual gearboxes, wet brakes, hydraulics and turbo-drives in tractors and other agricultural machinery. SAE J300: SAE 10W-30 SAE J306: SAE 75W-80 API CG-4 API GL-4 DEUTZ DQC I ZF TE-ML 06B, 06F, 07B	AFNOR NFE 48603 HV DIN 51524-3: HVLP (-D) ACEA E3 ALLISON C-4 CASE MS 1207 / 1209 / 1210 / 1230 CNH MAT 3505 / 3509 / 3525 / 3526 FORD M2C48-C3, M2C86-B, M2C134-D, M2C159-B/C JOHN DEERE JDM J20 C NH 82009201/2/3 NH 410 B, NH 420 A MASSEY FERGUSON CMS M 1145 (1135/1139/1143/1144) ZF TE-ML 06A, 06C
Standard Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM STOU M SAE 15W-30 SAE 15W-40	High performance multifunctional oil (STOU / MFO) for engines, manual gearboxes, wet brakes, hydraulics in tractors and other agricultural equipment. API CF-4 API GL-4	ACEA E2 CNH MAT 3525, 3526 DIN 51524 : HLP (-D) FNHA 200.00, 201.00 FORD M2C134-D, M2C159-B/C JOHN DEERE JDM J 20 C MASSEY FERGUSON CMS M 1145 (1135/1139/1143/1144) NH 82009201/2/3 NH 420 A SDFG OU 1391 OT 1891 STEYR D-401 ZF TE-ML 06A, 06B, 06C, 07B

The information contained in this product information is based on the experience and know-how of FUCHS EUROPE SCHMIERSTOFFE GMBH in the development and manufacturing of lubricants and represents the current state-of-the-art. The performance of our products can be influenced by a series of factors, especially the specific use, the method of application, the operational environment, component pre-treatment, possible external contamination, etc. For this reason, universally-valid statements about the function of our products are not possible. The information given in this product information represents general, non-binding guidelines. No warranty expressed or implied is given concerning the properties of the product or its suitability for any given application.

We therefore recommend that you consult a FUCHS EUROPE SCHMIERSTOFFE GMBH 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. With the publication of this product information, all previous editions cease to be valid.

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The products listed here are just a part of our entire product line. Additional specialities are available on request. Edition 03/2011.

Products for the most demanding applications:

Engine Oils



High Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM MOT SAE 10W-40 Ultra high-performance motor oil of 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. Specially recommended for normally aspirated and turbocharged engines.	ACEA E7 API CI-4 GLOBAL DHD-1 JASO DH-1 DEUTZ DQC III	ALLISON C-4 CUMMINS CES 20071/2/6/7/8 DAF MACK EO-M PLUS MAN M 3275 MTU DDC TYPE-2 RENAULT RLD / RLD-2 VOLVO VDS-3

Medium Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM MOT SAE 15W-40 Super high-performance motor 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 API CI-4 GLOBAL DHD-1 CAT ECF-1-a/ECF-2 DEUTZ DQC III	ALLISON C-4 CAT TO-2 CASE MS 1121 CUMMINS CES 20071/2/6/7/8 DAF IVECO 18-1804 CLASSE T2 E7 MACK EO-M PLUS MAN M 3275 MTU DDC TYPE-2 NH 330 H RENAULT RLD / RLD-2 STEYR A-201 VOLVO VDS-3

Gearbox-Hydraulic Oils



Medium Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM UTTO MP Super high-performance oil (UTTO/MFO) for use in transmission and hydraulic systems with integrated wet brakes, clutches and differentials for agricultural and construction machinery.	SAE J300: 15W-30 SAE J306: 75W-80 API GL-4 ZF TE-ML 03E, 05F, 17E	AGCO Powerfluid 821 XL AGCO Q-186 (Whitefarm) ALLISON C-4 CASE MS 1230, 1210, 1209, 1207, 1206 CLAAS / LANDINI / SAME-Transmission CNH MAT 3525, 3526, 3510, 3509, 3506, 3505 FNHA-2-C-200.00 / -201.00 FORD M2C48-C3 ESN M2C86-B/C FORD M2C134-D JOHN DEERE JDM J20C MASSEY FERGUSON CMS M 1145 (1135/1141/1143) NH 410 B SDFG OT 1891 A ZF TE-ML 06K
AGRIFARM UTTO LN Super high-performance transmission-hydraulic fluid developed as a problem-solver for tractors in which conventional UTTO oils led to noisy wet brakes	SAE J300: 20W-30, SAE J306: 80W-85 API GL-4	AGCO Powerfluid 821 XL AGCO Q-186 (Whitefarm) ALLISON C-4 CASE MS 1230, 1210, 1209, 1207, 1206 CNH MAT3505, 3506, 3509, 3510, 3525, 3526 FNHA-2-C-200.00 / -201.00 FORD M2C48C3 ESN M2C86-B/C FORD M2C134-D JOHN DEERE JDM J20C MASSEY FERGUSON CMS M 1141/1135 CLAAS / LANDINI / SAME-Transmission / DEUTZ-FAHR FENDT (non Vario)



Gear Oils

Medium Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM GEAR SAE 80W-90 Super high-performance 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 ZF TE-ML 05A, 21A	MIL-L-2105 D NH 520 A STEYR B-101

Gear Oils



Medium Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM GEAR SAE 85W-140 Super high-performance 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 ZF TE-ML 05A, 21A	MIL-L-2105 D
AGRIFARM GEAR LS SAE 90 Super high-performance EP gear oil for axles fitted with limited-slip differentials in agricultural and other machinery.	API GL-5	CASE MS 1317 NH 520 B SDFG OP 1705 LS ZF TE-ML 05C, 12C, 16E

Hydraulic Oil



High Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM HYDRATEC HVI 46 Ultra high-performance EP-lubricating and hydraulic oil with high viscosity index.	DIN 51524-3, HVLP HVLP ISO 6743-4: HV	CASE MS 1230 Cincinnati Milacron DENISON HF0 Bosch Rexroth Vickers US Steel NH 646 H SDFG OI 1446 HV

Milking Machine Oil



High Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM MILKING MACHINE OIL Super high-performance milking machine oil specially developed for use in the vacuum pumps of milking machines. It contains additives which protect against wear and corrosion and foaming. These features increase the functional reliability of such systems.		ALFA LAVAL WESTFALIA

Chain Saw Oil



Medium Quality	Specifications/ approvals	FUCHS recommendations
AGRIFARM CHAIN SAW OIL Super high-performance chain lube oil specially developed for all chain saws with pressurized chain oiling.		DOLMAR HUSQVARNA SOLO STIHL

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	Ultra High Performance Diesel (UHPD) engine oils.
E5	Heavy-duty use / Euro 1, 2 and 3 / extended intervals possible / performance similar to E3, additional wear test on American engines.
E6	Ultra High Performance Diesel (UHPD) engine oils. E6 is based on E4 with SAPS threshold for commercial diesels fitted with exhaust treatment such as DPF, EGR and SCR.
E7	Ultra High Performance Diesel (UHPD) engine oils for commercial diesels which operate in very difficult conditions.
E9	Ultra High Performance Diesel (UHPD) engine oils with SAPS threshold. Recommended for commercial diesels fitted with exhaust treatment such as DPF, EGR and SCR.

API

Diesel engines (C = Commercial):

Indirect injection diesel engines

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

Direct injection diesel engines

API CE Heavy-duty and turbocharged diesel engines. Improved characteristics regarding oil consumption, oil thickening, piston coking and wear.

API CF-4 Surpasses API CE regarding piston coking and oil consumption. For higher-speed diesel engines (Standard exists since 1990).

API CG-4 For high performance diesel engines and fuel sulphur < 0.5%. Required for engines complying with German 1994 emission regulations.

API CH-4 Since September 1998, for 1998 emission regulations for trucks in the USA. Surpasses API CG-4.

API CI-4 Since March 2003, for engine emissions according to TIER II (US exhaust emission regulations), surpasses CH-4.

API CJ-4 Valid since 2006. For commercial vehicles with high-speed four-stroke engines fulfilling US 2007 emission standards when using diesel fuel with max. 500 ppm sulphur.

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 STOUs and UTTOs.

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, STOUs / 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 gearbox-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	