RENOLIN / RENOLIT / PLANTO

Lubricants for the paper industry

LUBRICANTS.
TECHNOLOGY.
PEOPLE.

FUCHS

LUBRICANTS.
TECHNOLOGY.
PEOPLE.

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

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.

Facts and figures

Holding company: FUCHS PETROLUB SE
Headquaters in Mannheim, Germany
Established 3 generations ago as a family-owned business
References: The world´s largest independant lubricant manufacturer with more than 100,000 customers
Companies worldwide: 57
Employees: Approx. 5,000 employees, over 400 of these in the department research and development
Product program: A full range of over 10,000 lubricants and related specialties

FUCHS SCHMIERSTOFFE GMBH
A company of the FUCHS Group
Headquarters: Mannheim
Other plants in Wedel, Kiel, Dormagen
Employees: more than 800 employees
Certifications: DIN ISO/TS 16949, DIN ISO 14001, BS OHSAS 18001, ISO 50001
References: One of the leading lubricants OEM for the German automotive industry

FUCHS has developed, produced and sold lubricants and related specialties for more than 85 years – for virtually all areas of application and sectors. With over 100,000 customers and 60 companies worldwide, the FUCHS Group is the leading independent supplier of lubricants.

A team of more than 800 specialists across Germany works to guarantee the satisfaction of our customers. Whatever their requirements, we have 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.

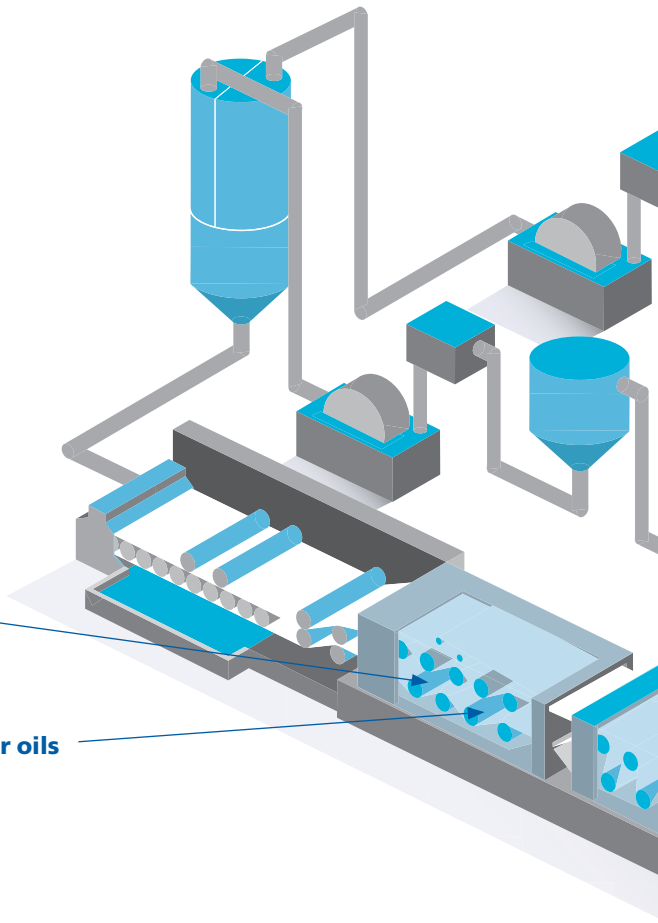
FUCHS lubricants stand for performance and sustainability, for safety and reliability, for efficiency and cost savings. They represent a promise: technology that pays off.

REQUIREMENTS OF PAPER MACHINE LUBRICANTS

The daily paper requirements of our modern society require huge quantities to be produced by paper and tissue manufacturers. Indeed, according to the Association of German Paper Manufacturers (VDP), around 22.6 million tons of paper and cardboard were produced in Germany alone in 2015. The paper machines used – the central units of any paper mill – therefore clearly need to be extremely reliable. The lubrication of the components employed in the wet end and dryer sections makes a significant contribution to this requisite reliability. Consequently, paper machine lubricants used in the wet end production sections must meet strict requirements in terms of corrosion protection and water resistance, while those used in the dryer sections need to provide both oxidative and thermal resistance. In addition to this, excellent wear protection must generally be guaranteed in all lubricated components.

However, the framework conditions in the paper machine are becoming more complex and the requirements ever stricter. Ever larger working widths (up to 12 m) and production speeds (up to 2,000 m / min), coupled with higher temperatures, inline calendering processes and new kinds of drying systems (boost dryers), are placing ever stricter requirements on the lubricants used in paper machines.

FUCHS has developed a complete range of lubricants for this field and offers the right lubricant for every application.

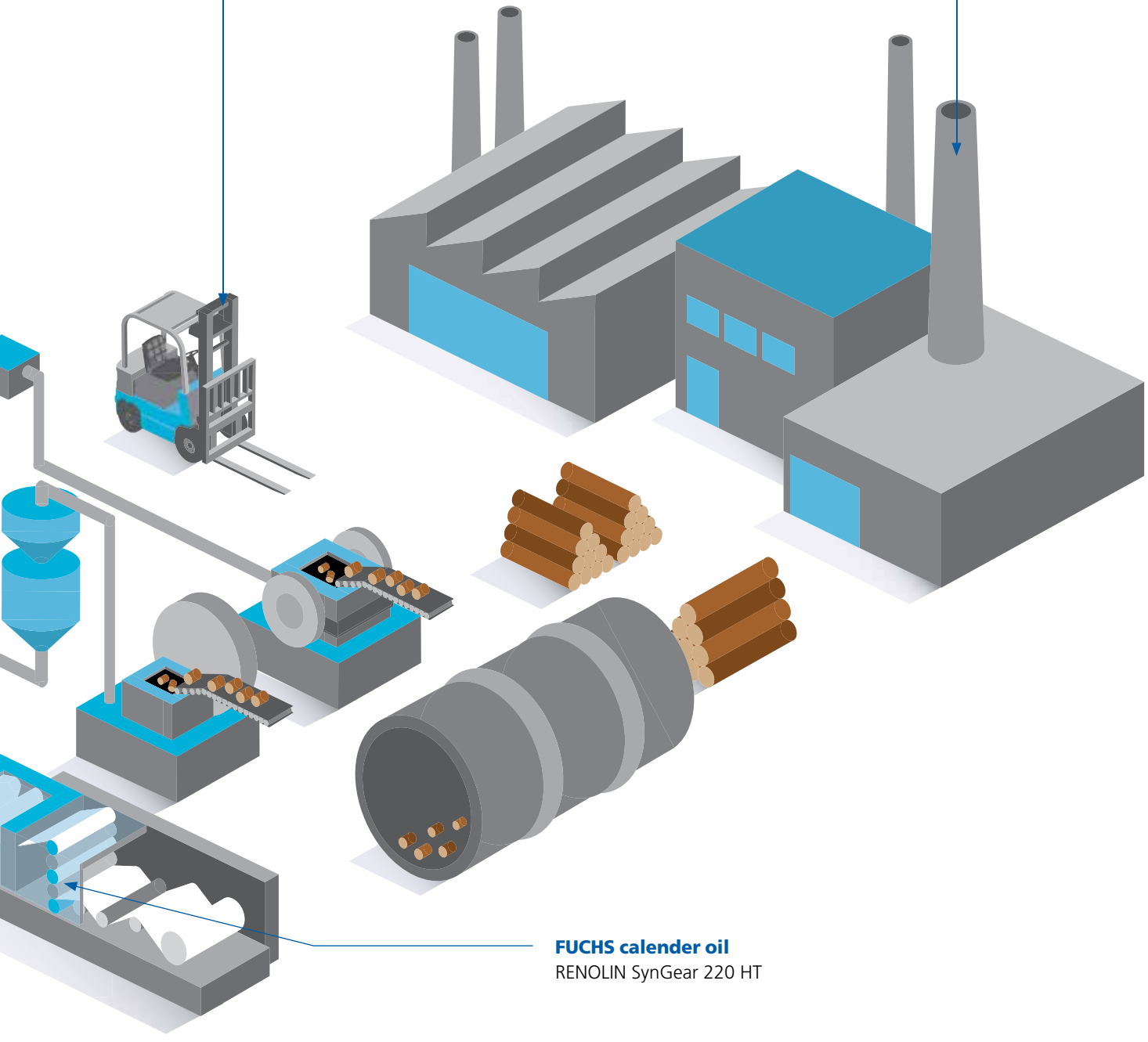


FUCHS Greases
RENOLIT CSX 15
RENOLIT HI-TEMP-SERIES
RENOLIT CX-TOM 15
RENOLIT LX-PEP-SERIES
RENOLIT DURAPLEX EP-SERIES
RENOLIT LZR 2 H
RENOLIT CX-EP-SERIES
RENOLIT EP X1
RENOLIT ST-FTM-SERIES
RENOLIT ST 8-081/2
RENOLIT CHUCK PASTE
RENOLIT PASTE PW

FUCHS lubricanting and gear oils
RENOLIN UNISYN CLP PA-SERIES
RENOLIN PA-SERIES
RENOLIN NF PRESS 100
RENOLIN DTA-SERIES
RENOLIN CLP-SERIES
RENOLIN PG-SERIES
PLANTOGEAR S-SERIES

FUCHS hydraulic oils
RENOLIN B-SERIES
RENOLIN ZAF-SERIES
RENOLIN MR-SERIES
RENOLIN MR MC-SERIES
PLANTOHYD S-SERIES
PLANTOSYN HVI-SERIES

FUCHS turbine oils
RENOLIN ETERNA-SERIES
RENOLIN ETERNA SGV-SERIES



FUCHS calender oil
RENOLIN SynGear 220 HT

RENOLIN UNISYN CLP PA-SERIES – fully synthetic (PAO)

RENOLIN UNISYN CLP PA oils are fully synthetic, newly developed high-performance paper machine oils based on polyalphaolefins. They boast excellent demulsibility, high resistance to aging, excellent wear protection and very good corrosion protection. The products possess a high, shear stable viscosity index, good filterability and show very low deposit formation.

They are available in all common ISO VG classes from 100 to 680. Fulfilling and exceeding the requirements of gear oils according to DIN 51517-3: CLP-HC.

RENOLIN UNISYN CLP 220 PA fulfills and even exceeds the requirements of paper machine oils according to the specifications of SKF, FAG, Voith and Valmet.

SKF roller test (8 weeks at 140 °C): RENOLIN UNISYN CLP 220 PA displays neither sludge formation, incrustations nor any signifi cant changes in viscosity.

RENOLIN UNISYN CLP 220 PA:
Excellent thermal and oxidative stability

Competitor product (PAO-based):
Poor thermal and oxidative stability

RENOLIN UNISYN CLP 220 PA: Development and test results (selected examples)

Criterion	Test	Result	Test passed
Wear protection	FAG FE8 D / 7.5 / 80–80	Roller bearing wear <10 mg	yes
	FAG FE 8 paper machine test (FAG test at 120 °C)	Passed	yes
	FZG test A / 8.3 / 90 (DIN ISO 14635-1)	Failure load stage >12	yes
Corrosion protection	"Steel Rod" test with distilled water (procedure A) and with synthetic process water (procedure B; acc. to ISO 7120)	Corrosion degree 0 – no corrosion Corrosion degree 0 – no corrosion	yes
	Copper corrosion 100 A3 (ISO 2160)	Corrosion degree 1 – no corrosion	yes
	SKF Emcor test with process water (mod. ISO 11007; SKF test)	Corrosion degree 1 – no corrosion	yes
Aging stability	SKF roller test (in-house SKF test)	Passed	yes
	SKF aging test (in-house SKF test)	Passed	yes

RENOLIN PA-SERIES / NF PRESS 100 – based on mineral oil

The products of the **RENOLIN PA-SERIES** are paper machine oils based on selected mineral oils in combination with zinc-containing EP / AW active substances (EP = Extreme Pressure, AW = Anti-Wear) play an important role for improved wear protection. The RENOLIN PA-SERIES guarantees optimum wear protection, excellent demulsibility, outstanding resistance to aging and good compatibility with the kinds of elastomers typically used in paper machines. The oils exceed the requirements of CLP gear oils according to DIN 51517-3.

The benefits for you

- Optimum wear protection for bearings and gears
- Outstanding resistance to aging and oxidation stability
- Minimum foaming tendency
- Good compatibility with elastomer materials

Corrosion behaviour acc. to DIN ISO 7120 („Steel Rod" test): Visual inspection after test

passed RENOLIN PA 220 | moderate | poor

„Steel Rod" test – results:
RENOLIN PA 220 shows excellent corrosion protection, both with distilled water and synthetic process water: Corrosion degree 0 / 0 – no corrosion.

RENOLIN NF PRESS 100 is a zinc- and ash-free hydraulic oil for the use in hydraulic presses (shoe presses) in paper machines.
It fulfills and exceeds the requirements acc. to Voith VN 108 for hydraulic rollers.

The benefits for you

- Excellent ageing and oxidation stability
- Very low deposit formation
- Perfect wear protection
- Good compatibility with elastomer materials

RENOLIN ETERNA-SERIES

Steam generation

The majority of overhead costs in paper mills are due to energy generation in the dryer section. The media used here must comply with strict efficiency and reliability requirements. For example, the steam generated via a combined heat and power system is used to dry the paper web in the dryer section.

For the **RENOLIN ETERNA-SERIES** the latest generation of base-oils are chosen for use in gas and steam turbines employed in paper mills. Products of the RENOLIN ETERNA-Series display outstanding oxidative and thermal stability (>10,000 h in the TOST test acc. to ISO 4263) and possess both a naturally high, shear stable viscosity index and mild EP additivation. They fulfill and even exceed the requirements of many specifications of the turbine manufacturers such as Siemens Power Generation, GE and MAN Turbo AG.

The benefits for you

- Long shelf life of the turbine oil
- Unique thermal stability
- Varnish prevention due to excellent ageing resistance (no/low varnish oils)
- Outstanding hydrolytic stability
- Excellent corrosion protection

MAN HT test (high temperature & filtration test, MAN Oberhausen, Germany):
RENOLIN ETERNA 32 fulfills and exceeds the requirements of the MAN HT test with excellent results. RENOLIN ETERNA has excellent wear properties and a excellent oxidation stability, as well as very good thermal and oxidative resistance.

RENOLIN ETERNA 32
Fresh oil sample
Room temperature

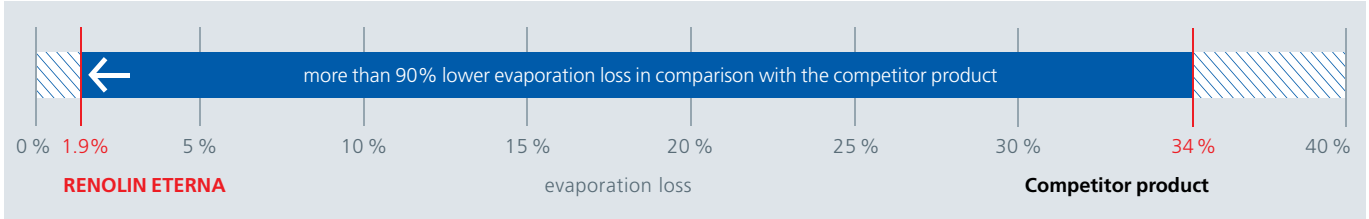
RENOLIN ETERNA 32
Fresh oil sample 120 °C

RENOLIN ETERNA 32
Fresh oil sample 150 °C

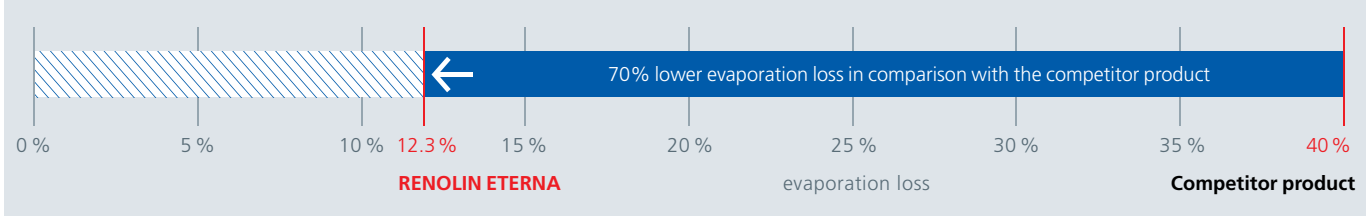
RENOLIN ETERNA 32
Fresh oil sample 180 °C

Source: MAN Diesel & Turbo SE

Results of RENOLIN ETERNA: Aging behaviour in the SKF aging test (at 120 °C)
Evaporation loss in % after 2 weeks compared to competitor product



Evaporation loss in % after 4 weeks compared to competitor product



RENOLIN SynGear 220 HT – fully synthetic (polyalkylene glycol = PAG)

Surface finishing

Heated steel rollers, so-called calenders, are used in the production of calendered paper. These rollers and corresponding bearings reach temperatures of up to 250 °C and above, which requires high thermal stability of the oils used.

Fully synthetic high-temperature EP industrial gear and calender oil based on selected polyalkylene glycols, offering extreme high-temperature stability, low evaporation loss and a excellent wear protection (FZG A/8.3/90: >14).

In aging tests, **RENOLIN SynGear 220 HT** shows high thermal and oxidative resistance. Particularly well-suited for lubricating plain and roller bearings in paper and foil calenders.

The benefits for you

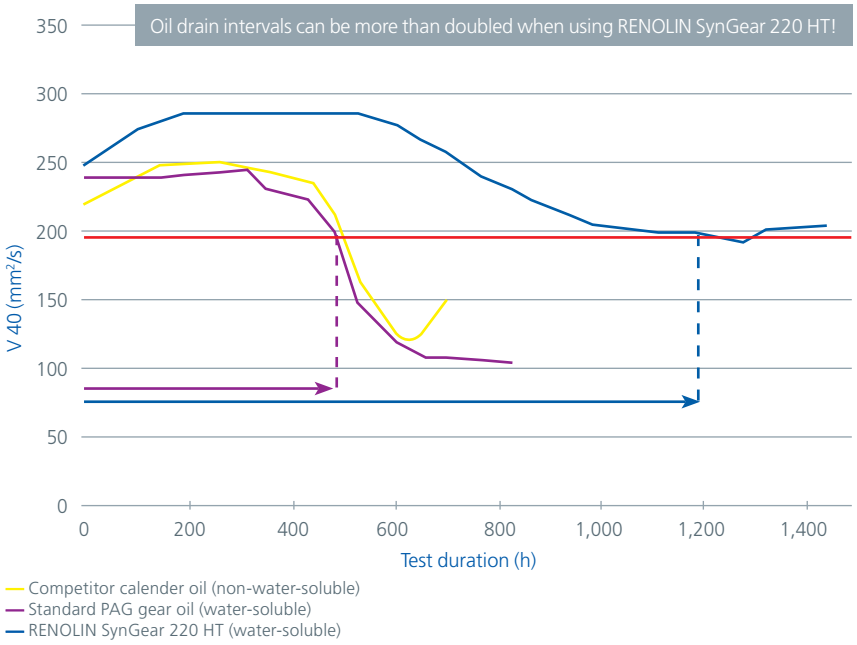
- Longer oil change intervals thanks to high aging stability and low evaporation tendency
- Increased efficiency
- Reduced temperatures
- Reliable prevention of deposits

When compared with other PAG-based lubricating oils, **RENOLIN SynGear 220 HT** offers more than twice the service life. Unlike mineral oil-based lubricants, polyalkylene glycols initially display a decrease in viscosity when exposed to high thermal stress levels.

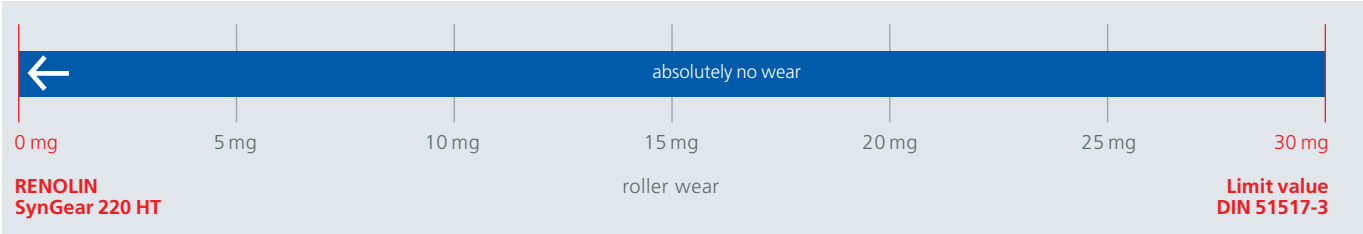
This reduction in viscosity can cause issues with the formation of lubricating films. A lower viscosity limit of 198 mm²/s was therefore specified for the aging test (ISO VG 220 – 10 % = 198 mm²/s) to guarantee unimpaired lubrication of the machine elements.

Please contact FUCHS application engineers for additional information. Changeover guidelines must be observed.

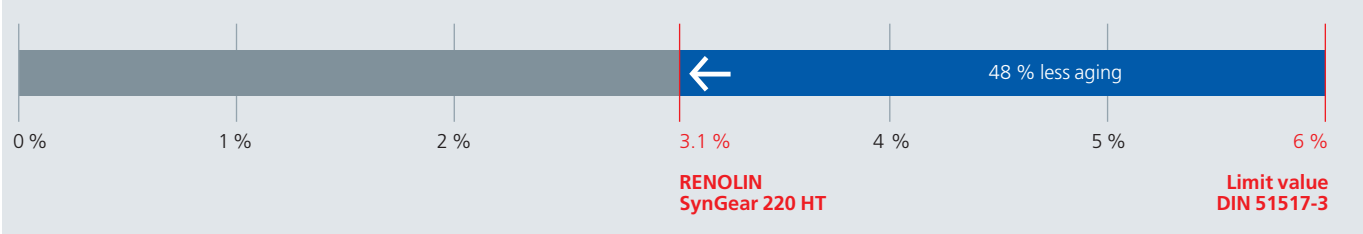
Aging test at 150 °C and 10 L air/h:
Change in kinematic viscosity at 40 °C

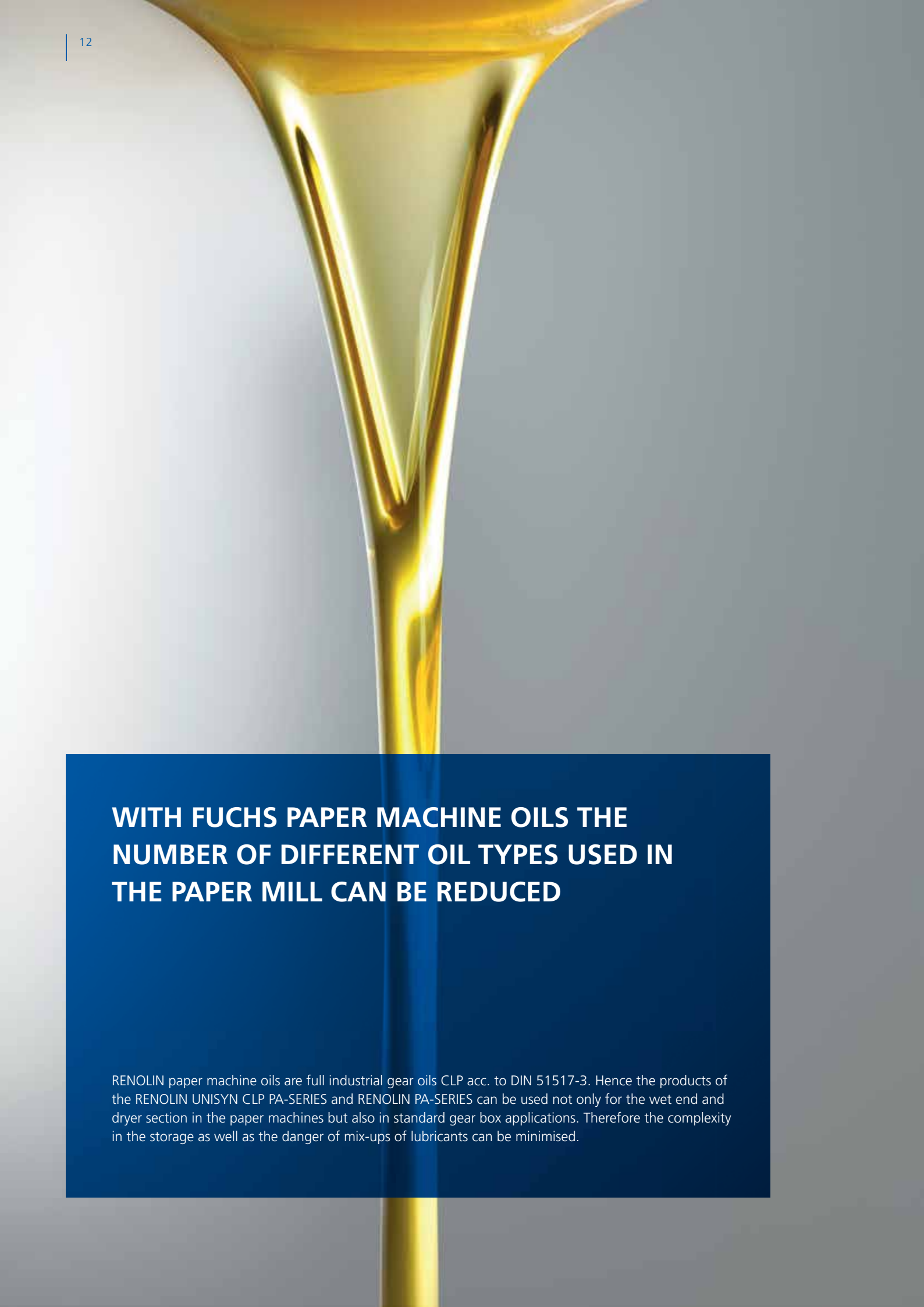


Results of RENOLIN SynGear 220 HT
Wear protection in the FAG FE 8 test D 7.5 / 80-80 (acc. to DIN 51819-3) compared to limit value DIN 51517-3: roller wear max. 30 mg



Aging stability of RENOLIN SynGear 220 HT in the S-200 oxidation test (312 h / 150 °C) (acc. to ASTM D 2893/ DIN EN ISO 4263-4) compared to limit value ISO 12925-1: viscosity increase (V100): max. 6% (limit values for industrial gear oils)

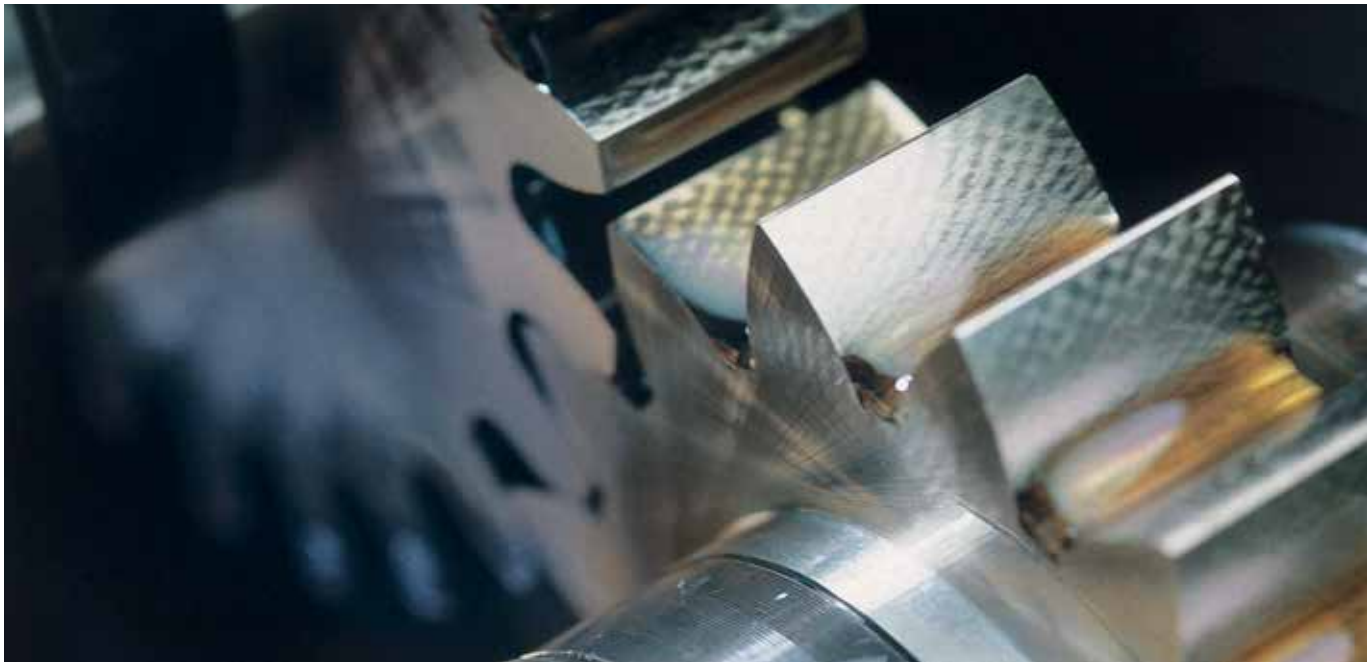




WITH FUCHS PAPER MACHINE OILS THE NUMBER OF DIFFERENT OIL TYPES USED IN THE PAPER MILL CAN BE REDUCED

RENOLIN paper machine oils are full industrial gear oils CLP acc. to DIN 51517-3. Hence the products of the RENOLIN UNISYN CLP PA-SERIES and RENOLIN PA-SERIES can be used not only for the wet end and dryer section in the paper machines but also in standard gear box applications. Therefore the complexity in the storage as well as the danger of mix-ups of lubricants can be minimised.

RENOLIN lubricating and gear oils for paper mills



Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
RENOLIN PA-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN PA 150	Mineral oil based, zinc containing paper machine oils. RENOLIN PA oils fulfill and exceed the minimum requirements of CLP gear oils acc. to DIN 51517-3 and of paper machine oils for the wet end and dryer section acc. to Voith VN 108.	878	>230	150	15.0	100	-30	For the use in circulating lubrication of the wet end and dryer section in paper machines, also in gearboxes and central lubricating systems. Fulfill and exceed the minimum requirements acc. to Voith VN 108.
RENOLIN PA 220		886	>230	220	19.3	99	-18	
RENOLIN UNISYN CLP PA-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN UNISYN CLP 150 PA	Fully synthetic, high performance paper machine oils based on polyalphaolefins in combination with zinc- and ash-free EP-additives. Fulfill and exceed the minimum requirements of gear oils CLP acc. to DIN 51517-3 and the specifications of the manufacturers FAG, Valmet, SKF and Voith VN 108.	857	>200	150	19.8	152	-39	For the use in circulating lubrication of the wet end and dryer section in paper machines, also in gearboxes and central lubricating systems.
RENOLIN UNISYN CLP 220 PA		859	230	220	26.5	154	-36	
RENOLIN UNISYN CLP 320 PA		864	>240	320	34.2	151	-32	
RENOLIN UNISYN CLP 460 PA		866	>240	460	46.0	156	-27	

EP = Extreme Pressure Additive, to avoid wear and scuffing at high pressures and loads
AW = Anti Wear Additive, to avoid wear in mixed friction areas

RENOLIN lubricating and gear oils for paper mills

Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
RENOLIN NF PRESS 100 – HL/CL-Oils (demulsifying)								
RENOLIN NF PRESS 100	Zinc- and ash-free hydraulic oil based on hydrogenated mineral oils for the use in hydraulic rolls in paper machines. Exceeds the requirements according to Voith VN108 for hydraulic rolls.	867	260	100	11.5	103	-36	For the use in hydraulic rolls in paper machines, e.g. Voith shoe presses.
RENOLIN DTA-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN DTA 68	Demulsifying general lubricating oils based on selected mineral oils with additives to improve ageing stability and corrosion protection. CL lubricating oils according to DIN 51517-2 (CL), CKB acc. to ISO 6743-6 as well as ISO 12925-1.	882	250	68	8.7	99	-18	For thermally-stressed bearings and hydraulic systems with peak temperatures of approx. 120 °C. General lubrication without specific wear protection requirements (without AW/EP). Also suitable for hydrodynamic drives where the use of a CL oil is recommended by the manufacturer.
RENOLIN DTA 100		881	248	100	11.2	97	-18	
RENOLIN DTA 150		889	266	150	15.5	94	-15	
RENOLIN DTA 220		893	280	220	18.8	95	-12	
RENOLIN DTA 320		898	280	320	24.0	95	-12	
RENOLIN DTA 460		904	315	460	30.4	95	-12	
RENOLIN CLP-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN CLP 68	High performance gear and lubricating oils with additives to improve corrosion protection, ageing resistance and with EP/AW additives. RENOLIN CLP oils fulfill and exceed the minimum requirements of CLP lubricating oils acc. to DIN 51517 part 3, ISO 6743-6 and ISO 12925-1: CKC, CKD. US Steel 224, David Brown S1.53.10. Approved by well-known gearbox manufacturers.	886	236	68	8.7	99	-24	Universal gear oils for industrial applications, such as in bearings, joints, spur, bevel and worm gearboxes, where the use of CLP oil is recommended by manufacturer.
RENOLIN CLP 100		890	240	100	11.2	98	-21	
RENOLIN CLP 150		894	250	150	14.5	96	-24	
RENOLIN CLP 220		896	260	220	18.9	96	-24	
RENOLIN CLP 320		900	255	320	24.0	95	-12	
RENOLIN CLP 460		901	270	460	30.4	95	-12	
RENOLIN CLP 680		918	270	680	36.8	88	-10	
RENOLIN PG-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN PG 68	Fully synthetic gear and lubricating oils based on special polyalkylene glycols (PAG), for high thermal stress. RENOLIN PG oils fulfill and exceed the minimum requirements of CLP lubricating oils acc. to DIN 51517 part 3 in combination with DIN 51502, ISO 6743-6 and ISO 12925-1: CKC, CKD, CKE, (CKS), CKT. Approved by well-known gearbox manufacturers.	1035	240	68	13.8	212	-51	For high thermally- and mechanically-stressed gears, e.g. wormgears. For the use in calenders in the paper and foil industry. Expecially for worm gear applications with steel/bronze sliding pairs. Not miscibile and compatible with mineral oils. Changeover guideline must be observerd!
RENOLIN PG 100		1043	260	100	19.6	220	-48	
RENOLIN PG 150		1051	240	150	27.0	224	-51	
RENOLIN PG 220		1075	240	220	36.8	218	-33	
RENOLIN PG 320		1075	260	320	54.4	237	-36	
RENOLIN PG 460		1075	280	460	75.1	245	-36	
RENOLIN PG 680		1075	280	680	110.3	261	-33	
RENOLIN PG 1000		1075	280	1000	162	281	-36	

Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
RENOLIN SynGear 200 HT – HL/CL-Oils (demulsifying)								
RENOLIN SynGear 220 HT	Fully-synthetic high-temperature EP industrial gear oil based on selected polyglycol (PAG). Excellent high-temperature stability, low evaporation loss, high wear protection and thermal and oxidation stability; according to DIN 51517-3 CLP-PG and ISO 6743-6 CKC/CKD/CKT.	1078	240	240	39.0	216	-36	For the use in spur and worm gearboxes with high mechanical and thermal stress. Especially for the use in calenders in the paper and foil industry. Suitable for short-term peak temperatures up to 250 °C are acceptable. Changeover guideline must be observerd!
RENOLIN 500-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN 503	High-Performance circulating and compressor oils based on hydrated mineral oils. RENOLIN 500 oils are VDL compressor oils acc. to DIN 51506. Pass and fulfill also the extended aging test (intensified by addition of iron oxide). TÜV certificates are available: 503: VDL 68 504: VDL 100 505: VDL 150 506: VDL 220	861	250	68	9.1	109	-18	Aging-resistant lubricating oils offering minimal coking. Especially for compressors outlet temperatures up to 220 °C, also for other thermally-stressed circulating systems.
RENOLIN 504		866	280	100	11.9	109	-21	
RENOLIN 505		875	275	150	15.0	100	-15	
RENOLIN 506		890	280	230	18.7	90	-12	

EP = Extreme Pressure Additive, to avoid wear and scuffing at high pressures and loads
AW = Anti Wear Additive, to avoid wear in mixed friction areas

RENOLIN hydraulic oils for paper mills

Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
RENOLIN ZAF B HT-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN ZAF B 5 HT	Demulsifying, zinc- and ash-free hydraulic and circulating oils with high oxidation and thermal stability. Fulfill and surpass the requirements of hydraulic oils according to DIN 51524-2 HLP, ISO 6743-4 HM and ISO 6713 HLP. Fulfill and surpass the requirements of gear oils according to DIN 51517-3 CLP, ISO 6743-6 CKC.	824	130	4.6	1.6	105	< -54	Universally usable as hydraulic oils (HLP) and insutrial gear oils (CLP) in different hydraulic drives, in presses and machine tools. Usable for stationary and mobile hydraulic systems.
RENOLIN ZAF B 10 HT		848	170	10	2.7	100	< -54	
RENOLIN ZAF B 22 HT		863	210	22	4.4	106	-33	
RENOLIN ZAF B 32 HT		875	220	32	5.4	96	-33	
RENOLIN ZAF B 46 HT		876	230	46	6.8	101	-24	
RENOLIN ZAF B 68 HT		882	242	68	8.8	100	-21	
RENOLIN ZAF B 100 HT		882	240	100	11.3	99	-18	

EP = Extreme Pressure Additive, to avoid wear and scuffing at high pressures and loads
AW = Anti Wear Additive, to avoid wear in mixed friction areas

Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
RENOLIN B-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN B 3 ISO VG 10	Demulsifying lubricating and hydraulic oils containing zinc with high resistance to aging and additives for improved corrosion protection. The oils exceed the requirements of HLP hydraulic oils acc. to DIN 51524-2, HM acc. to ISO 6743/4 as well as ISO 11158. DENISON HF0, HF1, HF2.	850	178	10	2.6	95	-42	As lubricating oils, particularly as hydraulic oils when high levels of resistance to aging, wear protection and demulsibility are required. Universal hydraulic oils for all hydrostatic and hydrodynamic hydraulic applications.
RENOLIN B 5 ISO VG 22		863	200	22	4.4	107	-27	
RENOLIN B 10 ISO VG 32		876	205	32	5.5	109	-24	
RENOLIN B 15 ISO VG 46		875	210	46	6.9	105	-24	
RENOLIN B 20 ISO VG 68		881	224	68	8.8	100	-24	
RENOLIN B 30 ISO VG 100		883	232	100	11.1	96	-18	
RENOLIN MR-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN MR 3 ISO VG 10	RENOLIN MR products are special HLPD lubricating and hydraulic fluids with outstanding corrosion protection and powerful cleaning and sludge carrying capacity. RENOLIN MR oils fulfill and exceed the requirements of HLPD hydraulic oils acc. to DIN 51524-2 (detergent/dispersant) and HM oils acc. to ISO 6743-4 (with high DD-performance).	852	166	10	2.6	91	-30	Heavy-duty hydraulic and gear oils with outstanding corrosion protection up to continuous temperatures of 100 °C. Also usable as running-in and anticorrosion oil.
RENOLIN MR 5 ISO VG 22		868	165	22	4.3	105	-30	
RENOLIN MR 10 ISO VG 32		875	210	32	5.4	102	-30	
RENOLIN MR 15 ISO VG 46		877	220	46	6.9	105	-27	
RENOLIN MR 20 ISO VG 68		881	225	68	8.9	105	-24	
RENOLIN MR 30 ISO VG 100		883	248	100	11.4	100	-18	
RENOLIN MR 40 ISO VG 150		889	250	150	14.8	98	-18	
RENOLIN MR MC-SERIES – HL/CL-Oils (demulsifying)								
RENOLIN MR 22 MC	Universal lubricating and hydraulic oils containing hydrocrack base oils with high viscosity index (shear stable) excellent oxidation stability and outstanding cleaning properties and sludge carrying capacity. HVLP acc. to DIN 51524-3 (detergent/dispersant) and HV acc. to ISO 6743/4.	856	200	22	4.9	153	-54	Heavy-duty hydraulic and gear oils with outstanding corrosion protection up to continuous temperatures of 100 °C. Especially for those applications which rquire detergent oils with very high shear stability. Allows oil changes intervals to be extended. Also usable as running-in and anticorrosion oil. Energy saving through high efficiency.
RENOLIN MR 32 MC		858	220	32	6.4	152	-48	
RENOLIN MR 46 MC		864	234	46	8.3	154	-48	
RENOLIN MR 68 MC		870	253	68	11.2	157	-42	

RENOLIT high-tech greases for paper mills

Brand name	Description	Main application area
RENOLIT CSX 15	Calcium sulphonate complex high-temperature grease based on mineral oil with excellent corrosion and wear protection, high resistance to aging and good pumpability. NLGI 1/2, operating temperature range -20 °C to +160 °C.	Grease for lubrication in wet section and for heavy duty applications.
RENOLIT HI-TEMP-SERIES	Lithium complex high performance grease based on fully synthetic oils (various levels of base oil viscosity from 100 to 460 mm²/s at 40 °C) with wide operating temperature range and excellent corrosion protection. NLGI 2, operating temperature range -50 °C / -40 °C to +140 °C.	Special greases for lubrication in the wet section and in the dry section, as well as plain and roller bearings in electric motors, belt rollers of conveyors, wheel bearings and cardan shafts.
RENOLIT CX-TOM 15	Calcium sulphonate complex special grease based on semi-synthetic oil with excellent corrosion and wear protection as well as high aging and media resistance. NLGI 1/2, operating temperature range -40 °C to +160 °C.	Special grease for lubrication in the wet section, as well as plain and roller bearings subjected to high loads over a wide temperature range.
RENOLIT LX-PEP-SERIES	Lithium complex special greases based on mineral oil with high mechanical resistance as well as good aging, corrosion, and wear protection. Available in NLGI 1/2, 2, 2 / 3 and 3. Operating temperature range -30 °C to +150 °C.	Universal greases for lubrication in the wet section, as well as plain and roller bearings, wheel bearings, electric motors, fans and cardan shafts.
RENOLIT DURAPLEX-SERIES	Lithium complex special greases based on mineral oil with high mechanical resistance and good wear protection. Available in NLGI 1, 2 and 3. Operating temperature range -30 °C to +160 °C.	High-grade multipurpose greases for lubrication of plain and roller bearings over a wide temperature range, e.g. in electric motors and construction machinery.
RENOLIT LZR 2H	Lithium grease based on mineral oil with good corrosion protection, high water resistance (also salt water) and excellent pumpability. NLGI 2, operating temperature range -30 °C to +140 °C.	Multipurpose grease for lubrication of plain and roller bearings, electric motors, conveyor systems and construction machinery.
RENOLIT CX-EP-SERIES	Calcium complex greases based on mineral oil with good wear protection, high resistance to weak acids and alkalis as well as excellent pumpability. NLGI 0, 1, 2 and 3, operating temperature range -30 °C to +140 °C / +150 °C.	Multipurpose greases for lubrication in the wet section.
RENOLIT EP X1	Lithium grease based on mineral oil with MoS_2, NLGI 1, -15 °C to +120 °C.	Heavy duty gear coupling grease.

Brand name	Description	Main application area
RENOLIT ST-FTM-SERIES	Synthetic high temperature grease based on an organic thickener. NLGI 1 and 2, temperature range -20 °C to +250 °C.	High temperature grease for the lubrication of e.g. pressure rolls, steamjoints, preheating rolls.
RENOLIT ST 8-081/2	High-temperature grease for plain and roller bearings in the industrial sector. NLGI 2, -20 °C to +260 °C, +280 °C for short periods.	High-temperature grease for the lubrication of e.g. pressure rolls, steamjoints, preheating rolls, lubrication points with contact with media in the bleaching, also recommended by STEINMÜLLER for smoke flue gas flaps in power stations.
RENOLIT CHUCK PASTE	Special paste to avoid fretting corrosion of threads and chucks, NLGI 2-3. Temperature range -30 °C to +155 °C.	Assembly paste for screw and plug connection, e.g. gears and electric engines.
RENOLIT PASTE PW	Special paste on calcium sulphonate soap and mineral oil as assembly paste to avoid fretting corrosion. Temperature range -20 °C to +1200 °C.	Lubrication of spline shafts with press fit or press pass connections of CVJ slines, bearing seats on knuckle pins, or spline connections in length adjusters of cardan shafts. Also usable for screw and plug connection in the high-temperature range and for spindle lubrication of hot steam valves.

PLANTO lubricating and gear oils for paper mills

Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
PLANTOGEAR HVI-SERIES – HL/CL-Oils (demulsifying)								
PLANTOGEAR 100 HVI* EU Ecolabel DE/027/177	Rapidly biodegradable and environmentally friendly, high performance gear oils based on fully-saturated synthetic esters. Comply with and exceed DIN 51517-3: CLP-E, ISO 12925-1: CKC, CKD and AGMA 9005/ E02: EP. Awarded the EU Ecolabel.	927	>270	100	–	138	-33	For highly-stressed spur, bevel, planetary and worm gears, above all in areas where leakages could present a hazard to soil and the ground or surface water. For both high and low application temperatures. Can be used as a cleaning fluid.
PLANTOGEAR 150 HVI* EU Ecolabel DE/027/178		928	>270	150	–	145	-30	
PLANTOGEAR S-SERIES – HL/CL-Oils (demulsifying)								
PLANTOGEAR 220 S* EU Ecolabel DE / 027 / 102	Rapidly biodegradable high-performance gear oils based on special, fully-saturated esters. „Self-Cleaning Oils". Exceed DIN 51517-3 in combination with DIN 51502, ISO 6743-6 and ISO 12925-1: CKC, CKD, CKE and AGMA 9005/E02: EP. Awarded the EU Ecolabel.	938	280	220	26.2	152	-30	For highly-stressed spur, bevel, planetary and worm gears, above all in areas where leakages could present a hazard to soil and the ground or surface water. For both high and low application temperatures. Can be used as a cleaning fluid.
PLANTOGEAR 320 S* EU Ecolabel DE/027/103		943	280	320	35.1	155	-30	
PLANTOGEAR 460 S* EU Ecolabel DE/027/107		951	280	460	48.0	163	-30	
PLANTOGEAR 680 S* EU Ecolabel DE/027/108		958	280	680	66.0	170	-30	

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PLANTO hydraulic oils for paper mills

Brand name	Description	Density at 15 °C [kg/m³]	Flash point (COC) [°C]	Kin. viscosity at 40 °C [mm²/s]	Kin. viscosity at 100 °C [mm²/s]	VI (viscosity index)	Pour-point [°C]	Main application area
PLANTOHYD S-SERIES – HL/CL-Oils (demulsifying)								
PLANTOHYD 15 S* EU Ecolabel DE/027/154	Environmentally friendly hydraulic oils based on synthetic esters. Rapidly biodegradable acc. to OECD 301 > 60%. HVLP acc. to DIN 51524-3 (exception: TOST test) HEES acc. to ISO 15380. Awarded the EU Ecolabel.	893	200	15	4.1	191	-33	Universally usable as lubricating and hydraulic oils, especially in areas with strict environmental protection requirements/goals. ISO VG 15 S – 46 S: non-hazardous to water (NWG). Container temperature: -30 °C to +90 °C. Changeover guidelines acc. to DIN ISO 15380 must be observed!
PLANTOHYD 22 S* EU Ecolabel DE/027/155		901	200	22	5.4	198	-33	
PLANTOHYD 32 S* EU Ecolabel DE/027/156		910	206	32	7.1	194	-36	
PLANTOHYD 46 S* EU Ecolabel DE/027/157		920	300	46	9.2	187	-45	
PLANTOHYD 68 S* EU Ecolabel DE/027/158		924	300	68	12.3	181	-36	
PLANTOSYN HVI-SERIES – HL/CL-Oils (demulsifying)								
PLANTOSYN 32 HVI* EU Ecolabel DE/027/104	Environmentally friendly hydraulic and circulating oils based on fully-saturated synthetic esters. Rapidly biodegradable according to OECD 301 B > 60%; very high wear protection, good seal and nonferrous metal compatibility, excellent oxidation stability. Fulfill the minimum requirements of HEES hydraulic oils according to DIN ISO 15380 and HVLP according to DIN 51524-3 (exception: TOST test). Awarded the EU Ecolabel.	915	220	32	6.2	148	-46	Universally usable in all mobile and stationary hydraulic systems for which the use of a rapidly biodegradable HEES hydraulic oil according to DIN ISO 15380 is recommended. Can be used where unsaturated and partly saturated, synthetic esters have failed. Extended oil chain intervals possible. Changeover guideline DIN ISO 15380 must be observed!
PLANTOSYN 46 HVI* EU Ecolabel DE/027/105		913	280	46	8.2	150	-36	
PLANTOSYN 68 HVI* EU Ecolabel DE/027/106		916	280	68	10.6	143	-30	

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EP = Extreme Pressure Additive, to avoid wear and scuffing at high pressures and loads
AW = Anti Wear Additive, to avoid wear in mixed friction areas

Everything from one single source.

Due to strict requirements in terms of their reliability, paper machines oils require intensive monitoring. FUCHS application engineers support the use of lubricants through lubricant analyses and evaluations of the labor results produced.

In addition to this, experienced application engineers provide you with regular recommendations for your oil filling.

FUCHS offers you a large number of laboratory tests

- Kinematic viscosity
- Undissolved substances
- Neutralization number
- Water content
- Foaming behaviour
- Element contents etc.

The complete package

- Lubricants from the specialists.
- R&D expertise
- Regular used oil monitoring processed with recommendations from engineers
- On request, concepts for cleaning / rinsing / refilling
- On request, coordination of refilling processes for your systems.

Notes

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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