

# Special lubricants for the pulp and paper industry





# Lubricant solutions for the pulp and paper industry

BECHEM - Lubrication solutions for industry

As the oldest German manufacturer of industrial lubricants, BECHEM is one of the leading producers of high-quality special lubricants and metalworking fluids today.

BECHEM products stand out through innovative formulations in the most diverse industrial applications – in machining and forming for metalworking processes, in coating technology and as for-life lubricants in various technical components.

A strong network of distributors and several national and international production sites ensure that BECHEM products are readily available worldwide.

Tomorrow's technologies. Today.

Please inquire about special solutions for your specific application.

### APPLICATIONS

Roller bearings	Ö
Plain bearings	$\bigcirc$



Open gears





Hydraulic



Wire ropes

Chains

Food grade/ Pharmaceutical technology

### PROPERTIES

High loads	Î
Low temperatures	
High temperatures	
High speed	$\bigcirc$
Noise damping	Ŵ
Resistant to water	°°°°°
Good pumpability	- <del>)</del> -
Low foaming	°B
Corrosion protection	00000 0000 0000
Compatible with plastics	[t]
Good rinsing performance	
Low residue level	Q

All indications and values correspond to latest knowledge and do not represent any product specification

# Wood treatment

In mechanical and thermal-mechanical wood treatment, machines and systems are exposed to great deals of water and are subjected to high mechanical stresses during milling and defibration. As the systems and possible production losses present major cost factors, and generally there are no redundant systems, choosing the right lubricant is essential. Using tailored BECHEM lubricants can reduce losses, maintenance costs and downtimes while meeting demands for high efficiency and system availability.

In wood treatment processes at pulp and paper plants, lubricants from the **BECHEM High-Lub FA 67 series** sat-

isfy requirements for high mechanical stability, high load bearing capacity, excellent water resistance and outstanding corrosion protection. The products surpass other conventional lubricants in terms of their capability to prevent stand-still corrosion especially and thus extend the service life of bearings filled with these greases.

Lubricants from the **BECHEM High-Lub SW 2 series** are especially effective with their water-repellent properties, allowing them to be applied to wet surfaces.



### Debarking

Lubricants, such as the **BECHEM High-Lub FA series** for main bearings, were designed with outstanding product properties for the most extreme requirements in lubricating bearings of debarking drums or rotor drives. Open gear drives and loose tires can be supplied dependably with the **Berulit GA series**. Thanks to their excellent adhesion to metal surfaces without being dust-binding, they ensure low consumption rates. This also prevents them from being washed away by water.



### Milling

The ball bearings in choppers, grinders and refiners are exposed to extremely high and often shock loads, as well as the effects of water. Refiners also see temperatures of up to 130 °C. Despite short relubrication intervals, bearing damage often occurs prematurely. The **BECHEM High-Lub FA 67 series** and **Berutox M 21 series** present lubricating greases with a very high mechanical stability that reliably protect the bearings from wear, corrosion and premature failure.



BECHEM lubricants stand out in terms of performance and efficiency in all areas of the paper industry.

### Chemical preparation

Systems performing the boiling and bleaching processes Bearings on washers, dewatering presses and systems with aggressive cooking liquors based on oxygen, sulfur for processing recycled paper are often exposed to the or chlorine compounds have to meet especially high strong influences of water or water vapor. Lubricating requirements in terms of lubricant chemical resistance. greases from the BECHEM High-Lub FA series ensure reliable protection with minimum consumption. The lubricants used must not embrittle, harden or be prone to heavy oxidation when coming into contact with aggressive chemicals. These properties are necessary to The Berulub OX series features nationally certified lubriprevent premature bearing failures. The heavy weight of cants for oxygen-carrying fittings. the boiling chamber and tanks, low speed and vertical arrangement of many bearings also place high demands For efficient operation of closed gears, BECHEM offers on lubricating film strength, wear protection and mechanivarious mineral oil-based and synthetic oil-based gear oils cal stability. with different performance characteristics.

Polyurea-based lubricants from the **Berutox M 21** and **Berutox FH 28 series** as well as PTFE-based lubricants from the **Berutox VPT series** and **Berutemp 500 T2** have proven their superiority to competitor products in bearings of many paper plants in terms of mechanical, thermal and chemical resistance.

# Paper machine

only acceptable for planned maintenance and repair work. section and the press section. This is why maximum operating reliability hinges not only on component design, but also on choosing the right lubri- The dry end places strict thermal and oxidative resistance cant.

bearing and prevent water penetration. Studies have shown that a lubricant water content above 200 ppm drastically reduces the service life of roller bearings. Corrosion in the bearing has a similar negative effect. This is why lubricants must ensure excellent corrosion protection. Lubricating greases from the BECHEM High-Lub FA 67 Special tailored lubricant solutions are available for oil series and Berutox M 21 series meet these demands

Paper machines are in operation non-stop. Downtime is and are ideal for bearings in the headbox, the wire

requirements on the lubricants. In addition, the operating speeds of bearings are much higher in the dry end and At the wet end, the lubricating grease has to help seal the reel section. Various greases from the Beruplex and Berutox series are used for different bearing dimensions and operating conditions, such as bearing load, operating speeds and temperatures. BECHEM application engineers would be happy to provide you with consultation.

circulation systems, chain drives and rotary joints.

# Example applications for BECHEM lubricants





BECHEM lubricants are used in paper production for maximum operating reliability.

# Paper finishing

## Surface treatment

are used in the bearings of size presses and calendars.

Berutox FB 22 has proven effective in high-speed roller bearings of guide rollers. The lubricating grease ensures high mechanical stability, low oil separation, low friction values and clean rolling of the rolling elements, even at very high speeds.

## Packaging

Lubricating greases from the Beruplex and Berutox series Synthetic lubricating grease Berutox FB 22 is also used to lubricate roller bearings in slitting and sheeting machines, as it does not escape from the bearings or tend towards higher oil separations, even at high speeds.

> Oiling the cutting edge with Berusynth 15 H1 can extend the service life of roller cutters significantly. This colorless lubricating oil reduces wear and prevents excessive paper fiber adhesion.

### Special papers

Food-grade lubricants with H1 or H2 registration should be used for processing papers that are later used for food packaging, cigarettes or hygiene products. Lubricating greases from the Berulub FG-H series meet the relevant machine and system requirements. For bearings with oil lubrication, chain drives and other mechanisms, the Berusynth H1 series of fully synthetic multi-functional oils is available in many viscosity classes.



BECHEM lubricants meet the requirements for producing hygiene products.



Paper rolls are reliably cut to the desired width with the help of BECHEM lubricants.

### Corrugated board

Owing to internal heating of the corrugated rolls in corrugated board plants and the resulting high operating temperatures, the lubricants have to meet very high requirements in terms of their thermal aging resistance. As forming the corrugations results in strong vibrations, the lubricating greases must also feature excellent mechanical stability as well as very low oil separation.

For these operating conditions, PFPE greases of the Berutox VPT series or Berutemp 500 T2 are recommended. In bearings of corrugated rolls with low operating temperatures, Berutox FH 28 KN can also be used.

The Beruplex LI-EP 2 and Berutox ings. Application of Berusynth 15 H1 FE 18 EP have proven themselves in can reduce wear on the cutting edges application for lubricating fan bear- of the slitting machines significantly.



BECHEM lubricants were designed for the extreme thermal conditions of corrugated board production.

# Lubricating greases

For bearings in pumps and water treatment systems, lubricating greases from the **BECHEM High-Lub FA series** and **BECHEM High-Lub SW 2** offer excellent water resistance and outstanding corrosion protection.

Lubricating greases from the **Beruplex** and **Berutox series** are ideal for lubricating bearings of fans in the soda house or recirculation fans that are exposed to extreme thermal stress.

Depending on the operating temperature, **BECHEM High-Lub LT 2 EP, Berutox FE 18 EP** or **Berutox FB 22** are recommended for bearing lubrication and electric motors.



PRODUCT	Bassoil	Thickenet	NLG1-9	ade Hinemati	SVISCOSIV at ma CI 100°C (mm²	And the process Applications	Description
BECHEM Premium <sup>2)</sup>	Mineral oil	Lithium-Calcium-Soap	2*	90-110 10-13	-30 +130	Multipurpose grease	Long-term lubrication grease relubrication intervals
BECHEM High-Lub LT 2 EP 🛞 🔘 💬	Mineral oil	Lithium soap	2	180 15	-30 +140	Multipurpose grease	Multi-purpose EP-grease, wi excellent corrosion and wear
BECHEM High-Lub FA 67-2 ເ∰ ເ⊛ 🕸 🕶	Mineral oil	Lithium-Calcium-Soap	2	100 11	-30 +130	Electric motors and fan bearings	Long-term lubricating grease and high speeds, excellent w
BECHEM High-Lub LFB 2000	Mineral oil	Lithium soap	2	180 15	-20 +140	Wood shredders, wood grinders, bark shredders	EP-grease, wide application excellent corrosion and wear running properties
BECHEM High-Lub LT 2 EP-400 <sup>©</sup> ○ <sup>©</sup> <sup>©</sup>	Mineral oil	Lithium soap	2	430 27	-20 +140	Wood shredders, wood grinders, bark shredders	Heavy-duty grease, extensive excellent corrosion protection
BECHEM High-Lub FA 67-400 KS	Mineral oil	Lithium-Calcium-Soap	2	400 30	-20 +140	Wood shredders, wood grinders, bark shredders, pulpers, wet end of the paper machine	Long-term lubricating grease corrosion protection, good p
BECHEM High-Lub FA 50	Mineral oil	Lithium-Calcium-Soap	2	920 42	-20 +120	Main bearing for cellulose and dewatering presses, support roller bearings	Long-term lubrication grease corrosion protection, contain
BECHEM High-Lub FA 50 MO ③ 〇 ① 举 整	Mineral oil	Lithium-Calcium-Soap	2	1200 47	-20 +120	Support roller bearings, main bear- ings of bark presses and dewatering presses	Long-term lubricating grease corrosion protection, even if contains solid lubricants and
BECHEM High-Lub SW 2 쏨 牮 ⓒ 〇 윤 강	Mineral oil	Special calcium soap	1-2	100 9	-25 +80	Roller bearings & guides for wood treatment & paper recycling under strong water influence	Corrosion protection grease ambient conditions, extreme excellent corrosion protectio
Beruplex LI-EP 2	Mineral oil	Lithium complex soap	2	180 6	-30 +150	Roller bearings and plain bearings in the dry end of the paper machine	Long-term EP-grease, excell- under shock load, protection electric motor bearings
Beruplex LI-EP 3 <sup>a</sup>	Mineral oil	Lithium complex soap	3	180 6	-30 +150	Roller bearings and plain bearings in the dry end of the paper machine	Long-term EP-grease, excell- under shock load, protection electric motor bearings
Beruplex HTA	Mineral oil	Aluminum complex soap	2	230 15	-25 +190 +200	Roller bearings and plain bearings in the dry end of the paper machine	High-temperature grease wit excellent pumpability in cent
Berutox FE 18 EP ⓒ 蓉 👓 📋 🔿 🕸	Mineral oil	Polyurea	2	100 11	-20 +140	Electric motors and fan bearings	High-performance grease to resistance, excellent corrosic
Berutox M 21 KN	Mineral oil	Polyurea	1-2	490 32	-20 +180	Roller bearings and plain bearings in the dry end of the paper machine, fan bearings	Long-term lubricating grease resistance to water, excellent

All indications and values correspond to latest knowledge and do not represent any product specification. <sup>1</sup> Value marked in grey indicates short term maximum temperature. <sup>21</sup> Not available worldwide. Please inquire about country-specific special solutions. <sup>21</sup> No available in other consistency classes.

se for high loads, excellent corrosion and wear protection, extends

wide application temperature range, excellent water resistance, ear protection, excellent pumpability in central lubrication systems

se, excellent corrosion and wear protection, suitable for high loads water resistance and pumpability

on temperature range, excellent pumpability and water resistance, ear protection, contains light-colored solid lubricants, emergency

sive application temperature range, excellent water resistance, tion, excellent pumpability, increased base oil viscosity, EP-properties

se, good sealing qualities, excellent water resistance, outstanding pumpability in central lubrication systems, EP-properties

se for high to very high loads, excellent water resistance, excellent ains highly-viscous mineral base oil and EP-additives

se for high to very high loads, excellent water resistance, excellent if there is risk of standstill corrosion, highly viscous mineral oil, nd EP-additives

se for roller bearings, plain bearings, and ropes, for aggressive nely high level wear protection through EP additives, water-resistant, tion, excellent pumpability

ellent corrosion and wear protection, excellent pumpability, even on against high temperatures and moisture, e.g. for wheel bearings,

ellent corrosion and wear protection, excellent pumpability, even on against high temperatures and moisture, e.g. for wheel bearings,

vith a wide application temperature range, good corrosion protection, ntral lubrication systems, for dusty environments

to lubricate high-speed roller and plain bearings, excellent water sion and wear protection, excellent pumpability

se, outstanding consistency-temperature-behavior, excellent ent corrosion and wear protection, EP-properties

# Lubricating greases

A number of different lubricating greases are used in the chemical recovery process. When it comes to lubricating open drives and the seals of line kilns, adhesive lubricants of the **Berulit GA series** stand out thanks to their excellent wear protection and low consumption rates. **The Berulit GA series** is also recommended for lubricating gear racks, e.g. of the soot blower in the soda house.

**BECHEM High-Lub FA 67-400 KS** ensures the reliable supply of grease-lubricated bearings in the supporting rollers and pinions of lime kilns with relubrication intervals of several months.

For lubricating floating races on lime kilns, **Berulub VPN 13 Ringlub** presents a semi-liquid high-temperature lubricant that only has to be applied every two to four weeks thanks to its high solid content. The synthetic carrier fluid prevents strong smoke development or fires, even when applied to very hot kiln surfaces.



PRODUCT	Base oil	Thickenet	NLGI-O	ade Kinem	atic viscoe	NC Imm?"	sl orkingterne	Process Applications	Description
Berutox M 21 EPK	Mineral oil	Polyurea	1-2	490	32	-20		Roller bearings and plain bearings in the wet and dry ends of the paper machine	Multi-purpose greas good adhesion, resis
BECHEM Ceritol PSA 12 H	Mineral oil	Special polyurea	1-2	240	17	-20	+160	Roller bearings and plain bearings in the dry end of the paper machine, fan bearings	High-temperature gr of thermal radiation,
Berutox MB 2-H	Mineral oil	Polyurea	2	300	18	-5	<b>+200</b> +220	Main bearings of refiners, bleachers and stirring boilers	Long-term lubricatin reliable corrosion pro
Berutox FB 22	Polyalpha- olefin (PAO)	Barium complex soap	2	50	8	-40	<b>+180</b> +200	Electric motor bearings and fan bearings, bearings of guide rollers and slitting machines	For long-term lubrica excellent water resis
Berutox FH 28 KN	Polyalpha- olefin (PAO)	Polyurea	1-2	400	40	-30	<b>+180</b> +200	Roller and plain bearings in the dry end of the paper machine, on drying units and corrugated board plants	Synthetic long-term excellent chemical a EP-properties
Berutox FH 28 EPK 2	Polyalpha- olefin (PAO)	Polyurea	2	400	40	-30	+180	Roller bearings and plain bearings in the dry end of the paper machine and on drying units	Long-term lubricatin overheating, exceller EP-properties
Berutox VPT 54	Perfluor- polyether (PFPE)	Polytetrafluoroethylene (PTFE)	1-2	210	20	-30	+230	Roller bearings and slide bearings on drying ovens, bleachers and corrugated board plants	Longlife lubricating g all sliding speeds pe decomposition, exce
Berutemp 500 T2	Perfluor- polyether (PFPE)	Polytetrafluoroethylene (PTFE)	1-2	510	45	-20	+260	Roller bearings and slide bearings on drying ovens, bleachers and corrugated board plants	Long-term lubricatin chemicals, outstand corrosion protection
Berulub FG-H 2 SL	Synthetic hydrocarbon	Special calcium complex soap	2	50	8	-45	<b>+160</b> +200	Roller bearings and plain bearings in the finishing of paper that can later come into contact with foodstuffs	High-performance lu and aging, reliable co registered, Halal and
Berulub FG-H 2 EP	Polyalpha- olefin (PAO)	Special calcium complex soap	1-2	150	18	-40	+160	Roller bearings and plain bearings in the finishing of paper that can later come into contact with foodstuffs	Universal lubricant, hi corrosion protection a registered, halal and l
Berulit GA 400 → 2500	Mineral oil/ Synthetic oil	Aluminum complex soap	0-00 00	490 2500	32 100			Open gear drives of debarking and drying drums, lime kilns, pulpers, inlet seals of rotary kilns	Operating lubricant f protection, extremel preferably applied by
Berulit GA 800 → 2500 Fluid	Mineral oil/ Synthetic oil	Aluminum complex soap	000*	1000 3175	45 113	-10 0	+120 +200	Open gear drives of debarking and drying drums, lime kilns, pulpers	Operating lubricant f protection, very high for dip baths or circu
Berugear HV 10 → HV 20	Mineral oil/ Synthetic oil	-	-	10000 18500	320 550			Open gear drives of debarking and drying drums, lime kilns, pulpers	High-performance fl closed gear units, ex adhesion
	Berutox M 21 EPK   Berutox M 21 EPK   BECHEM Ceritol   PSA 12 H   O I I I I I   Berutox MB 2-H   I I I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Jerutox M 21 EPKMineral oilBerutox M 21 EPKMineral oilBECHEM Ceritol PSA 12 H (> () () () () () () () ()Mineral oilBECHEM Ceritol PSA 12 H (> () () () () () () () () () ()Mineral oilBerutox MB 2-H (> () () () () () () () () () () () () ()	Image: Display bit is a constraint of the second	Introduced in tradition in the second in the	Berutox M 21 EPKMineral oilPolyurea1-2490Sechem CeritolMineral oilSpecial polyurea1-2240Berutox MB 2-HMineral oilPolyurea2300Serutox FB 22Polyalpha- olefin (PAO)Barium complex soap250Berutox FH 28 KNPolyalpha- olefin (PAO)Polyurea1-2400Serutox FH 28 EPK 2Polyalpha- olefin (PAO)Polyurea1-2400Serutox VPT 54Polyalpha- olefin (PAO)Polyurea1-2210Diffin (PAO)Polyurea1-2210210Serutox VPT 54Perfluor- polyether (PFPE)Polytetrafluoroethylene (PFPE)1-2210Berutob FG-H 2 SLSynthetic hydrocarbonSpecial calcium complex soap250Berulub FG-H 2 EPPolyalpha- olefin (PAO)Special calcium complex soap250Berulub FG-H 2 EPPolyalpha- olefin (PAO)Special calcium complex soap250Berulub FG-H 2 EPPolyalpha- olefin (PAO)Special calcium complex soap1-2150Berulit GA 400 -> 2500 FuidMineral oil/ Synthetic oilAluminum complex soap Sontexic oil000°1000 3175Berulit GA 800 +> 2500 FuidMineral oil/ Synthetic oilAluminum complex soap000°1000 3175Berulit GA 800 +> 2500 FuidMineral oil/ Synthetic oilAluminum complex soap000°1000 3175	Berutox M 21 EPKMineral oilPolyurea1-249032Secure ControlSecure ControlSpecial polyurea1-224017PSA 12 HMineral oilSpecial polyurea1-224018Secure X MB 2-HMineral oilPolyurea230018Secure X MB 2-HMineral oilPolyurea230018Secure X MB 2-HMineral oilPolyurea230018Secure X MB 2-HMineral oilPolyurea2508Berutox X B 2-HPolyalpha- olefin (PAO)Polyurea240040Secure X FH 28 KNPolyalpha- olefin (PAO)Polyurea1-240040Secure X FH 28 EPK 2Polyalpha- olefin (PAO)Polyurea240040Secure X FH 28 EPK 2Polyalpha- olefin (PAO)Polyurea1-221020Berutox VPT 54Perfluor- (PFPE)Polytetrafluoroethylene (PFPE)1-251045Berutub FG-H 2 SLSynthetic hydrocarbonSpecial calcium complex soap2508Secure X GA 400 - 2500Mineral oil/ Synthetic oilAluminum complex soap0-0049032Secura X GA 400 - 2500Mineral oil/ Synthetic oilAluminum complex soap000*100045Secura X GA 400 - 2500Mineral oil/ Synthetic oilAluminum complex soap000*11000320Secura X GA 400 - 2500Mineral oil/ Synthetic oilAluminum co	Justice Production   Justice	Berutox M 21 EPK   Mineral oil   Polyurea   1-2   4-90   32   2-20   +160     BEC-HEM Ceritol SSA 12 H   Mineral oil   Special polyurea   1-2   240   17   20   +160     BEC-HEM Ceritol SSA 12 H   Mineral oil   Special polyurea   1-2   240   17   -20   +160     Berutox MB 2-H   Mineral oil   Polyalpha- olefin (PAO)   Barium complex soap   2   300   18   -5   +200     Berutox FB 22   Polyalpha- olefin (PAO)   Polyurea   1-2   400   40   -30   +180     Berutox FH 28 KN   Polyalpha- olefin (PAO)   Polyurea   1-2   400   40   -30   +180     Berutox FH 28 KN   Polyalpha- olefin (PAO)   Polyurea   1-2   400   40   -30   +180     Berutox FH 28 EPK 2   Polyalpha- olefin (PAO)   Polyurea   1-2   210   20   -30   +230     Berutox FH 28 EPK 2   Polyalpha- olefin (PAO)   Polytetrafluoroethylene (PTFE)   1-2   210   45   -20	Derutox M 21 ErK (\$) \$ 20 100Mineral oil (\$) \$ 20 100Polyurea1-24-30-32-20+160Poleior bearings and plain bearings in paper machineBECHEM Centrol (\$) \$ 20 10Mineral oilSpecial polyurea1-224017-20+160Roller bearings and plain bearings in the dry end of the paper machine, fan bearingsBerutox MB 2-H (\$) \$ 10 100Mineral oilPolyurea23018-5+200Main bearings of refiners, bleachers and stirring boliersBerutox HB 2E (\$) \$ 10 100Polyurea2508-40+180Electric motor bearings and fan bearings, bearings of guide rollers and slitting machinesBerutox H1 28 KN (\$) \$ 10 200Polyurea1-240040-30+180Roller and plain bearings in the dry end of the paper machine, fan bearings, bearings and glain bearings in the dry end of the paper machines and slitting machinesBerutox H1 28 KN (\$) \$ 10 200Polyurea240040-30+180Roller bearings and glain bearings in the dry end of the paper machine and on drying units and corrugated board plantsBerutox H7 24 (\$) \$ 10 200Polyurea240040-30+180Roller bearings and slide bearings on drying units and slitting machinesBerutox H7 24 (\$) \$ 10 200Polyurea2200400-30+180Roller bearings and slide bearings on drying units and corrugated board plantsBerutox PT 54 (\$) \$ 10 200Perfuor- polyether polyether (PFFE) <t< td=""></t<>

ase for plastic/metal slide pairings, high corrosion and wear protection, sistant to oxidation, water, and steam, water repellent, EP-properties

grease, no pipe clogging in central lubrication systems even in case n, excellent sealing qualities, good corrosion and wear protection

ting grease with outstanding sealing capacities, good wear protection, protection even in presence of aggressive water

ication at high speeds, good consistency-temperature-behavior, sistance, excellent corrosion and wear protection, good pumpability

m lubricating grease, outstanding consistency-temperature behavior, I and water resistance, excellent corrosion and wear protection,

ting grease, outstanding consistency-temperature behavior even at llent resistance to water, excellent corrosion and wear protection,

g grease to reduce friction and wear at high temperatures, suitable for permitted for grease lubrication, resistant to thermal and chemical cellent oxidation resistance and plastic compatibility

ting grease, even for vacuum, radiation, solvents and aggressive nding compatibility with plastics, high thermal stability, high wear and on, resistant to acids, bases, disinfectants

e lubricant, good adhesion and sealing properties, resistant to water e corrosion protection, suitable for central lubrication systems, H1 and Kosher certified, certified according to ISO 21469

, high load-carrying properties, good adhesion and sealing effect, reliable n and wear, resistant to ageing, water, disinfectants and cleaners, H1 d kosher certified, certified according to ISO 21469, available in aerosols

nt for open gear drives, extremely high base oil viscosity, excellent wear hely high load-carrying capacity, good adhesion, contains graphite, by spray equipment, Berulit GA 2500 also available in aerosols

nt for open gear drives, increased base oil viscosity, excellent wear gh load-carrying capacity, strong adhesion, contains graphite, suitable rculating systems, sprayable

e fluid with extremely high base oil viscosity for open and slow-running excellent wear protection, very high load-carrying capacity, excellent

All indications and values correspond to latest knowledge and do not represent any product specification. <sup>1)</sup> Value marked in grey indicates short term maximum temperature. \*Value indicates unworked penetration.

# Lubricating oils

Compared with mineral-oil-based gear and circulating oils, synthetic lubricating oils from the **Berusynth GP** and **Berusynth EP series** offer better aging resistance and thus extend oil change intervals, even at high operating temperatures. Thanks to lower friction values, it is also possible to reduce oil sump temperatures and losses in closed gears.

The **Berugear GS BM series** was developed for use in high-load gears with previous damage. Owing to special high-performance additives, the lubricating oils are capable of bonding highly effective reaction layers with a very high pressure capacity on the contact surfaces, enabling micro-plastic deformation of upper surface layers. The coefficient of friction in the contact area is also reduced.

For temperature-stressed chains in the dry end of paper machines and drying units, **Berusynth CU 250** presents a special synthetic chain oil with a low evaporation rate and low residue formation.



	PRODUCT	Bassoll	Visc	SitV Innelsi 40 Visco	sity index pour	point POI	point PCI	ation WP8	Process Applications	Description
oils	BECHEM Staroil NR 10 → 68	Mineral oil	10 to +68	95	-30 to -24	≥ 150 to ≥ 230	DIN 51524-2	HLP	Hydraulic equipment	Hydraulic oil with high thermal stat wear and corrosion, excellent air a temperature behavior, free of zinc
Lubricating oils	BECHEM Staroil LV 46 → 150 😤 🖄	Mineral oil	46 to 150	95 to 105	-9 to -7	≥ 230 to ≥ 240	DIN 51506	VDL	Compressors	Additive containing compressor oi against corrosion, low formation of the requirements of VCL/VBL oils
Ľ	BECHEM Staroil G 100 → 680 🚰 😳 〇	Mineral oil	100 to 680	95 to 100	-33 to -18	≥ 230 to ≥ 270	DIN 51517-3	CLP	Gear units in the normal temperature range	High-performance gear oil for sput high ageing resistance, good load- water and air separation capacity
	BECHEM Staroil SMO 68 → 1500 Î 🗑 🕸 〇	Mineral oil	+68 to 1350	90 to 100	-33 to -9	≥ 210 to ≥ 250	DIN 51517-3	CLPF	Gear units with increased wear protection requirements	High-performance gear oils for hea good load-carrying capacity, excel high ageing resistance, excellent w
	Berugear GS 68 → 680 BM 〇 ۞ ۞ ፬ Î	Mineral oil	+68 to 738	92 to 100	-30 to -15	≥ 210 to ≥ 290	DIN 51517-3	CLP	Gear units with increased require- ments relative to wear protection and minimal power loss	High-performance oil for heavy-du high resistance to micropitting, for thus increases the contact area, hi
	Berusynth GP 68 → 1000	Polyalpha- olefin (PAO)	67 to 1007	145 to 165	-60 to -27	≥ 245 to ≥ 280	DIN 51517-3	CLP HC	Gear units with higher oil sump tem- peratures or higher requirements rela- tive to extended oil change intervals	High-performance gear oil on poly gear units, allows extended oil cha resistance, miscible with mineral o
	Berusynth EP 68 → 1000	Polyglycol	+68 to 1000	196 to 278	-42 to -30	≥ 240 to ≥ 280	DIN 51517-3	CLP PG	Gear units with higher oil sump tem- peratures or higher requirements rela- tive to extended oil change intervals	High-performance gear oil on poly allows extended oil changing inter- reduces tooth friction losses in the
	Berusynth CU 250	Ester	250	120	-45	≥ 250	H2		Drive chains in the dry end of the paper machine and on drying units	High-temperature chain oil, wide a properties, hot and cold water resi H2-registered, adjusted to Berusyr
	Berufluid WO	Medical white oil	17	98	-10	≥ 170	H1	AN	Cutters and mechanisms for which the paper can later come into con- tact with foodstuffs	Medical white oil, odorless and tas contamination, high creeping capa
	Berusynth 15 H1 → 1000 H1 I	Polyalpha- olefin (PAO)	15 to 1000	125 to 165	-65 to -35	≥ 170 to ≥ 260	H1, Halal, Kosher	HLP HC, CLP HC, HVLP HC, VDL HC	Multi-purpose oil for reduced ranges, also for higher temperatures and extended oil changing intervals	High-performance oil for circulatio blowers, air compressors, effective and paints, good load-carrying cap
Special applications	Berulub VPN 13 Ringlub	Synthetic oil	ар- prox. 140	-		≥ 300	-	ANPFE	Floating tires of rotary kilns	High-temperature fluid, sprayable, smoke development on hot surface
	Berusynth H1 Spray	Polyalpha- olefin (PAO)	100	140	-50	-	H1, Halal		Multi-purpose spray for the produc- tion of paper that later can come into contact with foodstuffs	Transparent chain oil/adhesive oil, solvent free
Specia	Beruclean ECO					≥ 65	H1, Halal, Kosher		Cold cleaning agent for the produc- tion of paper that later can come into contact with foodstuffs	Universal cold cleaner, free of aron good cleaning effect, quickly biode

stability and resistance to oxidation, excellent protection against ir and water separation capacity as well as outstanding viscosity/ nc

r oil with high oxidation and temperature resistance, good protection n of residues, water repellent, good adhesion, considerably exceeds ils

pur, bevel, planetary and worm gears, excellent wear protection, very ad-carrying capacity and viscosity/temperature behavior, excellent ty

heavy-duty gear units with high contact pressure or shock loads, cellent wear protection, good viscosity-temperature behavior, very t water and air separation capacity

duty gears, contains PD-additives, excellent wear protection, very forms reactive surface layer that supports plastic deformation and , highly effective on gears with high percentages of sliding friction

olyalphaolefin basis for heavy-duty spur, bevel, planetary and worm changing intervals, excellent wear protection, very high ageing a oil

olyglycol basis for heavy-duty spur, bevel, planetary and worm gears, tervals, excellent wear protection, very high ageing resistance, the gear unit

e application temperature range, excellent wetting and creeping esistant, good corrosion protection, no formation of critical residues, synth CC 100, also available in aerosols

tasteless, water repellent, excellent corrosion protection, removes apacity, resin-free and acid free, medically pure

tion lubrication, transport chains, hydraulic equipment, gear units, tive corrosion and wear protection, neutral to conventional seals capacity, certified according to ISO 21469

le, excellent wear protection, very high ignition temperature, low aces

bil, good corrosion and wear protection, high load-carrying capacity,

romatic hydrocarbons, virtually odorless, strong dissolution effect, odegradable according to OECD 301 F, A7

All indications and values correspond to latest knowledge and do not represent any product specification.

## Lubrication solutions for industry

