



Special lubricants for the cement industry,  
open cast mining and mineral processing



**BECHEM**  
LUBRICATION  
TECHNOLOGY



# Special lubricants for the cement industry, open cast mining and mineral processing

BECHEM – Lubrication solutions for industry

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








BECHEM products convince by innovative formulations in the most diverse of industrial applications – in machining and forming metal working 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.**

## PICTOGRAMS

### APPLICATIONS

- Roller bearings 
- Plain bearings 
- Open gears 
- Closed gears 
- Chains 
- Wire drawing 
- Wire ropes 

### PROPERTIES

- High loads 
- Low temperatures 
- High temperatures 
- Resistant to water 
- Good pumpability 
- Noise damping 
- Corrosion protection 

# Under all conditions

In the cement and lime industry, as well as in mining and mineral processing, machines and equipment are often exposed to extreme working conditions. Besides environmental influences such as dust, humidity and even extreme variations in temperature, both very high and/or shock loads have to be managed. Machine downtime and possible production loss represent an enormous cost factor, and since redundant systems are in general not available, the selected lubricant is extremely important.

Based on years of experience gathered in close cooperation with leading machine manufacturers, BECHEM developed special lubricants for these demanding conditions.



With the use of a new generation of high-performance additives, the latest development of BECHEM lubricants contributed to a considerable increase in wear protection and extended lifetime.

Our lubricants help reduce power loss, maintenance costs and downtime so that requirements with regard to higher economic efficiency and plant availability will be fulfilled.

To supply the lubrication points of heavy machinery in open cast mining via central lubrication systems, BECHEM has developed a variety of special lubricating greases with excellent pumpability. They are suitable for different climatic conditions and can be used at ambient temperatures of up to -40 °C.

» Reduce power loss,  
increase lifetime. «

# Lubricating greases for roller and plain bearings



The very good wear and corrosion protection as well as the excellent mechanical stability of BECHEM lubricating greases allow for coping with high specific loads. Even at extended re-lubrication intervals, there will be hardly any negative influence caused by dust and humidity.

Based on the use of innovative high-performance additives and their physico-chemical reaction with the metal surfaces, the greases of the **BECHEM High-Lub FA-series** guarantee a reduced friction value and wear. For example, the use of the lubricating grease **BECHEM High-Lub FA 50** contributed to a considerably extended lifetime of slew ring bearings in hydraulic excavators. Some lubricating greases have a special combination of solid lubricants for use in bearings with very high contact pressures and/or shock loads.

BECHEM offers special mineral oil based and synthetic high-temperature greases with very high thermal stability for thermally stressed bearings in mineral processing and smelting processes. In the FAG FE 9 roller bearing test at 160 °C, the fully synthetic grease **Berutox FH 28 KN** achieves a lifetime that is approximately seven times longer than that of conventional high-temperature lubricating greases.

## BECHEM high-performance greases

Tried and tested in:

- Main bearings of roller presses and crushers
- Main and pivot bearings in vertical roller mills
- Pinion and support roller bearings of mills and kilns
- Pivot and slew ring bearings of excavators
- Main bearings of fans and blowers
- Bearings of vibration screens and sorting plants
- Roller and tensioning roller bearings of conveyor systems

## BECHEM high-temperature greases

Tried and tested in bearings of:

- Clinker coolers and cooling beds
- Clinker and ore conveying systems
- Converters and ladle furnaces
- Hot-air fans

# High-performance oils

To meet the growing importance of reduced friction losses and extended oil life, BECHEM has developed innovative mineral oil based and synthetic high-performance oils.

With the use of these oils in closed gearboxes and circulation systems, it was possible to reduce the power loss in gears caused by the lubricant by 3-5 %. In addition, oil sump temperatures can be reduced as well. Typical fields of application are:

- Ball, rod and SAG-mills
- Rotary kilns, coolers and dryers
- Vertical roller mills and roller presses
- Hydraulic and bucket wheel excavators and draglines
- Crushers, stackers and reclaimer systems
- Cranes, hoists, stackers and belt wagons
- Transport and conveyor belt systems

We recommend the use of synthetic gear oils for gears with permanent operating temperatures above 90 °C. At higher temperatures, the oils of the **Berusynth EP** and **Berusynth GP** series achieve a lifetime that is four times higher than that of mineral oils. Their load-carrying capacity by far exceeds the performance of conventional gear oils.

## The Berugear GS BM-series

With the oils of the **Berugear GS BM-series**, BECHEM offers products with increased resistance to micro pitting, based on a high-performance PD additive system. This system allows the formation of reaction layers with an extreme high-pressure capacity.

Thus, micro-plastic deformation of surface roughness asperities and slight damages without any considerable material loss is possible at high specific flank pressures.

In view of this process and the related increased contact pattern, these products can also be used as running-in oils. Polar additives improve the wetting and adhesion properties of the oils. The reaction layers formed on the surface reduce the friction coefficient in the tooth contact and hence the power loss in the gearbox.



# Open gear lubricants

BECHEM open gear lubricants for large gears offer reliable wear protection combined with low consumption based on the use of special high-performance additives. They guarantee reliable lubrication of open gear drives of

- Ball, rod and SAG-mills
- Rotary kilns and coolers
- Hydraulic and bucket wheel excavators and draglines
- Crushers, stackers and reclaimer systems
- Cranes, hoists, stackers and belt wagons
- Ladles and dryers
- Pelletising discs and drums

For different requirements regarding temperature, dust, influence of water, re-lubrication intervals and lubricant application, BECHEM offers highly viscous, transparent gear fluids as well as graphite containing, black greases. The BECHEM portfolio contains suitable products for each type of lubricant application. Approvals of well-known manufacturers are available.



# Lubricants for special applications

## Floating tyres of rotary kilns

**Berulub VPN 13 Ringlub** is the suitable high-temperature fluid for the internal and flank lubrication of floating kiln tyres. It will not ignite on hot surfaces and hardly forms any smoke.

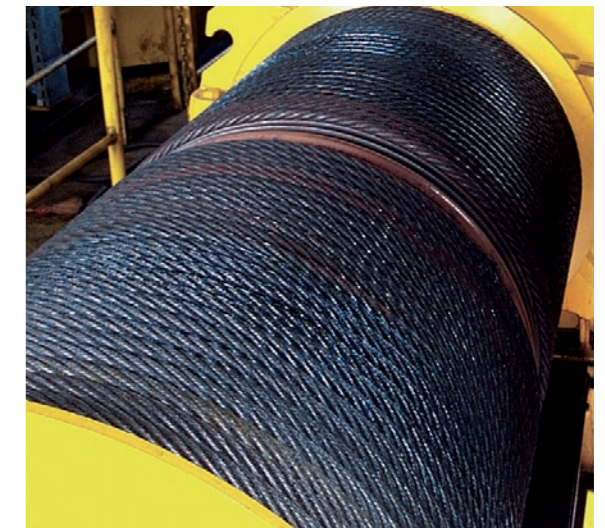
After evaporation of the synthetic carrier fluid, it forms a resistant, dry film on the metal surface that efficiently protects against scuffing and wear. Application of the fluid is possible by using hand spray systems.



## Wire ropes

Wire ropes of cranes, excavators and conveyor systems require especially reliable corrosion and wear protection. Our product **Beruprotect Rope Dressing** as well as the **Berulit GA-series** fulfil these requirements.

**Beruprotect Rope Dressing** is well suitable for use in dusty environments since it prevents dust adhesion by forming a non-sticky film on the surface.



## Chains

Adhesive semi-fluid greases of the **Berulit GA series** or highly viscous fluids offer excellent wear and corrosion protection of steel chains of large dimensions. For small or medium sized roller and bush chains, however, the penetration and wetting ability of the chain lubricant is of decisive importance.


Lubricants used for transmission and transport chains running in dusty environments have to offer high load-carrying capability and excellent corrosion protection and simultaneously prevent the strong adhesion of dust. Our BECHEM chain oil **Berulit IKP** fully meets these requirements.



# Technical service

When using our products, BECHEM offers full technical service to all customers. A worldwide network of technical service centres with well-trained application engineers is available. Depending on individual agreements, our technical service includes:

- Regular technical inspections
- Lubricant management and tribologic service
- Sampling and analysis of lubricant samples
- Preparation of lubricant charts including the determination of control and failure factors
- Execution of running-in processes
- Support in repair works
- Lubricant consumption optimisation programme
- Support in optimisation of lubricant application systems

	PRODUCT	Base oil		NLGI-grade	Base oil viscosity [mm <sup>2</sup> /s] at 40 °C/100 °C		Service temperature range [°C] <sup>1)</sup>	Properties
		Thickener						
Lubricating greases	<b>BECHEM High-Lub FA 50 MO</b> 	Mineral oil	Lithium-/Calcium soap	2	1200/47	-20	+120	Long-life lubricating grease for high to very high loads, excellent water resistance, excellent protection against corrosion, highly viscous mineral oil, contains solid lubricants and EP-additives
	<b>BECHEM High-Lub FA 67-400 KS</b> 	Mineral oil	Lithium-/Calcium soap	2	400/30	-20	+140	Long-life lubricating grease, good sealing qualities, excellent water resistance, outstanding protection against corrosion, good pumpability in central lubrication systems, EP-properties
	<b>BECHEM High-Lub LFB 2000</b> 	Mineral oil	Lithium soap	2	180/15	-20	+140	EP-grease, wide service temperature range, very good pumpability and water resistance, excellent corrosion and wear protection, contains light solid lubricants, emergency running properties
	<b>BECHEM High-Lub LT 2 EP</b> 	Mineral oil	Lithium soap	2	180/15	-30	+140	EP-grease, wide service temperature range, excellent water resistance, excellent protection against corrosion, very good pumpability in central lubrication systems
	<b>Beruplex CS 2 EP</b> 	Mineral oil	Calcium complex soap	2	150/13	-25	+140	EP-grease, wide service temperature range, excellent water resistance, excellent protection against corrosion, very good pumpability in central lubrication systems, high load-carrying capacity
	<b>Beruplex KS 22</b> 	Mineral oil	Special calcium complex soap	1-2	160/13	-30	+150 +180	EP-grease, extremely wide service temperature range, excellent protection against corrosion, very good pumpability, excellent water resistance and adhesion, very good sealing qualities
	<b>Beruplex PMC 42 F</b> 	Mineral oil	Special calcium complex soap	1-2	400/26	-20	+140	Roller and plain bearing grease for high to very high loads, excellent water resistance and pumpability, excellent protection against corrosion, contains solid lubricants and EP-additives
Open gear lubricants	<b>Berutox FH 28 KN</b> 	Polyalphaolefin (PAO)	Polyurea	1-2	400/40	-30	+180 +200	Fully synthetic long-life lubricating grease, excellent consistency-temperature-behaviour, excellent water resistance, excellent corrosion and wear protection, EP-properties, NSF-H2 certified
	<b>Berulit GA 400 → 2500</b> 	Mineral oil, Mineral oil/Synthetic oil	Aluminium complex soap	0-00 0-00 00	490/32 1050/43 2500/100	-20 -10 +5	+180 +180 +200	Service lubricant for open gear drives, excellent wear protection, very high load-carrying capacity, good adhesion, contains graphite, preferably applied by spray units  (2500)
	<b>Berulit GA 800 → 2500 Fluid</b> 	Mineral oil, Mineral oil/Synthetic oil	Aluminium complex soap	000* 000*	1000/45 3175/113	-10 0	+120 +200	Service lubricant for open gear drives, increased base oil viscosity, excellent wear protection, very high load-carrying capacity, good adhesion, contains graphite, suitable for dip baths or circulation systems, sprayable
	<b>Berugear HV 10 → HV 20</b> 	Mineral oil/Synthetic oil	-	-	10000/320 18500/550	0 +10	+120 +140	High-performance fluid with extreme high base oil viscosity for open and slow-running closed gears, excellent wear protection, very high load-carrying capacity, very good adhesion

<sup>1)</sup> Value marked in grey indicates short term maximum service temperature. \*Value indicates unworked penetration.



	PRODUCT	Base oil		Viscosity [mm <sup>2</sup> /s] at 40 °C		Viscosity index	Pourpoint [°C]	Flash point [°C]	Specification	Type	Properties
Lubricating oils	<b>Berulub EP 68 → 1000</b> 	Polyglycol	68 to 1000	196 to 278	-42 to -30	≥ 240 to ≥ 280	DIN 51517-3	CLP PG	High-performance gear oil on polyglycol basis, for heavy-duty spur, bevel, planetary and worm gears, allows extended oil changing intervals, excellent wear protection, very high ageing resistance, reduces friction loss in the gear		
	<b>Berulub GP 68 → 1000</b> 	Polyalphaolefin (PAO)	67 to 1007	145 to 165	-60 to -27	≥ 245 to ≥ 280	DIN 51517-3	CLP HC	High-performance gear oil on polyalphaolefin basis for heavy-duty spur, bevel, planetary and worm gears, allows extended oil changing intervals, excellent wear protection, very high ageing resistance, miscible with mineral oil		
	<b>Berugear GS 150 BM → 680 BM</b> 	Mineral oil	150 to 738	92 to 99	-26 to -15	≥ 240 to ≥ 290	DIN 51517-3	CLP	High-performance oil for heavy-duty gears, contains PD-additives, excellent wear protection, very high resistance to micropitting, forms reactive surface layer that supports plastic deformation and thus increases the contact area, most suitable for gears subjected to high sliding friction		
	<b>BECHEM Staroil G 100 → 680</b> 	Mineral oil	100 to 680	95 to 100	-33 to -18	≥ 230 to ≥ 270	DIN 51517-3	CLP	High-performance gear oil for spur, bevel, planetary and worm gears, excellent wear protection, very high ageing resistance, good load-carrying capacity and viscosity-temperature-behaviour, excellent water and air separation capacity		
Special applications	<b>Berulub VPN 13 Ringlub</b> 	Synthetic oil	ab. 150	-	ab. -20	≥ 300	-	ANPFE	High-temperature fluid, e.g. for floating tyres of rotary kilns, sprayable, excellent wear protection, very high ignition temperature, low smoke formation on hot surfaces		
	<b>Beruprotect Rope Dressing</b> 	Mineral oil	10	-	< -30	≥ 140	-	ANL 10	Wire rope lubricant, fluid, good creeping properties, excellent wear and corrosion protection, excellent adhesion, excellent wetting properties		
	<b>Berulit IKP</b> 	Mineral oil	115	-	-36	≥ 190	-	ANLFP 100	Chain oil to lubricate slow-moving transport and conveyor chains with large chain links and exposed to high tensional stresses, high load-carrying capacity, low dust adsorption, very good wear and corrosion protection, contains graphite		

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

# Lubrication solutions for industry

