



Lubricants and release agents  
for massive forming



**BECHEM**  
LUBRICATION  
TECHNOLOGY



# Beruforge and Berulit for massive forming

BEICHEM – Lubrication solutions for industry

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






BEICHEM 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 BEICHEM products are readily available worldwide.






**Tomorrow's technologies. Today.**

## PICTOGRAMS

### APPLICATIONS

- Massive forming 
- Cold massive forming 
- Bending 
- Deep drawing 
- Punching 

### PROPERTIES

- Extended die life 
- Good residue behaviour 
- Minimum quantity lubrication 
- Pleasant working area 
- Good pumpability 

# Lubricant solutions for the entire process chain

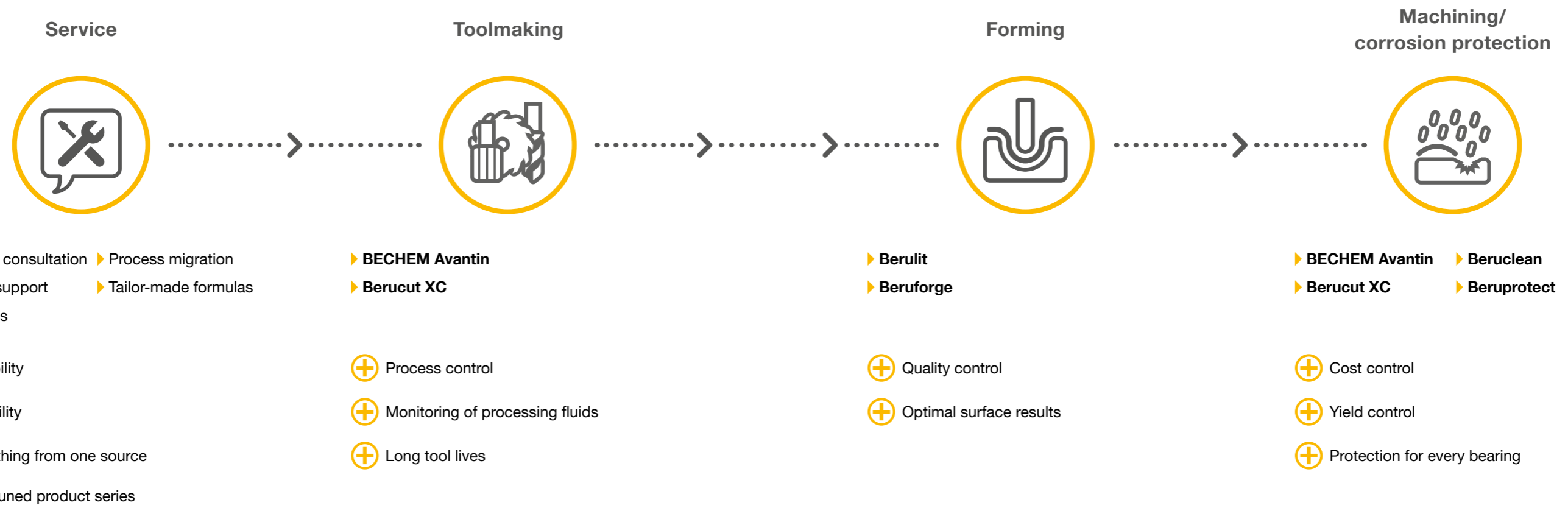
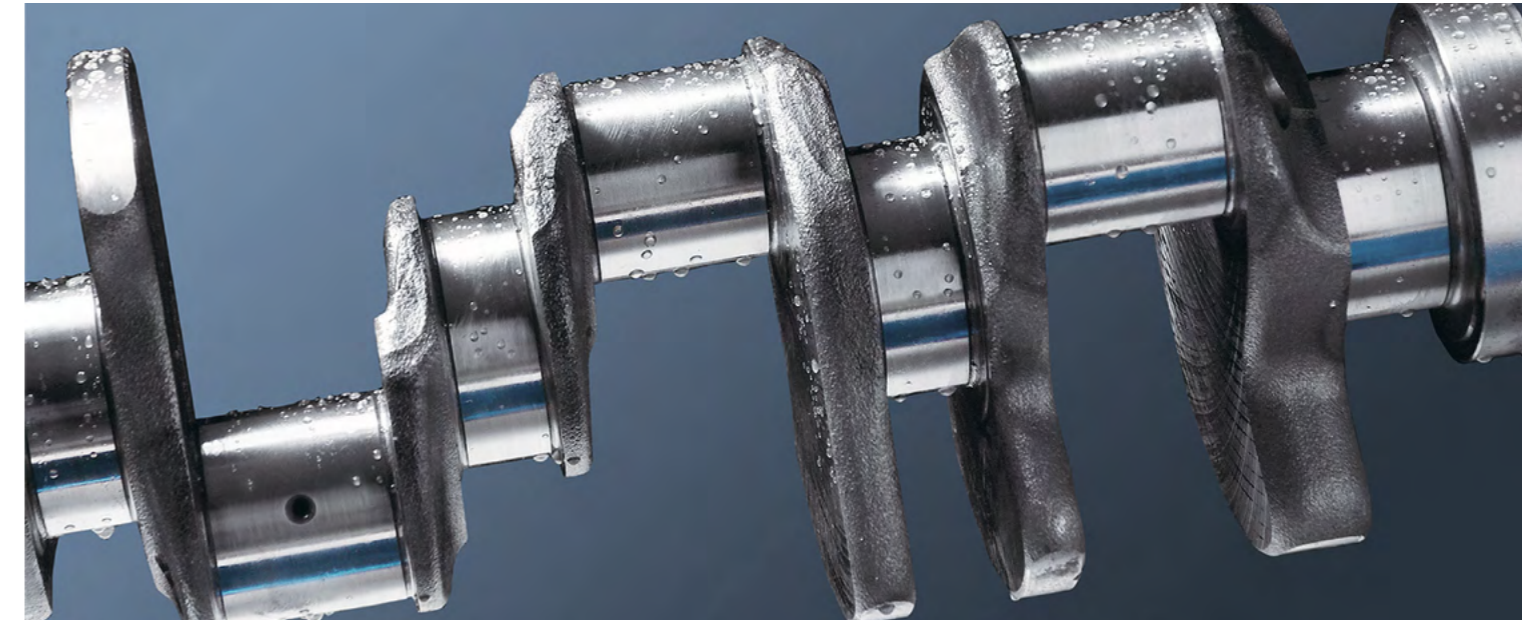
Everything from one source: BECHEM lubrication greases ensure maximum efficiency and performance over the entire process chain. From toolmaking, to forming and machining, down to corrosion protection, BECHEM develops fine-tuned product series offering a wide range of benefits.

Extended service lives reduce maintenance, increase production and continuously optimize processes. In addition, fewer suppliers means lower costs and more efficient lubrication application. Cost-intensive damage and machine downtimes can be prevented.

Ideal process support can be crucial when it comes to the functioning and life cycle of your machine fleet.

BECHEM provides technical consultation on the proper use of different lubricants, offering added value in terms of safety and reliability for production.

With the Berulit and Beruforge product series, BECHEM offers a high-performance range of products for forming operations which meet the increasing customer demands with regard to environmental regulations, process optimisation and process combinations. BECHEM products guarantee high levels of lubrication, excellent separation qualities and, in many cases, surface qualities which do not require any follow-up treatment.



# Cooling lubrication for dies

For cooling circular lubrication of dies in horizontal high performance forging presses, BECHEM has developed **Beruforge** and **Berulit** series die sprays. They meet highest requirements and enable optimal forming results during forward and backward extrusion in semi-hot and hot forming.

Thanks to its excellent cooling properties, graphite-free cooling lubricant **Beruforge 200 CU** ensures excellent process results, an extended tool operating life and high corrosion resistance in steel and non-ferrous metals.

At tool temperatures of 120°C to 350°C, the **Berulit** series is optimal for loss and circular lubrication of hammer and press forges or profile rollers. In the processing of hubs, front axles or crankshafts made of steel, stainless steel and non-ferrous metals, the lubricant offers good wear protection, outstanding separation effects and excellent cooling properties.

BECHEM die sprays meet the highest of quality standards as well as customer specifications, enabling optimized processes – the key to reducing costs and boosting efficiency.



Extended die life based on the specific application of BECHEM lubricants



Beruforge products for forming of precision parts

PRODUCT	Material	Tool temperatures	Application		MoS <sub>2</sub> / graphite-containing, black	Transparent / white	Mixing ratio with water <sup>a)</sup>	Description
			Spraying	Coating				
<b>Beruforge 100</b> 	Steel, stainless steel, titanium	up to 400 °C	-	•	•	-	pure – 1:4	MoS <sub>2</sub> -containing coating lubricant for forming of complex construction parts, special additives produce good pressure stability and allow high forming degrees without using zinc phosphates
<b>Beruforge 120 AL</b> 	non-ferrous metals, steel	up to 320 °C	•	•	-	•	1:1 – 1:8	Synthetic, aqueous cooling lubricating wax suspension for hot forming of complex components and punching, with good parting properties and wear protection, suitable for die spraying or as coating lubricant
<b>Beruforge 120 DL</b> 	Steel, stainless steel, non-ferrous metals	25 °C	-	•	-	•	1:1 – 1:8	Coating lubricant as drawing paste, suitable for zinc phosphate free semi-finished products, good corrosion protection, easy removal of residues
<b>Beruforge 152 D</b> 	Steel, aluminum	up to 200 °C	•	•	-	•	1:1 – 1:8	Phosphate-free, aqueous coolant suspension of solid lubricants for forming of complex construction parts and punching, special additives with excellent anti-corrosion properties produce good pressure stability and allow high forming degrees without using zinc phosphates
<b>Beruforge 152 DL</b> 	Steel, stainless steel, non-ferrous metals	25 °C	-	•	-	•	1:1 – 1:8	Coating lubricant as drawing paste with high solid content, suitable for zinc phosphate free semi-finished products, good corrosion protection, easy removal of residues
<b>Beruforge 170</b> 	Steel, stainless steel, titanium	up to 400 °C	-	•	•	-	pure – 1:5	MoS <sub>2</sub> -containing coating lubricant with very low particle size for forming of complex construction parts, special additives produce good pressure stability and allow high forming degrees without using zinc phosphates
<b>Beruforge 190</b> 	Steel, stainless steel, titanium	up to 400 °C	-	•	•	-	pure – 1:2	MoS <sub>2</sub> -containing coating lubricant with minimal particle size for forming of complex components, special additives produce good pressure stability and allow high forming levels without using zinc phosphates
<b>Beruforge 191 T</b> 	Steel, stainless steel, titanium	up to 500 °C	-	•	•	-	pure	MoS <sub>2</sub> -containing coating lubricant with very low particle size for forming of complex construction parts, special additives produce good pressure stability and allow high forming degrees in multiple-stage processes without using zinc phosphates
<b>Beruforge 350</b> 	Steel	up to 350 °C	•	-	-	•	1:4 – 1:8	Synthetic, aqueous coolant suspension with excellent parting properties and wear protection for graphite-free spray die spraying up to 1,280 °C on presses without ejectors and hammers
<b>Beruforge 393 G</b> 	Steel, non-ferrous metals, magnesium	up to 300 °C	•	-	•	-	1:5 – 1:15	Coolant with low graphite content and waxy additives for spray application in die forging up to 1,280 °C on multiple stage presses, good release properties and wear protection
<b>Beruforge 200 CU</b> 	Steel		• <sup>1)</sup>	-	-	-	2 – 16%	Graphite-free coolant for circular lubrication on high-speed horizontal die forging presses up to 1,280 °C, for backward and forward extrusion, excellent oil separation capacity, good corrosion protection, extended tool life
<b>Beruforge 2002 B</b> 	Steel, stainless steel, non-ferrous metals	up to 300 °C	•	-	-	•	1:1 – 1:10	Graphite-free coolant for spray application in die forging up to 1,280 °C, hot and profile rolling, extrusion moulding, good release properties and wear protection, well suitable for circular cooling and lubrication in semi-hot forming at 680 °C to 950 °C
<b>Beruforge 2450 B</b> 	Steel, stainless steel, non-ferrous metals	up to 450 °C	•	-	-	•	1:1 – 1:10	Graphite-free lubricant for extrusion of steel and non-ferrous metals, highly suitable for circulation cooling and lubrication in semi-hot forging at +680°C to +950°C, die forging up to 1,280°C
<b>Beruform Z1</b> 	Steel, stainless steel	25 °C	-	•	•	-	pure	Microfine powder on MoS <sub>2</sub> basis for cold calibration of forging parts with pre-finished surfaces and for pushing-in / pushing-out of dies

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

<sup>1)</sup>flooding <sup>2)</sup>Reference values, can be adjusted depending on application

# Pre-coating semi-finished products

The typical structure of a coating lubricant for semi-finished products is based on water with structure properties for viscosity and surface behavior, and is enhanced with additives and solid lubricants to achieve the desired performance. Additional properties such as wetting, corrosion protection or pH value can be adjusted exactly.

BECEM products are applied all over the world to minimize friction in demanding forming processes with extreme surface pressures between die and workpiece. This results in semifinished and finished products of high precision and optimal surface quality, ready for their intended application or for finishing purposes in downstream processing.

Coating lubricant **Berulit 913**, which contains graphite, is ideal for precision semi-hot forming of steel up to approx. 950°C. Berulit 913 reduces surface scaling and enables excellent application by spraying, immersion or pouring.



Berulit coating lubricants to minimize scale formation in semi-hot forming processes.



Berulit die spraying lubricants for optimized forging of automotive parts.

PRODUCT	Material	Tool temperatures	Application				MoS <sub>2</sub> / graphite-containing, black	Oil-containing	Transparent / white	Dilution ratio <sup>2)</sup>	Description
			Spraying	Coating	MoS <sub>2</sub> / graphite-containing, black	Oil-containing					
<b>Berulit 392</b> 	Steel, stainless steel, non-ferrous metals	up to 300 °C	• <sup>1)</sup>	-	-	-	•	-	1:1 – 1:10	Graphite-free coolant for spray application in die forging up to 1,280 °C as well as extrusion, excellent flow properties, good release effect and excellent wear protection	
<b>Berulit 400</b> 	Steel, aluminum, non-ferrous metals	up to 250 °C	•	-	•	•	-	-	1:1 – 1:10 <sup>3)</sup>	Semi-fluid, graphite-containing oil lubricant for die forging up to 1,280 °C as well as for hot extrusion with long flow paths, excellent release and lubricating properties, silicate and acid free, application by airless spray systems, brushing or dipping	
<b>Berulit 630</b> 	Steel, stainless steel, aluminum, non-ferrous metals	up to 350 °C	•	-	•	•	-	-	1:2 – 1:20	Graphite-containing oil-in-water emulsion with low particle size for spray application in die forging up to 1,280 °C, hot forging and profile rolling of complex construction parts, excellent release properties, silicate and acid free	
<b>Berulit 740-88</b> 	Steel, non-ferrous metals	up to 350 °C	•	-	•	•	-	-	1:1 – 1:25 <sup>3)</sup>	Semi-fluid, highly stable dispersion of graphites of different particle sizes in a semi-fluid grease on mineral oil basis, suitable for die forging up to 1,280 °C and hot extrusion, especially for the production of hollow parts, application by airless spray systems, brushing or dipping	
<b>Berulit 906 HP</b> 	Steel, stainless steel, non-ferrous metals	up to 350 °C	•	-	•	-	-	-	1:1 – 1:10	Graphite-containing, ammonia free coolant for spray application in die forging in loss or circular lubrication up to 1,280 °C, excellent release properties and very good wear protection due to smallest particle sizes and high solid content, suitable for most demanding applications	
<b>Berulit 912 HP</b> 	Steel, stainless steel, non-ferrous metals	up to 350 °C	•	-	•	-	-	-	1:1 – 1:10	Graphite-containing, ammonia free coolant for spray application in die forging in loss or circular lubrication up to 1,280 °C, excellent release properties and very good wear protection due to smallest particle sizes and high solid content, suitable for demanding applications	
<b>Berulit 909</b> 	Steel, stainless steel, non-ferrous metals	up to 350 °C	•	-	•	-	-	-	1:1 – 1:10	Graphite-containing, ammonia free coolant for spray application in die forging in loss or circular lubrication up to 1,280 °C, excellent release properties and excellent wear protection, high solids content, suitable for extreme applications	
<b>Berulit 913</b> 	Steel, aluminum		-	•	•	-	-	-	pure – 1:8	Graphite-containing coating lubrication for semi-hot forging as well as hot and profile rolling up to 950 °C, very good release properties and wear protection, prevents surface scaling based on high temperature stability	
<b>Berulit 935 H</b> 	Steel		-	•	•	-	-	-	1:1 – 1:4	Graphite-containing coating lubricant with special graphite mixture for semi-hot forging up to 950 °C, excellent parting properties and wear protection, prevents surface scaling based on high temperature stability, high tinder reduction	
<b>Berulit 935</b> 	Steel		-	•	•	-	-	-	pure – 1:8	Graphite-containing coating lubrication for semi-hot forging up to 950 °C, very good release properties and wear protection, prevents surface scaling based on high temperature stability	

All indications and values correspond to latest knowledge and do not represent any product specification.  
<sup>1)</sup>flooding <sup>2)</sup>Reference values, can be adjusted depending on application <sup>3)</sup>with oil

## BECHEM Avantin – water-miscible coolant lubricants

**BECHEM Avantin** is a product series of water-miscible coolant lubricants. Complex processes demand excellent cooling lubricant performance with maximum efficiency, lasting stability and extended tool life, made possible thanks to BECHEM's engineering expertise and a modern system structure. Clean machines that are protected against corrosion go without saying.

Products from the BECHEM Avantin series offer proven performance in terms of optimized tool service life and outstanding surfaces. They provide lubrication in areas susceptible to wear and are always tailored to the respective requirements. Oxidation-stable, semi-synthetic and fully synthetic product concepts provide ideal support for processes involving high thermal loads. Low-consumption BECHEM Avantin impresses with outstanding corrosion protection as well as excellent removal transport of process materials and heat, staying cool when things get hot.

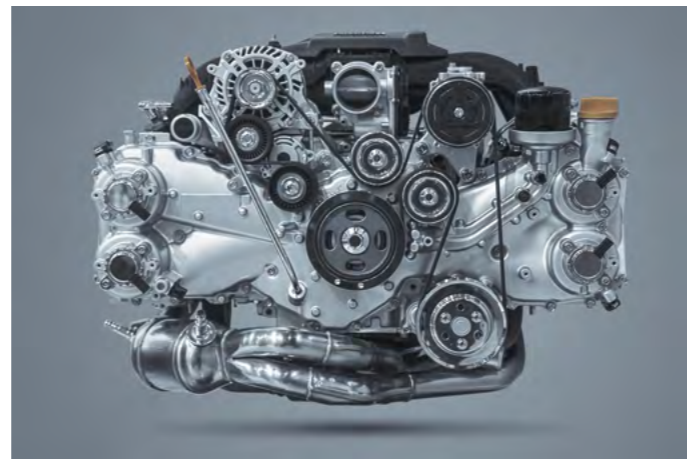


BECHEM Avantin was developed to achieve optimized efficiency for all forming processes.

## Berucut XC – non-water miscible cooling lubricants

The continuously growing demands in metal processing require more and more high performance fluids. The non-water miscible **Berucut XC series** is the new trend-setting generation of BECHEM cooling lubricants tailored to the wide range of processed materials. Berucut XC is ideal for minor to major machining jobs, such as turning, drilling, milling, thread cutting, grinding, broaching or sawing.

The Berucut XC series is based on synthetic base fluids free of crude oil and synergetic additive technologies, resulting in new outstanding performance brands as well as stable, reliable production processes. Designed for demanding metal cutting applications, this product series convinces with higher flashpoints, a lower evaporation tendency and reduced oxidation propensity. Users benefit from improved work safety and lower consumption.



Forged engine elements, such as crank shafts, pistons or cylinders are finished off with the Berucut XC series.

## BECHEM scientific network

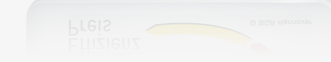
Thanks to intensive R & D work, as well as the participation in various international and national research projects, BECHEM has successfully tailored their high-performance lubricants to the corresponding application. Modern test equipment and control benches allow the optimal selection of the suitable lubricant already during the early stage of development. BECHEM finds the right solution which contributes to our customers' success.

## Awarded

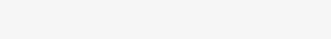
High-quality lubricants are indispensable products that are worth their investment. They have received prestigious awards – by making a decisive contribution to performance, energy efficiency and sustainability of products and processes.



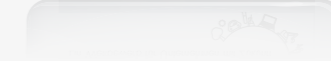
Award for Berufluid – a joint project with Fraunhofer Institute IVV and IWF Braunschweig.



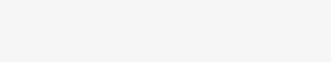
BECHEM wins award for tailored solutions in the premium vehicle sector.



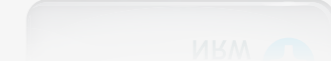
BECHEM as an award-winner is one of the 20 most innovative companies in North Rhine-Westphalia.



BECHEM wins the award for innovative lifetime lubrication of various vehicle components.



BECHEM wins the NRW Efficiency Award for innovative and resource-efficient coating in cold massive forming.



# Lubrication solutions for industry



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