

Lubricants and release agents
for massive forming



BECHEM
LUBRICATION
TECHNOLOGY



Beruforge and Berulit for massive forming

BECHEM – Lubrication solutions for industry

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






BECHEM products convince by innovative formulations in most different industrial applications – in machining and forming metal working processes, in coating technology or as for-life lubricant in various technical components.

A powerful network of distributors and several national and international production sites ensure that BECHEM 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 

Zinc phosphate free coating processes with the Beruforge 150 series

Tribological conditions in cold massive forming are characterised by high relative speeds between die and work piece, high surface pressures, as well as considerably enlarged surfaces.

cost pressure, increasing demands for energy and raw material efficiency in industrial processes, as well as strict regulations with regard to environmental protection require alternative and sustainable lubricant solutions.

Due to frictional and forming processes, temperatures of up to 500 °C will occur. These frame conditions require expensive lubricating systems in cold massive forming to prevent direct metal contact between tool and work piece.

Within a joint research project BECHEM has developed an innovative coating process which is superior to all conventional phosphate free systems – the single-layer system of the Beruforge 150 series.

Still today the “Singer Patent” with its classical zinc phosphate coating represents the latest state of technology in cold massive forming. Global competition and



The advantages of Beruforge 150

Cost savings and conservation of resources



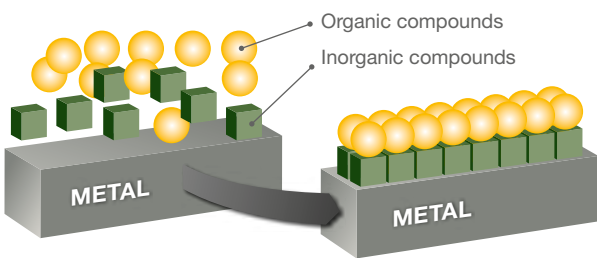
Chemical

Typical structure of a zinc phosphate coating

unreacted soap	anti-blocking, release agent
zinc stearate	friction reducer, release agent
zinc phosphate	release agent, prevents cold welding
METAL	

Mechanical

Typical structure of the single-layer system with Beruforge 150 series



Beruforge

for massive forming

In cold or hot sheet forming processes, in wire and tube drawing, in massive forming and cold forming processes, whenever the shape of metals is changed, BECHEM lubricants support production and provide excellent process results.

In various metal forming processes, lubricants have to meet highest demands. The consequent and continuous development and improvement of the BECHEM lubricants is the basis for outstanding quality tailored to our customers' requirements and thus the guarantee for smooth processes.

BECHEM process fluids for forming technology offer a high level of process reliability and efficiency.



Extended die life based on the specific application of BECHEM lubricants



Beruforge series for forming of precision parts

PRODUCT	Material	Tool temperatures	Spraying	Coating	MoS ₂ / graphite containing black	Transparent / white	Mixing ratio with water ²⁾	Properties
Beruforge 100 	Steel, stainless steel, titanium	up to 400 °C	-	•	•	-	pure – 1:4	MoS ₂ -containing coating lubricant for forming of complex construction parts, special additives produce good pressure stability and allow high forming degrees without using zinc phosphates
Beruforge 120 DZN 	Steel, aluminium	up to 200 °C	•	•	-	•	pure – 1:8	Aqueous coolant suspension of solid lubricants for forming of complex construction parts and aluminium sheets up to 300 °C, special additives with excellent anti-corrosion properties produce good pressure stability and allow high forming degrees without using zinc phosphates
Beruforge 120 AL 	Non-ferrous metals, steel	up to 320 °C	•	•	-	•	1:1 – 1:8	Synthetic, aqueous cooling lubricating wax suspension for hot forming of complex construction parts and punching, good release properties and wear protection, suitable for spray application on dies or as coating lubricant
Beruforge 120 DL 	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
Beruforge 152 D 	Steel, aluminium	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
Beruforge 152 DL 	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
Beruforge 170 	Steel, stainless steel, titanium	up to 400 °C	-	•	•	-	pure – 1:5	MoS ₂ -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
Beruforge 190 	Steel, stainless steel, titanium	up to 400 °C	-	•	•	-	pure – 1:2	MoS ₂ -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
Beruforge 191 	Steel, stainless steel, titanium	up to 500 °C	-	•	•	-	pure	MoS ₂ -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
Beruforge 350 	Steel	up to 350 °C	•	-	-	•	1:4 – 1:8	Synthetic, aqueous coolant suspension with excellent release properties and wear protection for graphite-free spray application on dies up to 1.280 °C on presses without ejectors and hammers
Beruforge 393 G 	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
Beruforge 200 CU 	Steel		• ¹⁾	-	-	-	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
Beruforge 2002 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
Beruforge 2011 B 	Steel, stainless steel, non-ferrous metals	up to 300 °C	• ¹⁾	-	-	•	1:1 – 1:10	Graphite-free coolant for circular lubrication and spray application on conventional vertical and high-speed horizontal multiple stage presses up to 1.280 °C, hot and profile rolling, excellent flow characteristics, good release properties and wear protection
Beruform Z1 	Steel, stainless steel	25 °C	-	•	•	-	pure	Microfine powder on MoS ₂ basis for cold calibration of forging parts with pre-finished surfaces and for indentation / ejection of dies

All indications and values correspond to latest knowledge and do not represent any product specification
¹⁾ flooding ²⁾ Reference values, can be adjusted depending on application

Berulit
for die forging and semi-hot forming

BECHEM products are applied all over the world to minimise friction in demanding forming processes with extreme surface pressures between die and workpiece.

BECHEM plays a key role in the manufacture of semi-finished and finished products of high precision and optimal surface quality, ready for their intended application or for finishing purposes in downstream processing.










Berulit high-performance lubricants offer excellent lubricating and release properties, and are most suitable for pre-coating and spray application in die forging.



Berulit die spraying lubricants for optimised forging of automotive parts



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

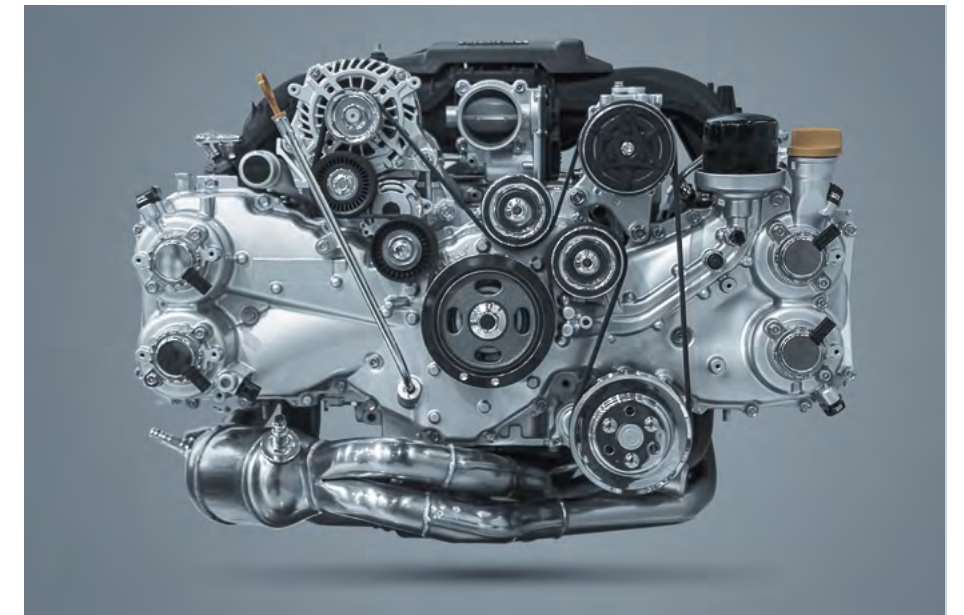
PRODUCT	Material	Tool temperatures	Application					Mixing ratio with water ²⁾	Properties
			Spraying	Coating	MoS / graphite containing black oil containing	Transparent / white			
Berulit 366 	Steel	up to 280 °C	•	-	-	-	•	1:5 – 1:10	Synthetic, water soluble, graphite-free coolant for die forging, excellent lubricating and release properties, for die forging up to 1.280 °C of complex construction parts
Berulit 392 	Steel, stainless steel, non-ferrous metals	up to 300 °C	• ¹⁾	-	-	-	•	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
Berulit 400 	Steel, aluminium	up to 250 °C	•	-	•	•	-	1:1 – 1:10 ³⁾	Semi-fluid, graphite-free 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
Berulit 630 	Steel, stainless steel, aluminium, non-ferrous metals	up to 350 °C	•	-	•	•	-	1:1 – 1:10	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
Berulit 740/88 	Steel, non-ferrous metals	up to 350 °C	•	-	•	•	-	1:1 – 1:25 ⁴⁾	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
Berulit 906 HP 	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
Berulit 909 	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, high solid content, suitable for most demanding applications
Berulit 912 HP 	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
Berulit 913 	Steel, aluminium		-	•	•	-	-	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
Berulit 935 	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
Berulit 935 H 	Steel		-	•	•	-	-	pure – 1:8	Graphite containing coating lubricant with special graphite mixture for semi-hot forging up to 950 °C, very good release properties and wear protection, prevents surface scaling based on high temperature stability

¹⁾ flooding ²⁾ Reference values, can be adjusted depending on application ³⁾ with oil

The right solution

With the Berulit and Beruforge product series, BECHEM offers a high-performance range of products for massive 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.

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.



Worth their price – BECHEM lubricants

High-quality lubricants are indispensable products that are not only worth their price but that have also been honoured with numerous well-known awards. They have earned this status by making a decisive contribution to performance, energy efficiency and sustainability in a variety of industrial applications.



Awarded for Berufluid – a mutual project with the Fraunhofer-Institut for Process and Technology and the Braunschweig Institute for Machine Tools and Production Technology.



BECHEM was awarded a prize for tailor-made solutions for vehicles in the premium segment.



As an award winner, BECHEM now belongs to the 20 most innovative companies in North Rhine-Westphalia.



BECHEM received an award for innovative lifetime lubrication of various vehicle components.

Lubrication Solutions for Industry



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