



**BECHEM high performance qualities  
for deep drilling operations**



# High Tech Lubricants for High Tech Processes

BECHEM is the specialist in the field of cutting and non cutting metal working operations.

BECHEM does not only develop and produce metal working agents for severe machining operations such as broaching, deep drilling, cold heading or wire drawing, but also monitors their application in the field as well.

Regular exchange of experience and close cooperation among the group members greatly enhance each sector's individual R + D, which is above all designed to improve performance, help protect our environment and to increase efficiency. Production underlies BECHEM's principle of quality which already applies upon receipt of raw materials: they are carefully checked, selected and, once they have been released for production, they will be monitored at any single phase of

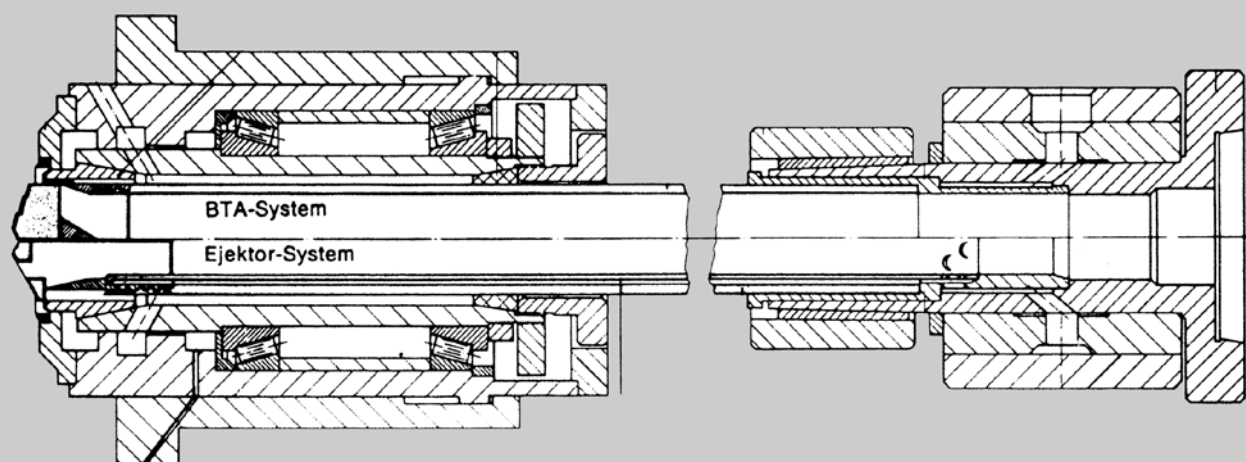
production. It is BECHEM's policy not just to recommend a suitable product but to offer individual solutions including professional assistance and advice, laboratory service, maintenance, environmental protection and information on how to correctly dispose waste emulsions.

For BECHEM efficient service and prompt supplies are self-evident.



## Deep drilling and cylinder tube processing with oils and emulsions

■ Drilling ■ Boring ■ Ejector drilling ■ Single-lip drilling ■ Peeling ■ Rolling ■ Planishing



# BECHEM high performance qualities for deep drilling operations

BECHEM deep drilling oils and BECHEM water miscible coolants are processing agents especially tailored to the high requirements of deep drilling. BECHEM deep drilling oils are successfully applied for all deep drilling processes such as ejector drilling, drilling, boring, peeling and rolling.

During deep drilling the cooling effect of the agent is of major importance in view of the severe cutting operations and the occurring heat development. Due to the low heat capacity and heat conductivity, deep drilling oils are inferior to the water-mixed deep drilling fluids with regard to their cooling effect. Therefore economic advantages are achieved with water miscible BECHEM deep drilling coolants since higher cutting parameters can be operated and intermediate washing processes are no longer necessary.

The excellent cooling effect of water miscible BECHEM deep drilling fluids avoids smoke formation as well as excessive heating of the work piece, even in case of severe cutting operations. Thus subsequent treatment of the work piece is no longer required.

Thanks to the newly developed BECHEM ADDITIVE-DESIGN deep drilling emulsions and solutions result in the same life-time of support and guiding pads as well as of the cutting tools in comparison with deep drilling oils.

## Deep drilling and cylinder tube processing with water miscible coolants

Product	Additives Sulfur	Additives Polar lubricants	Service concentration	pH-value at 10% concentration	Refractometer factor	Materials	Inhibited against non-ferrous metal corrosion
AVANTIN® 338-series	+	+	5–20 %	9,3	0,9	steel and cast alloys, heat-treated steel	
AVANTIN® 309/ AVANTIN® 3309-series	+	+	5–20 %	9,3	0,9	steel and cast alloys, heat-treated steel, performance improver for most demanding operations	
AVANTIN® 251-series		+	5–15 %	9,0	0,9	non-ferrous metal and aluminium alloys up to 15% silicon content	+
AVANTIN® 408-series		+	5–15 %	9,0	0,8	steel and cast alloys	+

The behaviour of the service emulsion – and thus the achieved result – is strongly influenced by the type of cutting operation and the applied drilling process. Our Technical Service is glad to be of assistance to you regarding the selection and application of the coolant. The specs. are intended as a guide; modifications reserved. In general BECHEM deep drilling media are free from chlorinated additives.

## Deep drilling and cylinder tube processing with high-tech deep drilling oils

Product	Viscosity at 20 °C (mm <sup>2</sup> /s)	Viscosity at 40 °C (mm <sup>2</sup> /s)	Viscosity at 50 °C (mm <sup>2</sup> /s)	Additives Sulfur	Additives Polar lubricants	Materials
TBO 405	9	5,2	4	+	+	Steels with a tensile strength up to 1.000 N/mm <sup>2</sup> (2.900 HB)
TBO 310	25	12	9	+	+	Steels with a tensile strength up to 800 N/mm <sup>2</sup> (2.350 HB)
TBO 515	36	15	11	+	+	Steels with a tensile strength up to 1.300 N/mm <sup>2</sup> (3.780 HB)
TBO 615	32	15	12	+	+	Steels with a tensile strength up to 1.300 N/mm <sup>2</sup> (3.780 HB)
TBO 422	55	22,5	16	+	+	Steels with a tensile strength up to 800 N/mm <sup>2</sup> Aluminium alloys (2.350 HB)

The specs. are intended as a guide; modifications reserved. In general BECHEM deep drilling media are free from chlorinated additives.

## That'Special!

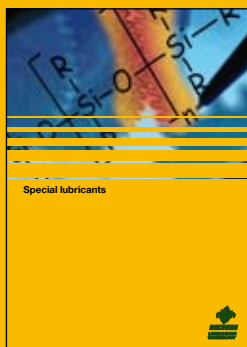
A tradition we are proud of since 1834. This is still today demonstrated by our trademark: the Rhus Flower. After permanent development, BECHEM is today a »Global Player«.

BECHEM special lubricants, industrial lubricants, metal working fluids and solutions for forming technology are based on our extensive experience in the development of special chemistry and on the latest tribologic knowledge. Our know-how with regard to friction, wear and lubrication always takes account of our customers' requirements for economical and ecological optimisation. We feel obliged to tradition and progress. That'Special!

Besides the headquarter in Hagen, BECHEM has two other production sites in Germany – in Mieste and Kierspe. In addition to that, our worldwide distribution network allows us to develop markets all over the world. With daughter companies in France, India, Switzerland and North East China, as well as Joint Ventures in the USA, South Africa, Sweden, Russia and South China, BECHEM shows its international presence.

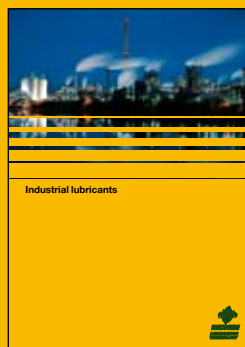
It is our target to supply our customers with high-quality products and to simultaneously meet the corresponding international standards. The quality of our products is confirmed by certification according to the automotive standard ISO/TS 16949. The requirement to our standard is guaranteed by regular internal audits and inspections by the RWTÜV at all sites, as well as by audits carried out by our customers.

**Further information material is available either direct from us or at [www.bechem.com](http://www.bechem.com)**



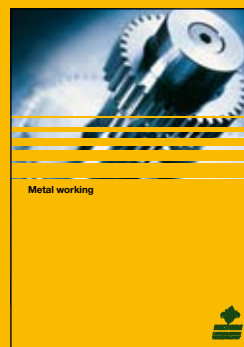
### Special lubricants

- Low and high temperature lubricants
- Plastic lubrication
- Electrical contact lubricants
- Food grade lubricants
- Valve lubricants
- Anti-Friction Coatings



### Industrial lubricants

- High performance multipurpose greases
- Heavy duty and high temperature lubricants
- Hydraulic oils
- Gear lubricants
- »Green« lubricants



### Metal working

- Deep drawing/punching oils
- Coolant lubricants
- Cutting and grinding oils
- Deep drilling oils
- Corrosion protection oils
- Cleaning agents



### Forming technology

- Wire drawing lubricants
- Cold forging oils
- Semi hot/hot forging
- Tube drawing lubricants
- Cold massive forming oils



**CARL BECHEM GMBH**, Weststraße 120, 58089 Hagen, Germany

Phone +49 2331 935-0, Fax +49 2331 935-1199, E-Mail: [bechem@bechem.de](mailto:bechem@bechem.de), [www.bechem.com](http://www.bechem.com)