



Advanced lubricants for
metal working processes



Importance of coolant

The role of coolant is critical in achieving higher efficiencies and productivity levels in metal working processes. The basic function of a coolant is to reduce friction between tool and work piece as well as to reduce and dissipate heat in the machining area. Knowledge of the dynamics involved in tool work interface, resultant frictional, tangential forces as well as behavior of the fluid when exposed to elevated temperatures and pressures are imperative in formulating the right coolant.

Complete range for metal working processes

■ Metal working mediums

- ✓ Coolants
- ✓ MQL
- ✓ Cutting oils
- ✓ Deep drilling oils
- ✓ Cleaning fluids

■ Metal forming fluids

- ✓ Cold forging oils
- ✓ Wire drawing lubricants
- ✓ Deep drawing oils
- ✓ Tube drawing

PICTOGRAMS

APPLICATIONS

Drilling	
Deep drilling	
Milling	
Grinding	
Honing	
Turning	
Broaching	
Deep drawing	
Bending	
Punching	
Fine blanking	
Cold forming	
Automotive industry	
Aviation industry	
Tool manufacture	

PROPERTIES

Chlorine free	
Good rinsing performance	
Low foaming	
Safe working environment	
Extended tool life	
Minimum quantity lubrication	
Low residue level	
Corrosion protection	
High loads	
Compatible with plastics	
Manual cleaning	

BECHEM Avantin

BECHEM Avantin range is the most advanced breed of cutting fluids that have set new benchmarks in the industry by achieving maximum performance with minimal consumption. Fortified with advanced additives the BECHEM Avantin range is equipped to contend harsh external impurities such as hydraulic oil, swarf and grinding dust whilst delivering unmatched performance.

>> BECHEM Avantin for minimal consumption and stain free machining <<



Product	Oil Content	pH Value at 5%	Corrosion Protection DIN 51360/2 Note 0 - 1	Refractometer Index	Properties
BECHEM Avantin 405 	0%	9.2	4%	2.0	Fully synthetic coolant with excellent EP properties. Suitable for grinding, cutting operations of cast iron, SG iron, steel and alloys. Synthetic character ensures high stability and long lifetime of the emulsion. Has transparent appearance. Free of Boron and Formaldehyde releasing agents
BECHEM Avantin 320 	15%	9.2	3.50%	1.6	Excellent dirt carrying capacity. Suitable for all types of grinding applications and cast iron machining. Has high emulsion stability. Not suitable for aluminium.
BECHEM Avantin 339 H 	29%	9.5	3.25%	1.2	Semi-synthetic coolant for heavy duty machining of ferrous materials. Highly recommended for machining of stainless steel. Also suitable for machining of cast iron and steel metallurgy. Offers excellent lubricity. Contains chlorinated paraffins. High stability, low foaming. Good corrosion protection properties. Low discoloration tendencies with machining of cast iron.
BECHEM Avantin 331 H 	30%	9.5	3%	1.25	Semi-synthetic coolant for machining / grinding of ferrous materials. Highly suitable for machining of cast iron, SG iron and steel. Low tendency of discolouration in CI machining. Excellent bio-stability, provides good lubrication and possesses excellent corrosion protection properties.
BECHEM Avantin 359 H 	36%	9.3	3.5%	1.1	Designed for demanding machining applications such as boring, reaming, threading and grooving. Provides excellent surface finish and improves tool life. Recommended for most aluminium alloys, stainless steel and other steel alloys. Increases tool life. Offers excellent lubricity. Provides excellent surface finish and good machining results. Contains chlorinated paraffins.
BECHEM Avantin 352 H 	44%	9.3	3.25%	1.1	Semi-synthetic coolant for universal machining. Best suited for shopfloors where different types of materials such as aluminium, cast iron, steel are machined. High stability and low foaming characteristics. Has excellent corrosion protection. Provides high bio-stability.
BECHEM Avantin 361 H 	45%	9.3	3.5%	1.1	Semi-synthetic coolant for machining and grinding applications. Possesses good lubricity. Suitable for aluminium alloys, steel, cast iron and SS machining. Suitable for high coolant pressure machines due to lower foaming tendency. Provides high bio-stability. Has excellent corrosion protection properties.
BECHEM Avantin 255 AL 	35%	8.9	5%	1	Amine and boron free coolant. Best suited for sensitive aluminium and non-ferrous metals. Also suitable for steel and stainless steel. High lubricity ensures excellent surface finish.

Stay ahead with BECHEM's extensive range : MQL, neat oils and forming fluids

	Product	Viscosity [mm ² /s] at 40 °C	Flash point [°C]	Materials to be processed	Properties
Neat oils	Berugrind 7 HC 	7 - 9	≥ 160	Carbides, Steel, Cast Steel, Stainless Steel, Titanium, HSS	Recommended for grinding of tungsten carbide tools, honing, engraving, mould construction, die manufacturing processes. Excellent cooling properties with low evaporation tendency. High dirt carrying capacity. Has good flushing properties. Minimal foam formation.
	Berucut SCO 322 HC 	21.5 - 25.5	≥ 185	Steel, Stainless Steel, Non-ferrous metals	Recommended for turning, drilling, milling, grinding, deep drilling, thread cutting, gear cutting and severe grinding operations. Supports high speed cutting. No formation of built up edges. Has excellent EP/AW properties, excellent filterability as well as flushing properties.
	Berucut SCO 316 HC 	16	≥ 186	Steel, Stainless Steel, Non-ferrous metals, Titanium	Non water miscible coolant for cutting, grinding, drilling, milling, turning, thread cutting, deep drilling, gear tooth grinding operations. Possesses excellent anti-wear and EP properties. Extends tool life. Free of Chlorine and heavy metal containing additives. Supports high speed cutting.
	Berucut XC 1010 	13	≥ 185	Cast Iron, Steel, Stainless Steel	Non water miscible coolant developed on fully synthetic base for difficult machining processes. Recommended for turning, drilling, milling, thread cutting, gear grinding and thread forming operations. Possesses excellent anti-wear and EP properties. Extends tool life. Supports high speed machining operations. Provides good corrosion protection. Free of chlorine and heavy metals.
	Berucut XC 1012 	11-13	≥ 190	Steel, Steel Alloys, Stainless Steel, Titanium, Non-Ferrous Metals	Ensures extended tool life, excellent surface finish. Low foam formation and low evaporation tendency. High flash point. Possesses good rinsing properties. Provides superior lubrication and corrosion protection. Recommended for turning, drilling, milling, grinding, deep drilling, threading, gear flank grinding etc.
	Berucut XC 1115 	15	≥ 190	Steel, Titanium, Nickel alloys, Stainless Steel, Chrome Cobalt and Non-ferrous metals	High performance cutting fluid, developed on fully synthetic base with excellent anti wear properties. Developed for machining processes such as turning, milling, deep drilling, thread cutting and tooth grinding. Suited for machining components used in medical technology. Extends tool life. Provides excellent surface finish along with good corrosion protection. Minimises foam formation. Free of chlorine and heavy metals. Non cytotoxic acco to DIN EN ISO 10993-5:2009
	Berucut XC 1222 	22	≥ 190	Cast Iron, Steel, Aluminium, Copper alloys, Titanium	Non-water miscible process medium based on synthetic base fluids with extreme pressure/anti-wear additives. Very low evaporation behaviour. Good load carrying capacity and flushing properties. Chlorine and heavy metal free.
	Berucut SCO 36 	36	≥ 280	Steel alloys, Titanium, Aluminium, Cast iron, Copper alloys, Stainless steel, Titanium alloys, Aluminium alloys, Non-ferrous metals	Non-water miscible cutting fluid for flooded and minimal quantity lubrication. Ensures long tool life. Has high flash point. Reduces smoke formation, better work environment. Recommended for heavy duty broaching and hobbing operations.
EDM Oil	BECHEM Dielectricum 4027 	2.5	≥ 101	Steel, Stainless Steel, Aluminium, Copper and non-ferrous metals	Universal EDM oil for finishing and roughing processes. Ensures low electrode wear. Excellent rinsing and cooling properties. High resistance to ageing. Low evaporation. Very low aromatic content, hence odourless.
Forming, punching & blanking	Beruform KFP 96 	81.5 - 100.5	≥ 170	Steel, Stainless Steel	Non water miscible cold forming oil for demanding and multiple forming operations. Suitable for cold extrusion, piercing, punching and deep drawing operations. Provides longer coolant service life. Free of chlorine and heavy duty metals.
	Beruform STO 110 	41.4 - 50.6	≥ 290	Steel, Stainless Steel, Aluminium, Copper	Recommended for punching, bending and stamping operations. High-performance, fully synthetic forming oil for minimum quantity lubrication with higher flash point. Can be applied by spray equipment, drip oiler, roller or brush.
	Beruform STO 5 	4.7	≥ 160	Steel, Stainless Steel, Aluminium, Copper	Non water miscible oil for easy to medium machining operations such as punching, cutting and bending. Free of chlorine and heavy metals. Provides excellent surface finish. Can be applied by spray equipment, drip oiler, roller or brush.
	BECHEM Form E 1700 N 	1.3	≥ 65	Steel, Aluminium, Copper and alloys	Biodegradable punching and bending oil. Recommended for operations of fine sheets upto 1 mm approx. Also for forming of electrical contacts. Good evaporation.
	Beruform MF 155 I 	99-121	≥ 190	Steel, Stainless Steel, Aluminium, Copper and Brass	Non water miscible multifunctional oil for cold massive forming on multiple stage presses. Suitable for cold extrusion, piercing, punching, blanking and drawing etc. Cold drawing of bare steel in wet drawing processes, forming degrees between 20% and 30% can be achieved. Drawing of round bars and profiles (square, hexagon) with difficult geometries. Also available in 68 viscosity as Premium Fluid 68 D.
	Beruform MF 155 C 	88-108	≥ 190	Steel, Stainless Steel, Aluminium, Copper and Brass	Non water miscible forming oil recommended for cold extrusion, sheet forming, piercing, punching, blanking and drawing operations. Suitable for cold drawing of bare steel in wet drawing processes, forming degrees between 20% and 30% can be achieved. Also suitable for drawing of round bars and profiles (square, hexagon) with difficult geometries. Contains chlorinated paraffins.
	BECHEM Form 180 C 	170-210	≥ 180	High alloy steel, Stainless Steel, Aluminium, Non-ferrous metals, High-nickel alloys	Extreme pressure forming oil for extended tool life. Contains chlorinated paraffins. Possesses good lubrication property. Ensures maximum reduction per pass in cold pilgering process. Has very good adhesion.

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Product	Viscosity [mm²/S] at 40 °C	Flash point [°C]	Materials to be processed	Properties
Berucut MQL-A 20 	24.3 - 29.7	≥ 180	Steel, Stainless steel, Aluminium, Copper	Recommended for MQL machining and forming operations including punching, bending and stamping. Specially suited for machining of aluminium alloys sensitive to staining. Application possible with very low dosages, possesses excellent rinsing capacity. Fast evaporation.
Berucut MQL-A 16 	16 - 24	≥ 150	Steel, Stainless steel, Aluminium, Copper	Recommended for MQL machining and forming operations including punching, bending and stamping. Specially suited for machining of aluminium alloys sensitive to staining. Application possible with very low dosages, possesses excellent rinsing capacity. Faster evaporation compared to MQL-A-20.
Beruform STO 110 	41.4 - 50.6	≥ 290	Steel, Stainless steel, Aluminium, Copper	High-performance, fully synthetic oil for minimum quantity lubrication with higher flash point. Suitable for machining and forming applications including punching, bending and stamping.
Beruform STO 5 	4.7	≥ 160	Steel, Stainless steel, Aluminium, Copper	Non water miscible punching, cutting and bending oil suitable for minimum quantity lubrication. Suitable for medium machining operations.
Berucut MQL M 30 	27-33	≥ 180	Low alloy steels, aluminium, ferrous and non ferrous metals	Non water miscible fluid for minimum quantity lubrication applications involving cutting and non cutting operations. Also suitable for forming operations such as punching and bending. Possesses excellent EP properties, extends tool life. Free from chlorine and heavy metals.
Berucut SCO 36 	43	≥ 265	Low alloy steels, aluminium, ferrous and non ferrous metals	Non water miscible fluid for minimum quantity lubrication applications involving cutting and non cutting operations. Also suitable for forming operations such as punching and bending. Possesses excellent EP properties, extends tool life. Free from Chlorine and heavy metals.
MQL M 40 	43	≥ 255	Low alloy steels, aluminium, ferrous and non ferrous metals	Non water miscible fluid for minimum quantity lubrication applications involving cutting and non cutting operations. Also suitable for forming operations such as punching and bending. Possesses excellent EP properties, extends tool life. Free from Chlorine and heavy metals.

Cleaners for higher productivity

Cleaning of work-piece and semi finished products for subsequent process is an important aspect during production. Insufficient or incorrect cleaning often lead to defective products and increase in rejection rates.

Beruclean : Heavy duty range of cleaners by BECHEM

Based on, advanced formulation Beruclean range of cleaners provide spotless and speck free components, leaving no residues mandatory for critical machining processes. The Beruclean range is available in both aqueous and solvent-based biodegradable variations for wide variety of materials.

Cleaners based on synthetic hydrocarbons

Product	Viscosity at 20°C [mm²/S]	Flash Point [°C]	Properties
Beruclean Eco 	1.8	≥ 65	No ozone depleting agents. Compatible with plastics and rubber. Universal cold cleaning agent, free of aromatic hydrocarbons, almost no smell, readily biodegradable according to OECD 301 F. Also NSF-H1 approved. Gives temporary rust protection.
Beruclean 4027 	3.3	≥ 101	Cold cleaner based on paraffin hydrocarbons with low aromatic content and free from hazardous substances. Leaves a thin oily corrosion protection film. No ozone depleting agents. Higher flash point. Compatible with plastics and rubber.

Concentrates for aqueous cleaning

Product	pH Value at 5%	Examples of application	Properties
Beruclean 113 EMF 	9.5	Suitable for Steel, SS, Aluminium and Cast iron	Universal alkaline cleaner with low foaming properties. Specially recommended for high pressure cleaning applications: Spray cleaning (+55°C to +70°C), Ultrasonic cleaning (+50°C to +70°C) and Immersion cleaning (+50°C to +80°C).
Beruclean 111 EHF 	13	Steel, SS and Cast iron	High alkaline aqueous cleaning agent for steel and ferrous materials. Specially recommended for ultrasonic applications. Effective against extremely rigid dust and sludge particles. Spray cleaning (+ 40°C to +60°C), Ultrasonic cleaning (+50°C to +80°C) and Immersion cleaning (+50°C to +80°C).
Beruclean 3050 	10.2	Suitable for Concrete, Ferrous, Glass, Plastic surfaces, Steel, Tiles, Non-ferrous	Universal, alkaline cleaner to remove industrial contamination. Suitable for manual cleaning and scrubber vacuum machines. Neutral towards paints, rubber seals, plastics, textile and aluminium. Suited for machine and floor cleaning. Very effective of removal of oil and emulsion residue of CNC machines. Suited for ultrasonic cleaning. Component cleaning. Biodegradable surfactant.
Beruclean 3849 	1.5	Ceramic, Copper, Glass, Plastic or other acid-resistant materials, Stainless Steel	Acidic cleaner with surfactants for removal of rust and corrosive film on metal surfaces. Designed for immersion and manual cleaning as well as for diluted use in high pressure cleaners. Removes stubborn lime deposits. Cleans acid-resistant materials and rust. Also suited for scale remover. Also can be used for brightening purpose for aluminum and copper. Also suited for ultrasonic cleaning.
Premium Clean 223 RF 	8.4	Ferrous and non-ferrous metals	Universally applicable aqueous cleaner to remove oil, coolant, grease deposits and metal working soils from machine surfaces and shop floor residues. Inhibitors provide short term protection against corrosion. Suitable for ultrasonic spray, manual and immersion cleaning.

Corrosion Protection Fluids

Product	Viscosity at 40°C [mm²/s]	Layer of thickness. Approx. [µm]	Properties
Premium Protect DW 10 	1.0 to 1.05	1 to 2	Odourless solvent can provide upto 8 months of protection (indoor). Has excellent water displacing and drying ability on parts exposed/processed in watery systems. Gives almost dry to touch protective film. Recommended for separation of watery adhesions / dewatering properties. Provides corrosion protection during transport and storage.
Premium Protect MW 12 	2-4	2 to 3	Corrosion protection fluid with excellent water displacement ability for medium to long term storage. Provides effective protection for 18-20 months with indoor storage and 10-12 months for outdoor storage. Recommended for ferrous and non ferrous materials.

Experience the Avantin edge

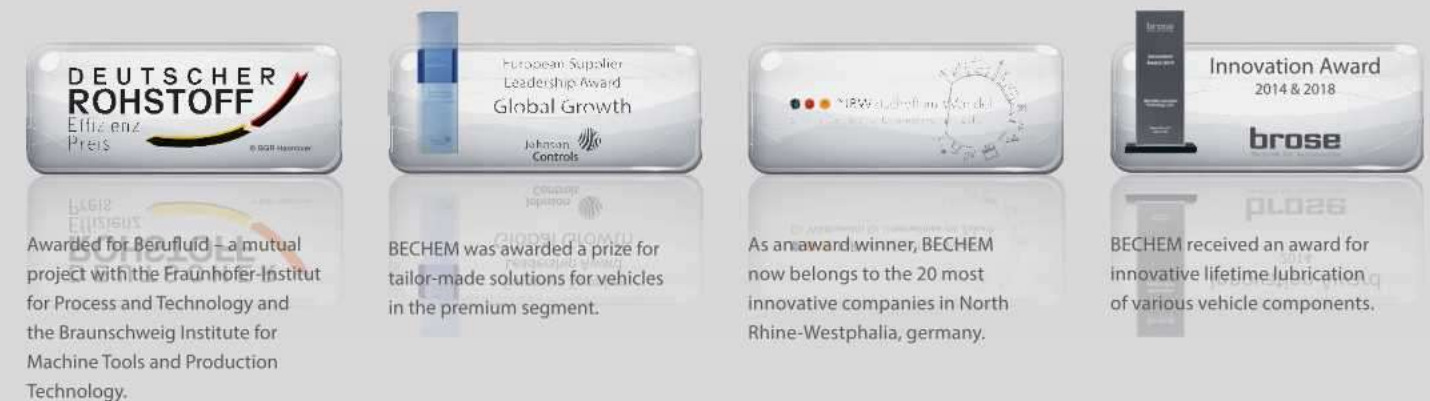
- Long sump life**
 - ✓ Excellent bio stability
 - ✓ Superior flushing properties
 - ✓ Cleaner work environment
- Excellent corrosion protection**
 - Minimal top-up quantity**
 - ✓ Negligible drag out losses
- Good machining performance**
 - ✓ Excellent surface finish
 - ✓ Enhanced tool life

» BECHEM Avantin service chart «

Parameter	Properties
Water 	Recommended water • pH value 7 • Hardness: Up to 50 ppm • Chloride content <25 ppm • Ensure water devoid of bacteria or fungal attack
Initial Filling 	Procedure • Use BECHEM System cleaner • Add system cleaner at 1% of cutting fluid in the tank • Drain the entire system after circulating the cutting fluid for 12 to 24 hours • Refill and circulate fresh water throughout the system. Flush out water so that all traces of cleaner and swarf are removed • For better results flush with 1% emulsion • Charge the tank with fresh emulsion
Mixing 	• Add oil to water slowly with constant stirring. Do not add water to oil • Mixing unit is recommended for better results • Avoid compressed air and coolant pumps
Maintenance 	• Keep the required concentration stable • Measure pH regularly • Check the appearance of coolant for colour, odour, foam, cleanliness of the system etc. • Avoid all sorts of dust • Remove any tramp oil from the coolant tank

Awarded – BECHEM lubricants

High quality lubricants are indispensable products which are worth their investment, they are winners of prestigious awards – by making a decisive contribution to performance, energy efficiency and sustainability of products and processes.



Lubrication Solutions for Industry



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