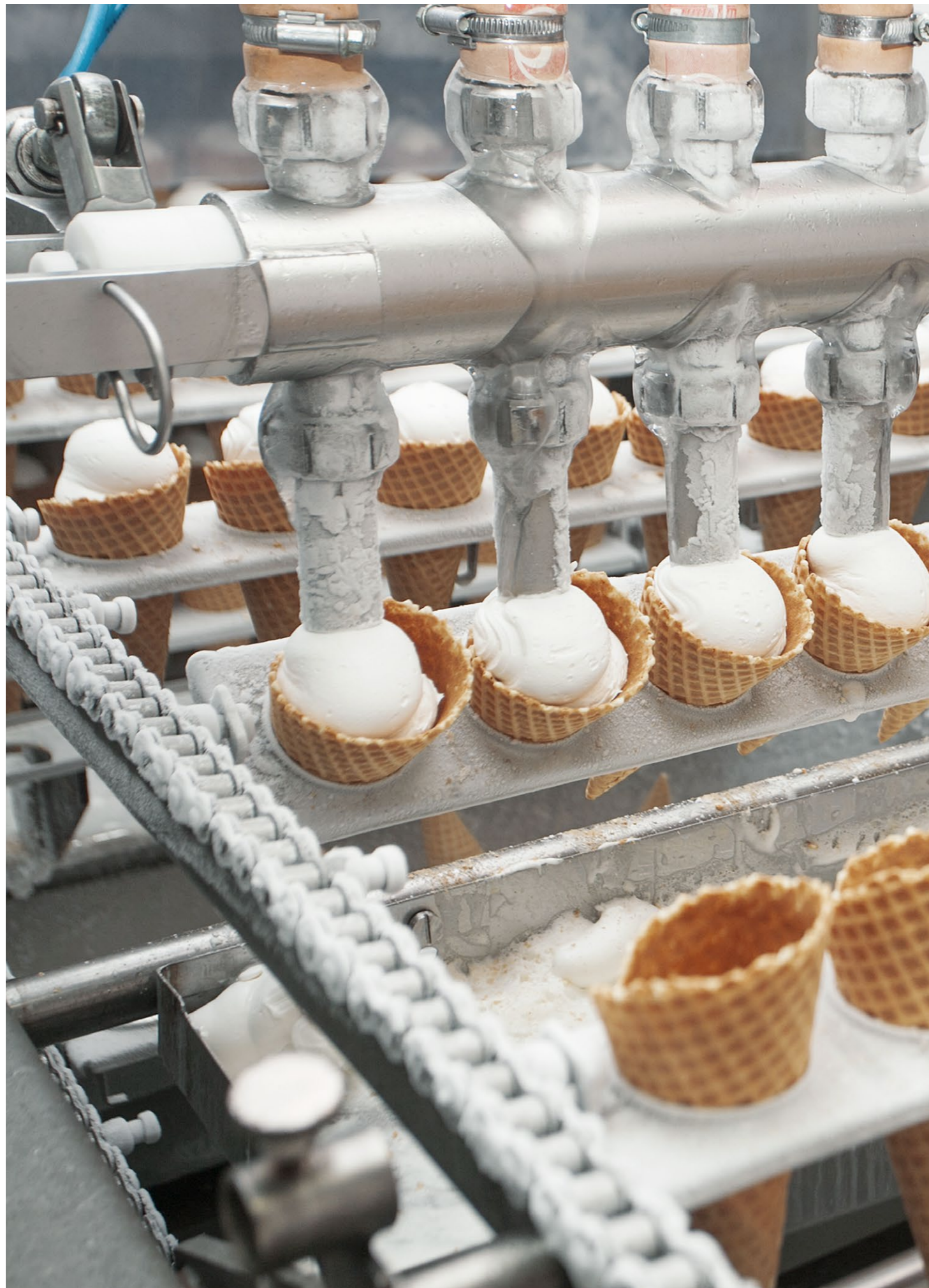




High performance chain oils



**BECHEM**  
LUBRICATION  
TECHNOLOGY



# High performance chain oils for extreme temperatures

## BECHEM – Lubrication solutions for industry

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

BECHEM products stand out through innovative formulations in the most diverse industrial applications – in machining and forming for metalworking 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.**

### APPLICATIONS

Automotive industry



Food grade/  
Pharmaceutical technology



### ATTRIBUTES

Low temperatures



High temperatures



High loads



Corrosion protection



Resistant to water



Compatible with plastics



Available in aerosols



# Powerful and efficient

Low evaporation, low friction and excellent lubrication guarantee the high performance of the chain even at high temperatures. In general chain lubrication is done by periodical application of fresh oil without oil recycling; thus lowest oil consumption is economical and clean. Cleaning of the chains is very simple or even unnecessary since oil residues are dissolved by fresh oil.

Attention: An already wet chain will not absorb more oil, excess oil will drip off!

Besides the use on drive and conveyor chains, BECHEM high-performance chain oils are well suitable for the lubrication and corrosion protection of cams, sliding surfaces and tooth systems.

» Oil structure and additive content are tailored to the specific application. «



BECHEM products meet highest requirements of chain lubrication e.g. in the production of rubber gloves



Many BECHEM products are also available in spray cans

## Lubricant consumption of a roller chain

### Guidance on viscosity selection

Criterion	Results of oils with a higher viscosity
Duration of lubricating effect	longer, optimum at ISO VG 220/320
Corrosion protection	better
Oil penetration	lower
Pumpability	lower
Wash-out stability	better
Tackiness	better
Dust absorption	lowest at very low and very high viscosity
Evaporation loss	best results at ISO VG 100 to ISO VG 220/320
Chain size	
small/fine chains	worse suitability
large/coarse chains	better suitability
Ability to dissolve residues (cleaning effect)	lower
Load carrying capacity	better, max. at ISO VG 220/320
Wear protection	better, max. at ISO VG 220/320

# For demanding conditions

BECHEM produces a large selection of oils for high temperature applications. The oil structure and additives with or without solid lubricant have been tailored to the corresponding requirements of special fields of application.

Synthetic BECHEM chain oils can be mixed with mineral oils. They thus facilitate the oil change and have a certain cleaning effect by dissolving oil residues. The better tackiness of the oil allows extended lubricating intervals without wear problems and simultaneously is the precondition for good corrosion protection and economic oil consumption. In case of correct application the BECHEM oils do not form any laquer like residues when used at high temperatures.

BECHEM lubricants for the food processing and pharmaceutical industry meet the standards and requirements of the international organisations for product tests and certifications. In addition, several products are certified as halal and kosher. For BECHEM products with H1 and H2 approval as well as their compliance with dietary rules, please refer to the information given in the table.

**H1:** Identification of food grade lubricants, i. e. lubricants which can be applied where incidental food contact cannot be excluded.

**H2:** Identification of lubricants for the general use in the food processing industry, provided food contact is excluded.

**Halal:** Identification of products which are classified as “halal” (legal) according to the Islamic dietary regulations.

**Kosher:** Identification of products which are classified as “kosher” (suitable, clean) according to the Jewish dietary laws.

**ISO 21469:** International standard which specifies the hygiene requirements for the formulation, manufacture and use of lubricants where incidental food contact cannot be excluded.

	PRODUCT	Base oil	Kinematic viscosity at 40 °C [mm²/s]	Viscosity index	Pour point [°C]	Flash point [°C]	Certificate Compliance	Description
High performance chain oils for universal applications	<b>Berusynth CU 46</b> 	Ester	54	120	-51	≥ 260	H2	Fully synthetic high-performance chain oil, very good penetration capability, good protection against corrosion, also suitable for high temperatures, low evaporation rate and dust absorption
	<b>Berusynth CU 100</b> 	Ester	100	115	-42	≥ 260	H2, Halal, Kosher	High-temperature chain oil, wide temperature range, good wetting and creeping properties, hot/cold water resistant, good protection against corrosion, no formation of critical residues
	<b>Berusynth CU 250</b> 	Ester	250	120	-45	≥ 250	H2	High-temperature chain oil, wide temperature range, very good wetting and creeping properties, hot and cold water resistant, good protection against corrosion, no formation of critical residues of critical residues
	<b>Berusynth CU 252</b> 	Ester	250	120	-45	≥ 250	H2	High-performance chain oil, excellent wetting and creeping properties, very low evaporation rate even at high temperatures, no critical formation of residues, good corrosion protection, high wash-out stability, resistant to hot and cold water, high load carrying capacity, excellent wear protection
	<b>Berusynth CU 3000</b> 	Ester	3000	170	-27	≥ 250	-	High-performance chain oil for long-life lubrication, excellent wash-out stability, excellent corrosion and wear protection, extremely adhesive even at high centrifugal forces, manual application only
	<b>Berusynth CR 250</b> 	Ester	250	120	-45	≥ 250	H2	Synthetic high-temperature chain oil, wide temperature range, excellent wetting and creeping properties, resistant to hot and cold water, good corrosion protection, no critical formation of residues, especially for the production of latex and nitrile products in the immersion process
High performance chain oils for special applications	<b>Berulit IKP</b> 	Mineral oil	115	-	-36	≥ 190	-	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 absorption, very good wear and corrosion protection, contains graphite
	<b>Berusynth CA 100</b> 	Ester	100	110	-48	≥ 260	-	High-performance chain oil for chains in drying furnaces in paint shops, compatible with paint, no critical formation of residues, low evaporation rate even at high temperature
	<b>Berusynth CF 250</b> 	Ester	250	115	-40	≥ 250	-	High-temperature chain oil for film stretching machines, compatibility with plastics, especially PP-foils, low evaporation rate even at high temperatures, compatible with copper
	<b>Berusynth CW 280</b> 	Ester	280	160	-40	≥ 260	-	High-temperature chain oil to lubricate the roller systems and belts of continuous double belt presses (chip board production), very low evaporation rate in the total high temperature range
High performance chain oils for the food processing industry	<b>Berusynth CB 180 H1</b> 	Ester	180	145	-45	≥ 235	H1, Halal, Kosher, ISO 21469	High-temperature chain oil, wide application temperature range, excellent wetting and creeping properties, resistant to hot and cold water, good corrosion protection, no critical formation of residues
	<b>Berusynth CB 280 H1</b> 	Ester	280	135	-36	≥ 250	H1, Halal, Kosher, ISO 21469	High-temperature chain oil, wide application temperature range, excellent wetting and creeping properties, resistant to hot and cold water, good corrosion protection, no critical formation of residues
	<b>Berusynth CG 370 H1</b> 	Polyglycol	370	230	-	≥ 200	H1, Halal, Kosher	High-temperature chain oil, up to +200 °C effective as fluid lubricant, at higher temperatures the synthetic carrier fluid evaporates without leaving any residues, the remaining dry lubricating film guarantees reliable lubrication at temperatures up to +650 °C
	<b>Berusynth 15 H1 → 1000 H1</b> 	Polyalpha-olefin (PAO)	15	125	-65	≥ 170	H1, Halal, Kosher, ISO 21469	High-performance oil for circulation lubrication and for transport chains, hydraulic equipment, gear units, blowers, air compressors, effective corrosion and wear protection, neutral to conventional seals and paints, odorless and taste
			32	140	-65	≥ 220		
			46	140	-60	≥ 240		
			68	145	-55	≥ 240		
			100	145	-50	≥ 250		
			150	145	-50	≥ 250		
			220	150	-50	≥ 250		
320			150	-45	≥ 250			
460	150	-40	≥ 255					
680	155	-35	≥ 260					
1000	165	-35	≥ 260					
Chain oils	<b>Berusynth CP 80</b> 	Mineral oil	-	-	-	-	-	Chain lubricant for extended lubrication intervals in outdoor applications, best adhesion after evaporation of the solvent, good dry running properties based on solid lubricant MoS <sub>2</sub>
	<b>Berusynth CC 100</b> 	Synthetic oil	100	133	-39	-	-	High-performance chain oil developed for cleaning purposes during operation, excellent cleaning effect, suitable for automatic lubrication systems, tailored to the series <b>Berusynth CU</b> and <b>Berusynth CW</b>

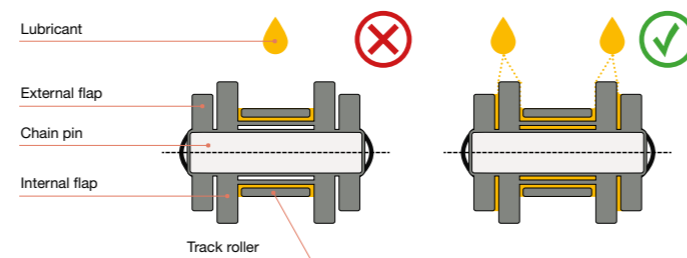
(100 and 1000 H1)

# Best properties for optimum performance

Drive and conveyor chains are working at maximum capacity. And this almost continuously. Therefore high performance chain oils are required for lubrication to guarantee smooth operation at lowest maintenance efforts.

Chains are running under mixed friction, therefore the excellent friction and wear reducing properties of BECHEM high performance chain oils are of special importance. The natural adhesive capacity thanks to polar qualities guarantee lowest oil consumption and avoid dripping and centrifuging off of the oil in case of correct dosage. In combination with their outstanding wetting and creeping properties, BECHEM high performance chain lubricants are especially economical in their application.

The oil that penetrates the chain links is decisive for the lubricating properties, not the lubricant which is visible outside the chain.



The BECHEM chain oil has to be applied in a way that it directly reaches the chain link along the internal and external flaps and the flap edges to lubricate the point of friction.

# Perfect: Low evaporation loss

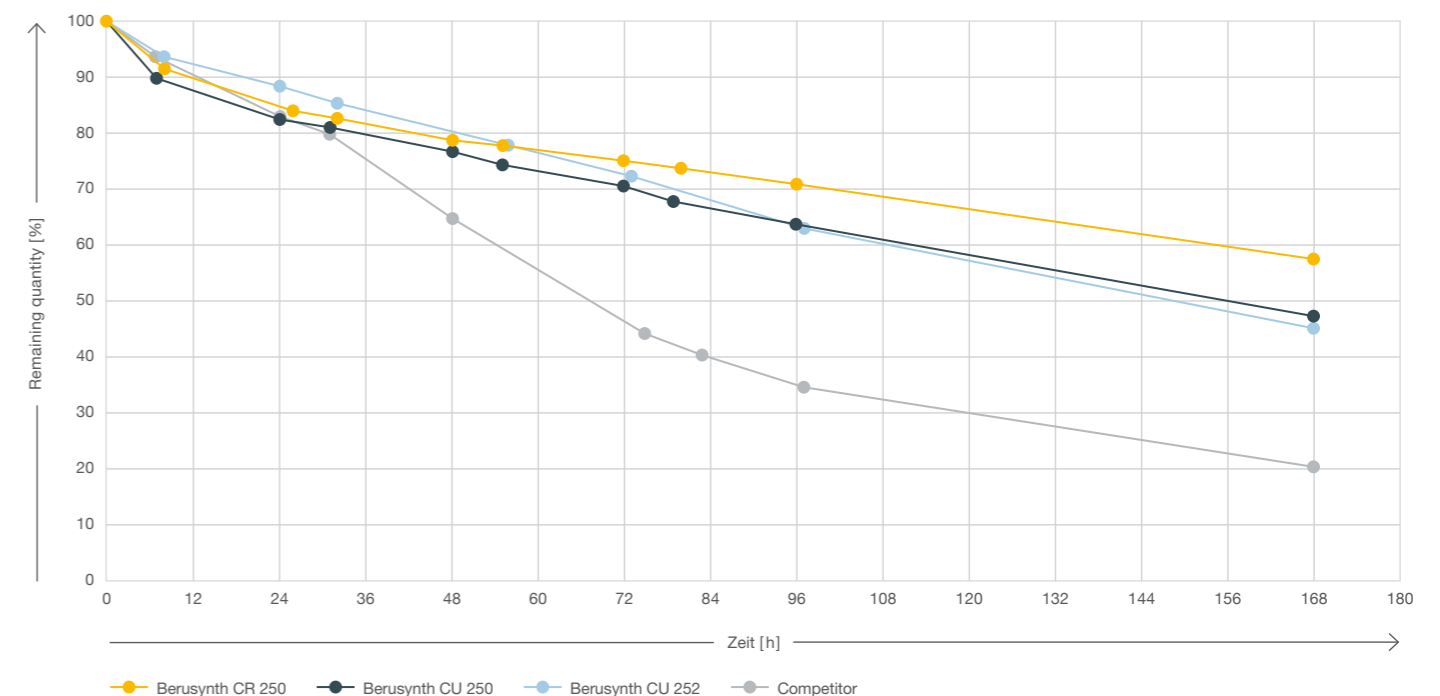
In the research and development department of BECHEM lubricants are continuously tested in order to develop them optimally for the demanding practice. The extreme loads, e.g. high temperatures, to which a chain oil is exposed during the lubrication of drive and conveyor chains, are simulated in the BECHEM technical center. For the testing of chain oils in the high temperature range we rely on state-of-the-art methods such as thermogravimetry and differential calorimetry.

For extreme applications, high-performance chain oils with a low evaporation loss and a high flash point are the best choice. The more stable the temperature properties, the lower the evaporation losses. This extends relubrication intervals and reduces consumption. This is an important economic advantage offered by the BECHEM high performance chain oils **Berusynth CB 280 H1**, **Berusynth CR 250**, **Berusynth CU 252**. They achieve outstanding values compared to competitive products and convince in applications worldwide, because they have been designed for very low evaporation rates in combination with very good lubrication performance at high temperatures of 250 °C.

» Chain damage is mainly caused by incorrect lubrication. «



## Evaporation loss at 210 °C



The diagram shows the oil fraction (%) that evaporates from an oil sample during a certain time (h) at 210 °C

# High performance oils under test

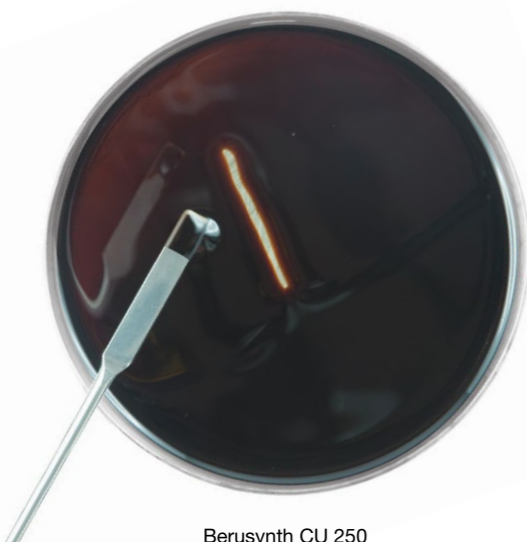
In the BECHEM laboratories, very modern and practical tests guarantee the permanent development and increased performance of the chain oils.

## Excellent evaporation behaviour

Here we show a less suitable synthetic chain oil in comparison to **Berusynth CU 250** in the evaporation test at 210 °C. The result: hard and brittle residues with the comparison oil contrary to almost unchanged oil structure with Berusynth CU 250 after a test duration of 3 days.



Synthetic chain oil

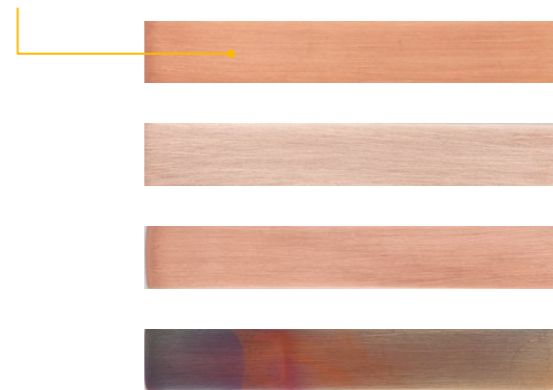


Berusynth CU 250

## Optimised behaviour towards copper

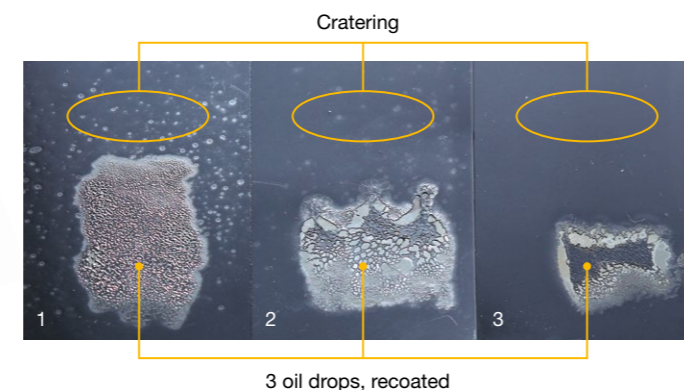
During the test **Berusynth CF 250** shows an optimised behaviour towards copper, which among others offers a special advantage when the chains are applied in film stretching machines.

Oiled with Berusynth CF 250



## Excellent paint compatibility

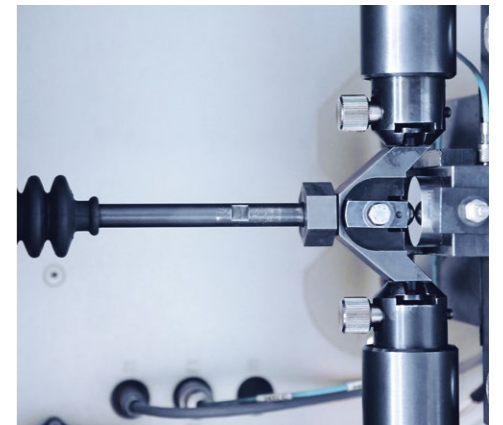
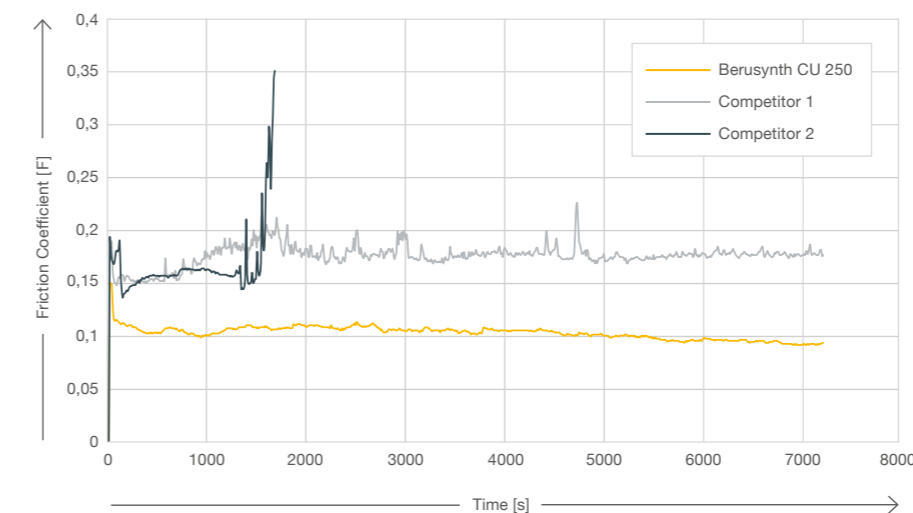
The photo shows test sheets for cratering. Three synthetic chain oils are compared, (1) an unsuitable product with strong cratering and damaged paint, (2) a less suitable product, (3) the suitable **Berusynth CA 100** approved for this water soluble paint.



## Very high wear protection

Even with a vertical contact area Berusynth CU 250 shows a considerably increased lifetime in the SRV test compared to conventional synthetic chain oils. Low and uniform friction means reliable lubrication without intermediate relubrication, even in case of extended lubrication intervals.

## Vibrational wear test run with defined load



## 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.

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



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



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



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



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

# Lubrication solutions for industry



Information on the compliance with regulations and religious dietary rules to be taken from our sales documentation.

## **CARL BECHEM GMBH**

Weststr. 120 · 58089 Hagen · Germany · Phone +49 2331 935-0 · Fax +49 2331 935-1199 · [bechem@bechem.de](mailto:bechem@bechem.de) · [www.bechem.com](http://www.bechem.com)