



Special lubricants and noise damping  
products for the automotive industry



**BECHEM**  
LUBRICATION  
TECHNOLOGY



# Special lubricants and noise damping products for the automotive industry

BECHEM – Lubrication solutions for industry

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

BECHEM 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 BECHEM products are readily available worldwide.

**Tomorrow's technologies. Today.**











## Contents

- 04 Development partner for the automotive industry
- 06 Interior components
- 08 Mechatronic systems
- 10 Electrical contacts
- 12 Chassis and brake systems
- 14 Seating and belt systems
- 16 Locking systems and hinges
- 18 Anti-friction coatings
- 20 Perfluoropolyether (PFPE) products
- 22 Noise damping
- 23 Elastomer and plastic compatibility

### APPLICATIONS

- Roller bearings 
- Plain bearings 
- Thread lubrication 
- Electrical contacts 

### ATTRIBUTES

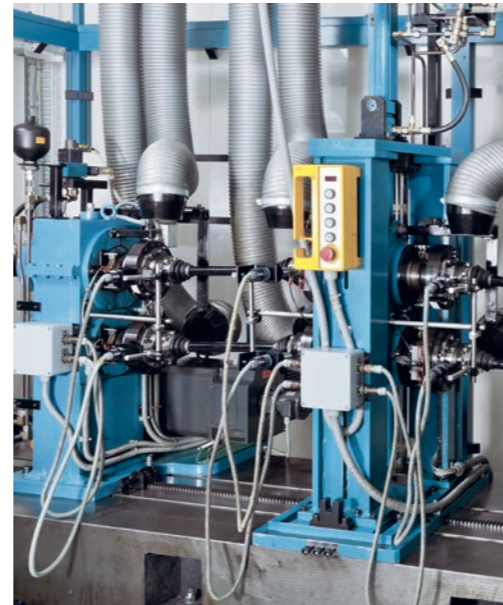
- High temperatures 
- Low temperatures 
- High loads 
- Good pumpability 
- Resistant to water 
- Noise damping 
- UV tracer 
- Compatible with plastics 
- Corrosion protection 
- Available in aerosols 

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

# Development partner for the automotive industry

The essential basis for innovative automotive lubricants is intense research and development work as well as modern testing equipment. In BECHEM's laboratories the latest physicochemical testing and analytical systems are available to characterise lubricants, control their application, analyse customer-specific problems and finally to develop the appropriate lubricant solutions. The testing of lubricants on model systems, original components and materials and the simulation of different vehicle-related conditions in the BECHEM laboratories help shorten product development times for our customers.

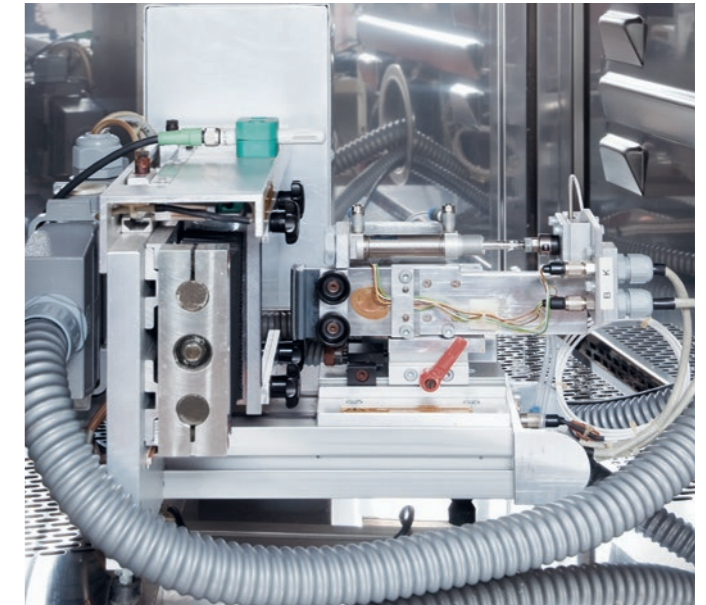
In cooperation with our customers and partners various test systems have been developed in research projects over the past few years. Involving our customers in the development of lubricants is also an essential part of our future problem solving.



Constant velocity joint test rig



Tensile strength test



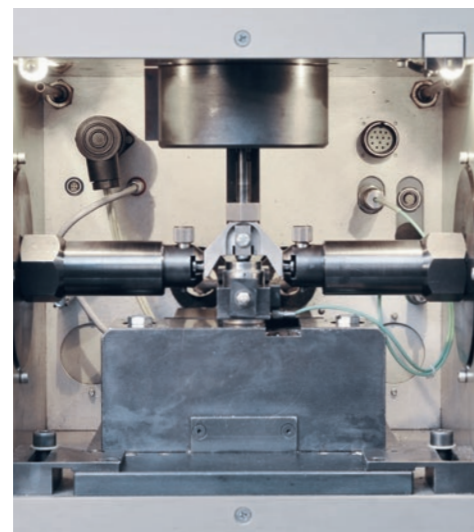
Stick-Slip test rig in climate chamber

Effective partners support us and thus our customers in the development of cross-system concepts. In addition to cooperating with universities and academies, BECHEM has excellent contacts with industry partners in the dosing and feeding technology, measurement and control technology, process and coating technology.

BECHEM's strategy is to offer automobile customers a global partnership in the fields of lubricant development and production to ensure that these are always tailored to the latest requirements.

»» What drives the automotive industry is change and development. ««

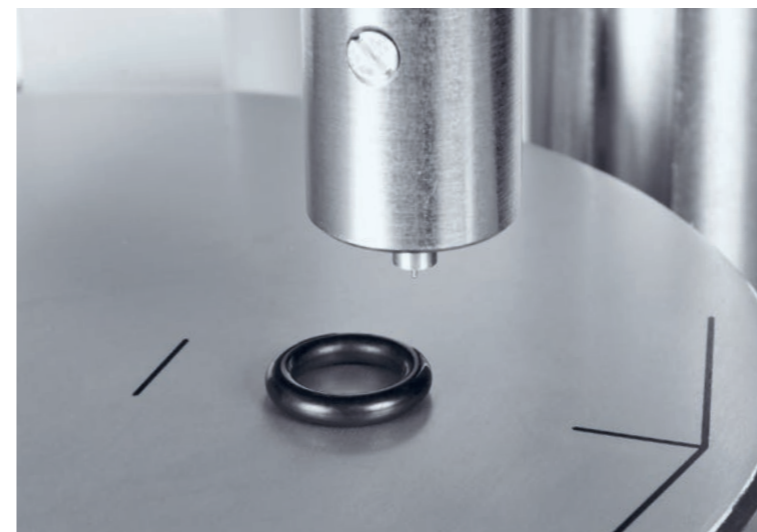
Translatory oscillation test rig (SRV)



Torque test rig



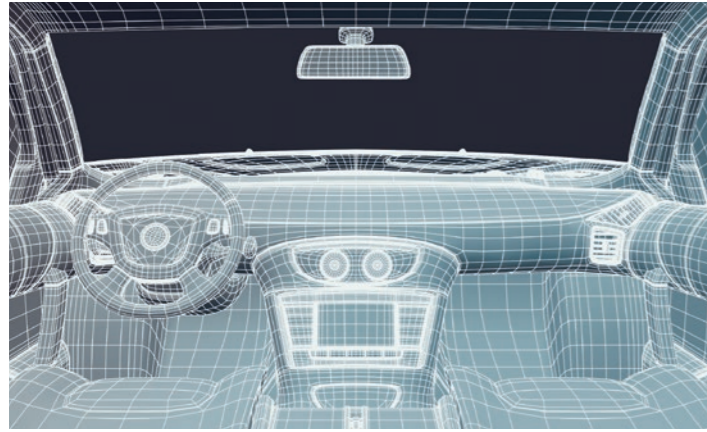
Hardness test of polymer materials



## Lubrication solutions for demanding requirements

- Reduction of friction and wear
- Durability and functional reliability
- Material compatibility
- Noise reduction
- Environmental compatibility
- Wide service temperature range
- Corrosion protection

# Interior components



With targeted vibration damping and optimisation of friction values, BECHEM lubricants allow controlled reproducible movements in all interior components such as cup holders, arm rests, door trims, consoles, control and switching systems. BECHEM products therefore make a major contribution to the functionality and haptics of interior components and upgrade the relevant parts and vehicles. Products, which are specifically designed for noise reduction, significantly improve driving comfort.

	PRODUCT	Base oil / base		NLGI-grade	Base oil viscosity (mm <sup>2</sup> /s) at 40 °C / 100 °C		Applications	Noise damping	
		Thickener				Service temperature range [°C]		Attributes	
Lubricating Greases / Pastes	<b>Berulub FR 16</b> 🔧🔧🔧🔧	Polyalpha-olefin (PAO)	Special lithium soap	2	32 6	-50 +140	Cup holder, ash-tray, kinematic components, sun-shades	●○○	Suitable for the material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE
	<b>Berulub FR 43</b> 🔧🔧🔧🔧	Polyalpha-olefin (PAO)	Special lithium soap	2	32 6	-50 +140	HVAC, glove box compartment, center console, window runner	●●○	Suitable for material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE, available with UV tracer
	<b>Berulub FH 57</b> 🔧🔧🔧🔧	Polyalpha-olefin (PAO)	Polyurea	1 - 2	900 100	-40 +150	Climate control, glove box, arm rest, GPS controller	●●○	Special grease for noise damping, excellent compatibility with elastomers, good resistance to oxidation, low oil separation, prevents stick-slip
	<b>Berulub XP 3000</b> 🔧🔧🔧🔧	Polyalpha-olefin (PAO)	Gel	1 - 2	2400 180	-40 +140	Center arm rest, arm rest closure, gear selection cover, folding table	●●●	Good plastic and elastomer compatibility, high adhesion, good low temperature properties, very low oil separation, excellent protection against corrosion, excellent noise damping
	<b>Beruplex LG 21 F</b> 🔧🔧🔧🔧	Polyglycol	Lithium complex soap	1 - 2	390 66	-40 +145	Sun roof, convertible roof top systems	●●○	Synthetic special lubricant for brake systems, wide temperature range, resistant to corrosion and oxidation, EP additives, good adhesion, water resistant, inert against EPDM
	<b>Beruglide L</b> 🔧🔧🔧🔧	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	1 - 2*	160 16	-40 +190	Anti-squeak applications, convertible top gear	●●●	Good noise damping properties, excellent compatibility with plastics and elastomer materials, good fogging behaviour, excellent oxidation resistance
	<b>Beruil TS 1</b> 🔧🔧🔧🔧	Special silicone oil	Polytetrafluoroethylene (PTFE)	1 - 2*	3500 1500	-50 +180	Flap mechanism for HVAC-Systems, kinematic construction parts	●●●	Noise damping silicone lubricant for long-life lubrication, good plastic and elastomer compatibility, wide temperature range, water resistant, prevents stick-slip
Anti-friction coatings	<b>Berucoat AK 978</b> 🔧🔧🔧🔧	Org. binder	-	-	-	-40 +80	Anti-squeak applications, door modules, covers, arm rest closure	●●●	Water based interior AF-coating, prevents stick-slip and disturbing noises, transparent, free of formaldehyde, UV tracer
	<b>Berucoat AK 376</b> 🔧🔧🔧🔧	Org. binder	-	-	-	-40 +120	Anti-squeak applications	●●●	Long-life lubrication for plastic and/or steel material combinations, no dust adsorption, prevents stick-slip, good protection against corrosion
	<b>Berucoat AF 320 E</b> 🔧🔧🔧🔧	Org. binder	-	-	-	-70 +250	Sun visor, convertible top guide way, cigarette lighter	●○○	Suitable for plastic/steel combinations, long-life coating, prevents stick-slip, no dust adsorption, excellent protection against corrosion, oil resistant, curing temperature +120 °C
Fluid	<b>Berulub ND-Fluid 160</b> 🔧🔧🔧🔧	Perfluoropolyether (PFPE)	-	-	160 16	-40 +200	Kinematic components, cup holder, air vents, anti-squeak applications	●○○	Noise damping fluid, excellent material compatibility (polymers, elastomers, non-ferrous metals, leather), high thermal stability and oxidation resistance

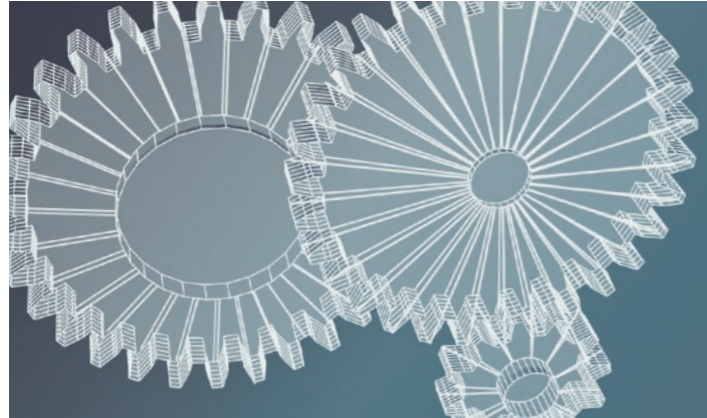
\*Value indicates unworked penetration  
●○○ noise damping ●●○ good noise damping ●●● very good noise damping

## Approvals / references

(in alphabetical order)

- Brose group 55.1
- Brose group 53.2
- Daimler DBL 6827.42
- Fiat Specification 9.55580 Gras V
- Ford WSD-M1C 234 A2
- GM W16531-Type 4
- GM W16531-Type 5
- GM 9986248
- VW-TL 778 A
- VW-TL 778 B
- VW-TL 52150

# Mechatronic systems



BECHEM provides a wide product range for a whole variety of manually and electrically operated actuators and control gears in the vehicle interior and body. These are characterised by their high wear resistance, excellent noise reduction properties and high functional reliability under the harshest climatic conditions worldwide. High levels of compatibility with various materials and the lowest starting torques at very low temperatures complete the range of benefits.

PRODUCT	Base oil	Thickener	NLGI-grade	Base oil viscosity [mm <sup>2</sup> /s] at 40 °C / 100 °C		Service temperature range (°C)	Applications	Noise damping Attributes	
				40	100			○ ○ ○	● ● ●
<b>Berulub FR 16</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Special lithium soap	2	32 6	-50	+140	Low torque, small gears, low noise damping	○ ○ ○	Suitable for the material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE
<b>Berulub FR 43</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Special lithium soap	2	32 6	-50	+140	Medium torque, medium noise damping	● ● ○	Suitable for material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE, available with UV tracer
<b>Berusoft 10</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Special lithium soap	2	600 70	-40	+150	High torque, high noise damping	● ● ○	Special grease for noise damping, excellent compatibility with plastic and elastomers, good resistance to oxidation, low oil separation, prevents stick-slip
<b>Berulub FG-H 2 SL</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Special calcium complex soap	2	50 8	-45	+160 +200	Low torque, small gears	○ ○ ○	High-performance lubricant with good adhesion and sealing qualities, resistant to water and ageing, reliable protection against corrosion
<b>BECHEM Ceritol PK 1 Soft</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Polyurea	0 - 1	32 6	-60	+140	Low torque, small gears, low noise damping	○ ○ ○	Special lubricant for metal and polymer materials, excellent low temperature behaviour, protection against corrosion, resistant to oxidation, contains EP-additives, prevents stick-slip
<b>Berulub FH 57</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Polyurea	1 - 2*	150 20	-40	+160	Medium torque, medium noise damping	● ● ○	Fully synthetic grease for long-life lubrication of polymer components, excellent noise damping properties, excellent low temperature behaviour, contains PTFE
<b>Berulub PMP 75</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Polytetrafluoroethylene (PTFE)	1 - 2	75 12	-50	+140	Low torque, small gears, medium noise damping	○ ○ ○	Fully synthetic grease for material combinations non-ferrous metal/metal/plastic, plastic/plastic, excellent low temperature behaviour, high surface pressure, noise damping, contains PTFE, UV tracer
<b>Beruglide H 50</b> N, M, P, S, T, U, V, W, X, Y, Z	Synthetic oil combination	Special lithium soap/PTFE	2	30 6	-60	+160	Low torque, small gears, high noise damping	● ● ○	Long-life lubrication for plastic/plastic, plastic/metal and non-ferrous metal/non-ferrous metal, excellent low temperature behaviour, noise damping, resistant to water, PTFE, UV tracer, hybrid technology
<b>Berulub FK 164-2 UV</b> N, M, P, S, T, U, V, W, X, Y, Z	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	2	150 45	-60	+250	Low torque, small gears, high noise damping	● ● ●	Lubricating paste for gold and silver plated sliding/plug-in contacts, excellent plastics/elastomer compatibility, excellent low temperature behaviour
<b>Beruplex LO 10</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Lithium-complex soap	0 - 1	48 8	-50	+140	Low torque, small gears	○ ○ ○	Fully synthetic multipurpose grease for long-life lubrication of plastic/plastic, plastic/metal and steel/steel, excellent low-temperature behaviour, noise damping, resistant to oxidation, water resistant, corrosion protection, UV-tracer
<b>Beruplex LO 21</b> N, M, P, S, T, U, V, W, X, Y, Z	Polyalphaolefin (PAO)	Lithium-complex soap	1 - 2	48 8	-50	+140	Low torque, small gears	● ○ ○	Fully synthetic multipurpose grease for long-life lubrication of plastic/plastic, plastic/metal, excellent low-temperature behaviour, noise damping, resistant to oxidation, water resistant, corrosion protection, UV-tracer

\*Value indicates unworked penetration <sup>1</sup>Value marked in grey indicates short term maximum temperature  
 ○ ○ ○ noise damping ● ● ● good noise damping ● ● ● very good noise damping

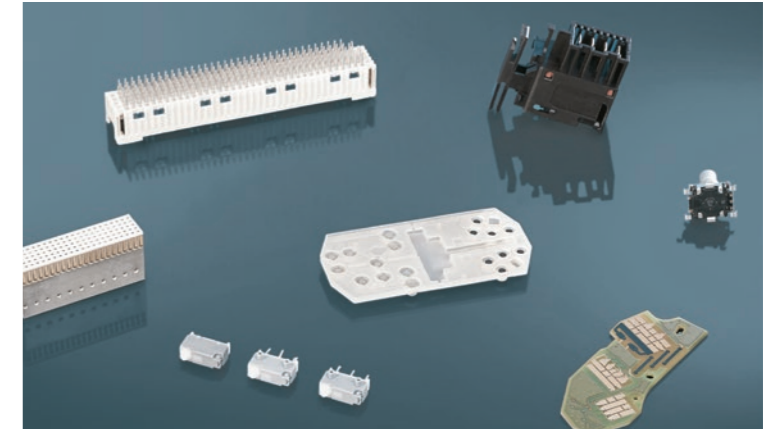
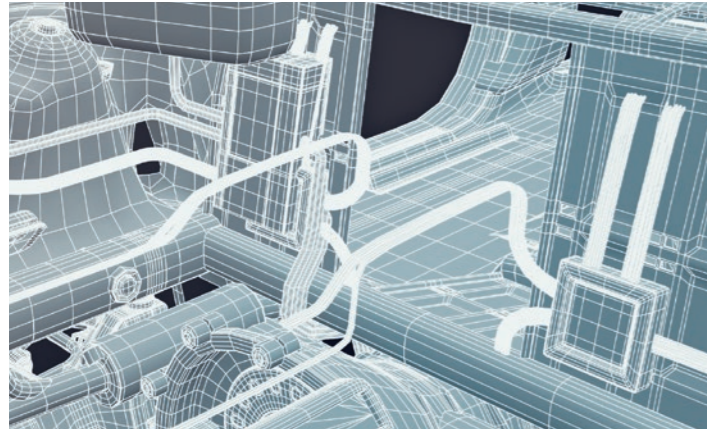
## Approvals/references

(in alphabetical order)

- Brose group 53.2, Brose group 55.1
- Daimler DBL 6827.42
- Delphi Automotive
- Fiat Specification 9.55580 Gras V
- Ford WSD-M1C 234 A2
- GM 9986237, GM 9986248
- Kiekert AG
- Kostal
- Valeo
- VW-TL 778 A, VW-TL 778 B



# Electrical contacts



BEICHEM electrical contact lubrication products for the automotive industry meet the highest standards and make a major contribution to the functionality and durability of electrical contact systems with different currents due to their wide service temperature range. Highly specialised formulations guarantee excellent oxidation stability and material compatibility as well as protection against the formation of impurity layers and sparks.

	PRODUCT	Base oil	Thickener	NLGI-grade	Base oil viscosity (mm <sup>2</sup> /s) at 40 °C / 100 °C		Applications	Attributes
						Service temperature range [°C]		
Lubricating Greases / Pastes	<b>Berulub FK 125</b> 🔧 ⚙️ 🛠️	Polyalpha-olefin (PAO)	Special lithium soap	1 - 2	20 4	-50 +120	Finger sliding systems, lubrication and protection of sliding contact systems	Lubrication and contact protection, improved electrical contact, contact protection against atmospheric influences, water resistant, UV-tracer, very good low-temperature behaviour
	<b>Berulub FK 202</b> 🔧 ⚙️ 🛠️	Polyalpha-olefin (PAO)	Lithium-calcium soap	2	18 4	-50 +120	Finger sliding systems, lubrication and protection of sliding contact systems	Lubrication and contact protection, improved electrical contact, contact protection against atmospheric influences, water resistant, UV-tracer, very good low-temperature behaviour
	<b>Berulub KR-EL 2</b> 🔧 ⚙️	Ester	Lithium soap	2	13 4	-50 +120	Ignition switch, electrical connector, wiper motor	Long-life lubricating grease and contact protection, forms a protective layer on copper/silver plated materials, excellent low temperature behaviour, prevents formation of impurity layers, available with UV tracer
	<b>Berulub FK 97 E</b> 🔧 ⚙️ 🛠️	Ester	Polyurea	1*	78 12	-40 +150	Currents from 0,25 A to 15 A	Lubrication and protection against corrosion of lifting and sliding contacts, for materials of copper and silver
	<b>Berulub FK 122</b> 🔧 ⚙️	Ester	Polyurea	0*	78 11	-50 +150	Currents from 5 mA to 10 A	Lubrication and contact protection, improved contact making, neutral towards polymer materials, resistant to water, suitable for low temperatures, available with UV tracer
	<b>Berulub FK 164-2 UV</b> 🔧 ⚙️ 🛠️	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	2	150 45	-60 +250	Currents from 10 mA to 30 A	Lubricating paste for gold and silver plated sliding/plug-in contacts, excellent plastics/elastomer compatibility, excellent low temperature behaviour
Dispersions	<b>Berulub FK 164 Dispersion OZF 1-10</b> 🔧 ⚙️ 🛠️	Perfluoropolyether (PFPE)	-	-	150 45	-60 +230	Currents from 1 mA to 500 mA	Contact protection, a very thin lubricating film with very low contact resistance is formed after evaporation of the solvent, suitable for contact partners of silver and gold
	<b>Berutox VPT 64 Dispersion OZF 0,5-20</b> 🔧 ⚙️ 🛠️	Perfluoropolyether (PFPE)	-	-	325 30	-40 +250	Currents from 1 mA to 500 mA	Contact protection, a very thin lubricating film with very low contact resistance is formed after evaporation of the solvent, suitable for contact partners of silver and gold

\*Value indicates unworked penetration

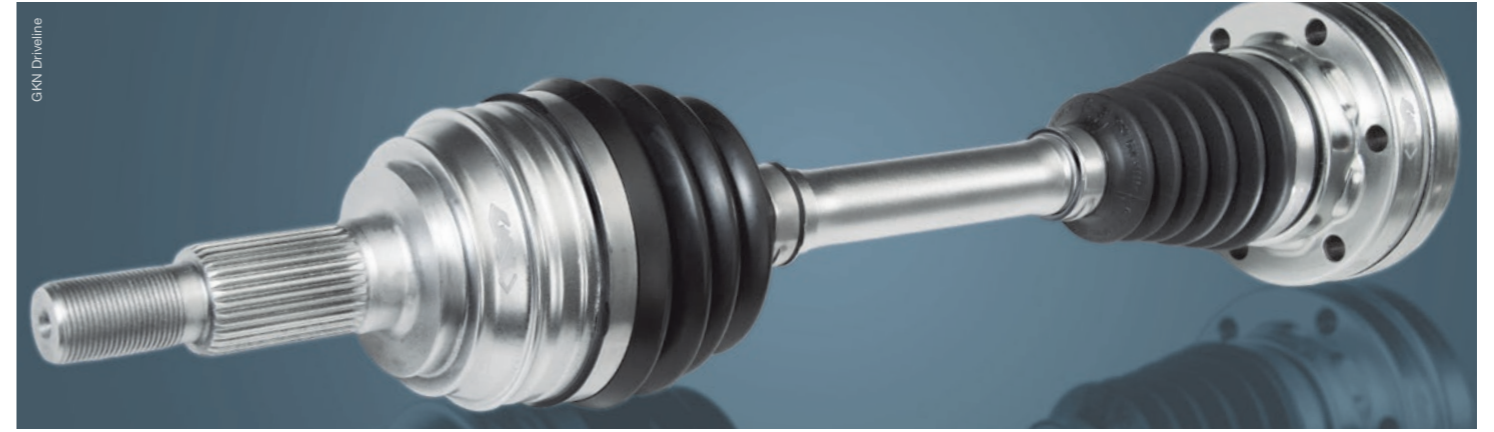
## Approvals / references

(in alphabetical order)

- Bosch
- BJA
- Delphi Automotive
- HELAG
- Kostal
- SAIA-Burgess
- Siber
- TRW
- Valeo

» Electrical contacts require particularly high-performing lubricants. «

# Chassis and brake systems



With maximum material compatibility, corrosion protection, load-carrying capacity and protection against tribocorrosion, BECHEM products provide very high levels of reliability over the lifetime of the product for various systems and applications in chassis, brake and steering systems and for transmissions and clutches.

	PRODUCT	PRODUCT		PRODUCT			Applications	PRODUCT	
		Base oil / base	Thickener	NLGI-grade	Base oil viscosity (mm <sup>2</sup> /s) at 40 °C / 100 °C	Service temperature range [°C]		Noise damping	Attributes
Lubricating Greases / Pastes	<b>Beruplex LI-EP 2</b> 🔧 ⚙️ ⚙️ ⚙️	Mineral oil	Lithium complex soap	2	180 16	-30 +150	Wheel bearing, drive shaft, clutch release bearing, brake cylinder	○ ○ ○	Long-life lubricating grease, reliable protection against corrosion, reduces wear at high temperatures, humidity and water steam
	<b>Berulub CVN 140</b> ⚙️ 🛢️ ⚙️	Mineral oil	Lithium soap	1 - 2	140 13,5	-35 +130	CV-joint, components of the power train	○ ○ ○	Long-life lubricating grease for heavy-duty constant velocity joints, contains solid lubricants, optimal wear and corrosion protection
	<b>Berulub CVH 170</b> ⚙️ 🛢️ ⚙️	Mineral oil / Polyalpha-olefin (PAO)	Polyurea	1 - 2	170 14	-35 +160	CV-joint, components of the power train	○ ○ ○	Long-life grease for constant velocity joints, suitable for high temperatures, contains solid lubricants, excellent corrosion and wear protection
	<b>Berulub CVH 170 LF</b> ⚙️ 🛢️ ⚙️	Mineral oil / Polyalpha-olefin (PAO)	Polyurea	1 - 2	170 14	-35 +160	CV-joint	○ ○ ○	Same properties as <b>Berulub CVH 170</b> but considerably reduced friction value based on special additive combination
	<b>Berulub FE 16</b> ⚙️ 🛢️ 🛢️	Polyglycol	Lithium soap	1 - 2	120 20	-40 +120	Elastomer seals, boots in hydraulic brake systems	● ○ ○	Synthetic special lubricant for heavy-duty plain bearings, especially suitable for friction partners metal/plastics and metal/elastomer
	<b>Beruplex LG 21 F</b> 🔧 🛢️ 🛢️ 🛢️ 🛢️	Polyglycol	Lithium complex soap	1 - 2	390 66	-40 +145	Clutch systems, elastic axle bearings, steering column gasket	● ● ○	Synthetic special lubricant for brake systems, wide temperature range, resistant to corrosion and oxidation, EP additives, good adhesion
	<b>Beruplex LG 1-30</b> 🔧 🛢️ 🛢️ 🛢️ 🛢️ 🛢️	Polyglycol	Lithium complex soap	1 - 2	30 7	-50 +145	Electro-hydraulic actuators, electrical parking brake	● ○ ○	Wide service temperature range, resistant to corrosion and oxidation, EP additives, good adhesion, water resistant, neutral towards EPDM
	<b>Berulub FR 16</b> ⚙️ 🛢️ ⚙️	Polyalpha-olefin (PAO)	Special lithium soap	2	32 6	-50 +140	Electrical parking brake	● ○ ○	Suitable for the material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE
	<b>Berulub FH 57</b> 🔧 🛢️ 🛢️ 🛢️	Polyalpha-olefin (PAO)	Polyurea	1 - 2*	150 20	-40 +160	Steering column assembly	● ● ○	Fully synthetic grease for long-life lubrication of polymer components, excellent noise damping properties, excellent low temperature behaviour
	<b>Beruglide L</b> 🔧 🛢️ 🛢️ 🛢️ ⚙️	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	1 - 2*	160 16	-40 +190	Steering column assembly	● ● ●	Good noise damping properties, excellent compatibility with plastics and elastomer, good fogging behaviour
<b>BECHEM Ceritol PK 1 Soft</b> ⚙️ 🛢️ 🛢️ 🛢️	Polyalpha-olefin (PAO)	Polyurea	0 - 1	32 6	-60 +140	Clockspring cartridges, door closing mechanisms	● ○ ○	Special lubricant for metal and polymer materials, excellent low temperature behaviour, protection against corrosion, resistant to oxidation, contains EP-additives, prevents stick-slip	
Anti-friction coating	<b>Berucoat AF 320 E</b> 🔧 🛢️ 🛢️	Organ. binder	-	-	-70 +250	Locking hooks, bolt connections, hinge pins, cams, notches, springs	● ○ ○	Long-life coating of plastic and steel material combinations, prevents stick-slip, no dust adsorption, excellent protection against corrosion, oil resistant	

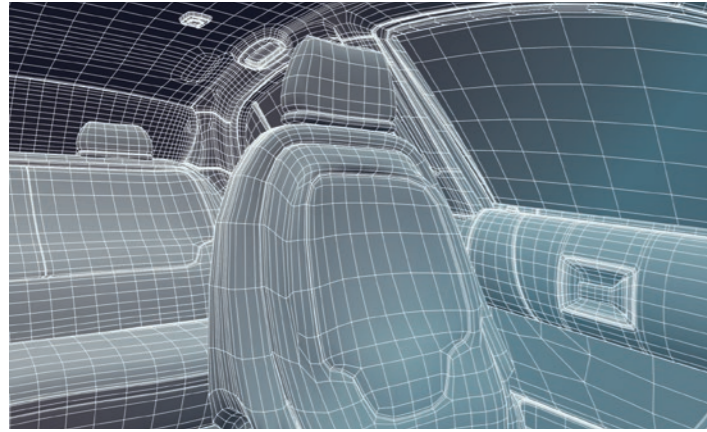
\*Value indicates unworked penetration  
● ○ ○ noise damping ● ● ○ good noise damping ● ● ● very good noise damping

## Approvals / references

(in alphabetical order)

- Brose group 55.1
- Fiat Specification 9.55580 Gras V
- Ford WSD-M1C 234 A2
- GM 9986237
- GM 9986248
- VW-TL 52150
- VW-TL 778 A

# Seating and belt systems



For various applications in automotive seating and belt systems, whether actuators, cable winch systems or simple gear segments, with its excellent damping properties, wide service temperature range and good surface adhesion, the BECHEM product range offers maximum reliability even in emergency situations.

	PRODUCT	PRODUCT		NLGI-grade	Base oil viscosity (mm <sup>2</sup> /s) at 40 °C / 100 °C		Applications	Noise damping	
		Base oil / base	Thickener		Service temperature range [°C]	Attributes			
Lubricating Greases / Pastes	<b>Berutox VPT 54-2</b> 	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	2	210 20	-30 +230	Anti-squeak applications	●●●	Long-life lubricating grease, resistant to thermal and chemical decomposition, excellent oxidation stability, excellent compatibility with plastics, also available in NLGI-grade 1
	<b>Berulub FR 16</b> 	Polyalphaolefin (PAO)	Special lithium soap	2	32 6	-50 +140	Seat track, seat belt height adjustment	●○○	Suitable for the material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE
	<b>Berulub FR 43</b> 	Polyalphaolefin (PAO)	Special lithium soap	2	32 6	-50 +140	Seat recliner, seat adjustment, seat height adjustment	●●○	Suitable for material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE, available with UV tracer
	<b>Berusoft 15</b> 	Polyalphaolefin (PAO)	Polyurea	1 - 2	900 100	-40 +150	Seat recliner, seat adjustment	●●○	Special grease for noise damping, excellent compatibility with plastics/elastomers, good resistance to oxidation, low oil separation, prevents stick-slip, noise damping value: low to medium
	<b>Berulub FH 57</b> 	Polyalphaolefin (PAO)	Polyurea	1 - 2*	150 20	-40 +160	Seat recliner, easy entry, seat belt height adjustment, seat adjustment	●●○	Fully synthetic grease for long-life lubrication of polymer components, excellent noise damping properties, excellent low temperature behaviour, contains PTFE
	<b>Berulub XP 746</b> 	Ester	Gel	0	1200 120	-40 +200	Seat recliner, seat track	●●●	Noise damping grease, good adhesion, water and fuel resistant, low oil separation, good oxidation resistance and good protection against corrosion
	<b>Berulub XP 3000</b> 	Polyalphaolefin (PAO)	Gel	1 - 2	2400 180	-40 +140	Seat catch, seat track	●●●	Good plastic and elastomer compatibility, high adhesion, very low oil separation, excellent protection against corrosion, noise damping
Disp.	<b>Beruglide L</b> 	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	1 - 2*	160 16	-40 +190	Anti-squeak applications	●●●	Good noise damping properties, excellent compatibility with plastics and elastomer materials, good fogging behaviour, excellent oxidation stability
	<b>Berulub ND-Dispersion 10</b> 	Perfluoropolyether (PFPE)	-	-	325 20	-40 +250	Anti-squeak applications	●○○	For noise damping, excellent plastic/elastomer/non-ferrous metal compatibility, very high thermal stability, excellent resistance to oxidation
Anti-friction coatings	<b>Berucoat AF 320 E</b> 	Organ. binder	-	-	-	-70 +250	Locking hooks, bolt connections, hinge pins, cams, notches, springs	●○○	Suitable for plastic/steel combinations, prevents stick-slip, no dust adsorption, excellent protection against corrosion, oil resistant, curing temperature +120 °C
	<b>Berucoat AF 732</b> 	Organ. binder	-	-	-	-70 +250	Ratchet notches, seat belt ratchet, pawls	●○○	Suitable for metal/metal material combinations, long-life coating, very good adhesion, no sticking of dust, prevents stick-slip, excellent protection against corrosion, oil resistant
	<b>Berucoat AK 376</b> 	Organ. binder	-	-	-	-40 +120	Anti-squeak applications	●●●	Long-life lubrication for plastic and/or steel material combinations, no dust adsorption, prevents stick-slip, good protection against corrosion
	<b>Berucoat AK 978</b> 	Organ. binder	-	-	-	-40 +80	Headrest adjustment, anti-squeak applications	●●●	Water based interior AF-coating, prevents stick-slip and disturbing noises, highly compatible with plastics, transparent, free of formaldehyde

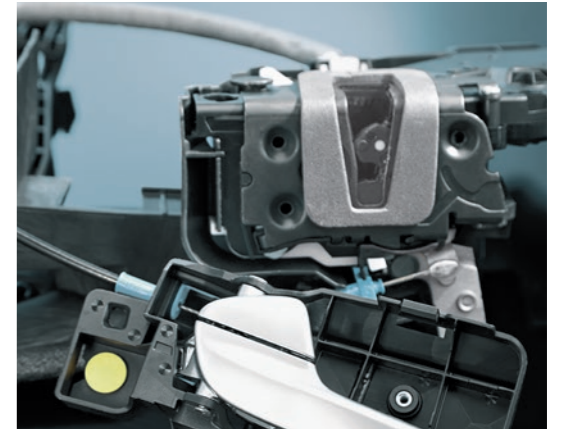
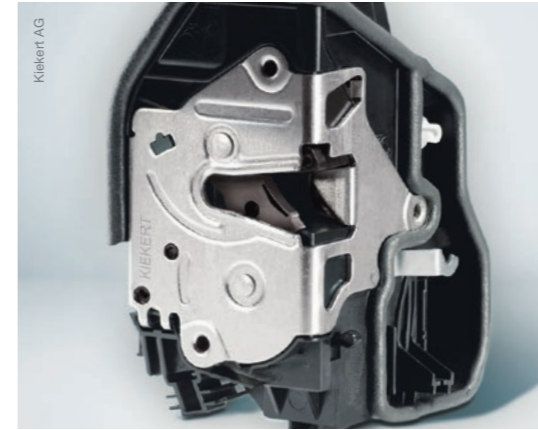
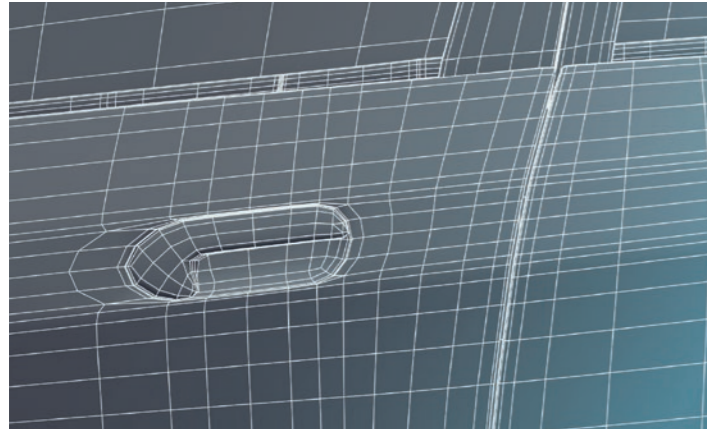
\*Value indicates unworked penetration  
●○○ noise damping ●●○ good noise damping ●●● very good noise damping

## Approvals / references

(in alphabetical order)

- Brose group 53.2, Brose group 55.1
- Daimler DBL 6827.42
- Faurecia
- Fiat Specification 9.55580 Gras V
- Ford WSD-M1C 234 A2, Ford WSS-M1C 253 A
- GM W16531-Type 4, GM W16531-Type 5, GM 9986248
- Johnson Controls
- Lear Corporation
- TRW
- VW-TL 778 A, VW-TL 778 B

# Locking systems and hinges



For increasingly complex door locking mechanisms and hinges BECHEM offers the appropriate lubricants and coating systems characterised by outstanding low-temperature properties, excellent water and deicing fluid resistance, paint compatibility and reliable corrosion protection.

	PRODUCT	Base oil / base	Thickener	NLGI-grade	Base oil viscosity (mm <sup>2</sup> /s) at 40 °C / 100 °C		Applications	Noise damping	Attributes
Lubricating Greases / Pastes	<b>Berutox FB 48-1</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Special Ca-complex soap	1	50 8	-50 +160	Door locking systems, central locking systems, steering lock, bowdies cables	●○○	For material combinations plastic/plastic and metal/plastic, resistant to substances, noise damping, resistant to ageing, low friction coefficient, prevents stick-slip
	<b>Berutox M 21 EPK-A</b> 🔧🔑🔒🔧	Mineral oil	Polyurea	1 - 2	490 32	-15 +160	Blocking pins, door check strap, hinges, gear shift control	●●○	Multipurpose grease for long-life lubrication, excellent sealing qualities, excellent resistance to water and steam, excellent corrosion and wear protection, EP-properties
	<b>Berulub FR 16 B</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Lithium-/Ca-complex soap	2	32 6	-50 +140	Door locking systems, central locking systems	○○○	For material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip
	<b>Berulub FR 16</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Special lithium soap	2	32 6	-50 +140	Door locking systems, central locking systems	●○○	Suitable for the material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE
	<b>Berulub FR 43</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Special lithium soap	2	32 6	-50 +140	Door locking systems, central locking systems	●●○	Suitable for material combinations plastic/plastic and plastic/steel, excellent low temperature behaviour, resistant to water and oxidation, prevents stick-slip, contains PTFE, available with UV tracer
	<b>BECHEM Ceritol PK 1</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Polyurea	1	50 8	-50 +160	Locking systems, central locking systems	●○○	Long-life lubrication and protection against corrosion of roller/plain bearings, mechanisms and switchgear, wide temperature range, EP-additives, resistant to oxidation, protects against aggressive substances
	<b>Berulub XP 719</b> 🔧🔑🔒🔧	Ester	Gel	2*	1600 150	-40 +200	Locking systems, fuel flap, door handle	●●●	Excellent adhesion and resistance to wash-out, low oil separation, protection against corrosion, good oxidation resistance, reduces friction and wear
	<b>Berulub XP 746</b> 🔧🔑🔒🔧	Ester	Gel	0	1200 120	-40 +200	Locking systems, fuel flap, door handle	●●●	For noise damping in automotive application, good adhesion, water and fuel resistant, low oil separation, good oxidation resistance and good protection against corrosion
	<b>Berulub XP 3000</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Gel	1 - 2	2400 180	-40 +140	Bonnet catch, locking systems	●●●	Good plastic and elastomer compatibility, high adhesion, good low temperature properties, very low oil separation, excellent protection against corrosion, noise damping
	<b>Berulub XP 15</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Polyurea	1 - 2	900 100	-40 +150	Door check strap, rear bench seat adjustment	●●○	Special grease for noise damping, excellent compatibility with elastomers, good resistance to oxidation, low oil separation, prevents stick-slip
<b>Berulub XP 20</b> 🔧🔑🔒🔧	Polyalphaolefin (PAO)	Polyurea	0 - 1*	1400 150	-40 +150	Door check strap, rear bench seat adjustment	●●○	Special grease for noise damping, excellent compatibility with elastomers, good resistance to oxidation, low oil separation, prevents stick-slip	
Anti-friction coatings	<b>Berucoat AF 732</b> 🔧🔑🔒🔧	Organ. binder	-	-	-70 +250	Catches, pawls, springs, locking cylinders	●○○	Suitable for metal/metal material combinations, long-life coating, very good adhesion, no sticking of dust, prevents stick-slip, excellent protection against corrosion, oil resistant	
	<b>Berucoat AF 320 E</b> 🔧🔑🔒🔧	Organ. binder	-	-	-70 +250	Catches, pawls, springs, locking systems, spindels, plastic components	●○○	Suitable for plastic/steel combinations, long-life coating, prevents stick-slip, no dust adsorption, excellent protection against corrosion, oil resistant, curing temperature +120 °C	

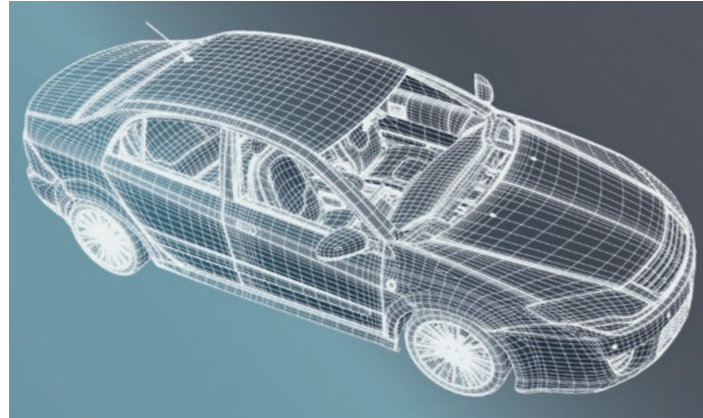
\*Value indicates unworked penetration  
●○○ noise damping ●●○ good noise damping ●●● very good noise damping

## Approvals / references

(in alphabetical order)

- Brose group 53.2
- Daimler DBL 6827.42
- Edscha AG
- Fiat Specification 9.55580 Gras V
- Ford WSD-M1C 234 A2
- Ford WSS-M1C 238 B
- Ford WSS-M1C 253 A2
- GM 9986248
- Valeo
- VW-TL 778 A
- VW-TL 778 B

# Anti-friction coatings



Anti-friction coatings are touch dry lubricant solutions for lifetime lubrication in most varied applications. Defined friction values, reduced wear and tribo-corrosion are only a few characteristics which allow these innovative coating technologies. The BECHEM coating product series each offer numerous advantages for all kinds of automotive applications, whether for metal materials, elastomers and plastics or leather and vinyl materials.

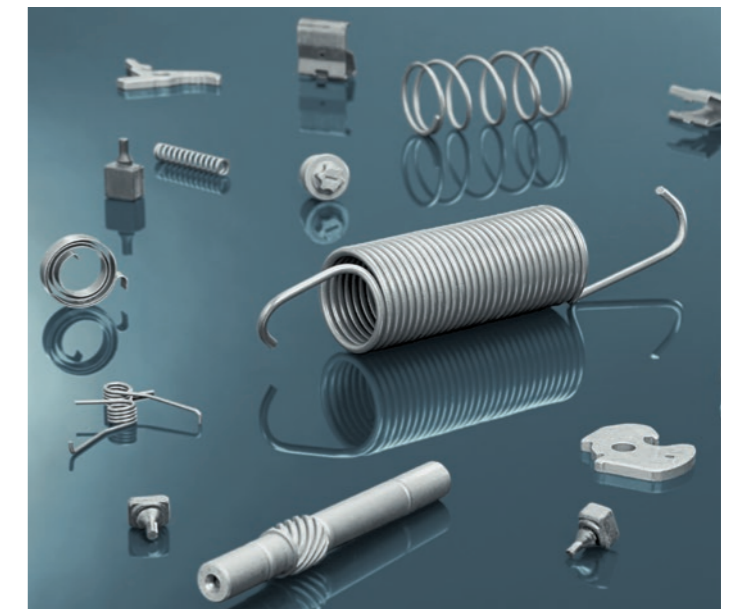
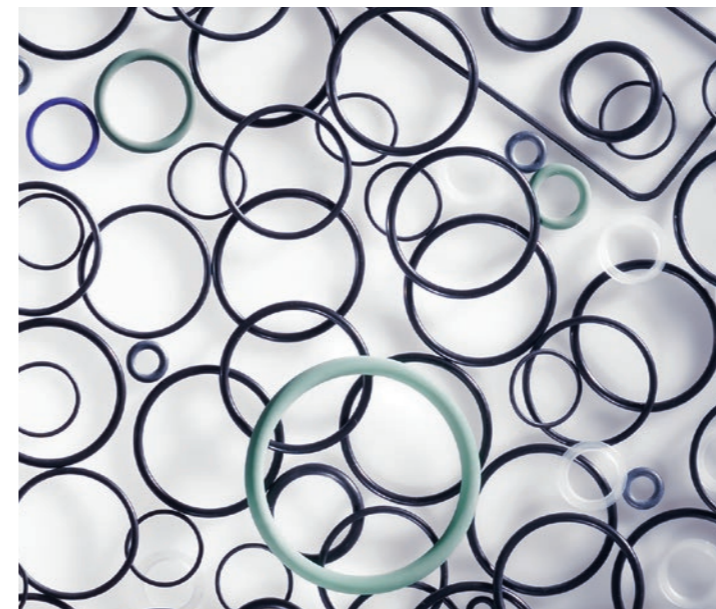
PRODUCT	Lubrication and wear protection additives			Service temperature range [°C] <sup>1)</sup>		Colour of the cured coating	Curing	Applications	Attributes
	Base	Solvent							
<b>Berucoat AF 130</b> 	Organ. binder	MoS <sub>2</sub>	Organ.	-70	+250	Black	Heat curing	Locking systems, locking cylinders, springs, cam shafts, gears, plain bearings	Long-life lubrication of metal/metal material combinations, pressure resistant, excellent adhesion, prevents stick-slip, excellent protection against corrosion, oil resistant, curing temperature +120 °C
<b>Berucoat AF 291</b> 	Organ. binder	Graphite	Organ.	-40	+250 +350	Black	Heat curing	Locking systems, locking cylinders, springs, cam shafts, gears, plain bearings	Suitable for metal/metal material combinations, excellent adhesion, good protection against corrosion, resistant to oil, grease and solvents, good wear resistance
<b>Berucoat AF 320 E</b> 	Organ. binder	PTFE	Organ.	-70	+250	Black	Heat curing	Locking systems, locking cylinders, springs, spindles in small gears, plain bearings, plastics, leather	Suitable for plastic/steel combinations, long-life coating, prevents stick-slip, no dust adsorption, excellent protection against corrosion, oil resistant, curing temperature +120 °C
<b>Berucoat AF 438</b> 	Inorgan. binder	MoS <sub>2</sub> /graphite	Organ.	-180	+450	Grey-black	Air curing	Cam shaft, gear, plain bearing	Suitable for metal/metal material combinations, prevents stick-slip, good adhesion on smooth surfaces, no dust adsorption, good resistance against radiation, lowest evaporation in high vacuum
<b>Berucoat AF 481</b> 	Organ. binder	MoS <sub>2</sub> /PTFE	Organ.	-40	+250 +450	Grey	Heat curing	Coating of metals, pistons, bearing seats, plain bearings	Suitable for metal material combinations, very good adhesion, high pressure resistance, excellent temperature resistance, good corrosion protection, resistant to oils, greases and solvents, low friction values
<b>Berucoat AF 732</b> 	Organ. binder	MoS <sub>2</sub> /PTFE	Organ.	-70	+250	Grey-black	Heat curing	Locking systems, locking cylinders, springs, cam shaft, plain bearing	Suitable for metal/metal material combinations, long-life coating, very good adhesion, no sticking of dust, prevents stick-slip, excellent protection against corrosion, oil resistant
<b>Berucoat FX 270</b> 	Organ. binder	Graphite	Water	-40	+300	Grey-black	Air curing	Wiper blades, seals, O-rings	Elastomer coating, prevents stick-slip, resistant to cleaning agents, wear resistant, temperature resistant, release effect even in the high temperature range, improved wiping pattern
<b>Berucoat FX 670</b> 	Organ. binder	Graphite/PTFE	Water	-40	+250	Grey-black	Air curing	Wiper blades, seals, O-rings	Elastomer coating, prevents stick-slip, resistant to cleaning agents, wear resistant, temperature resistant, improved wiping pattern
<b>Berucoat FX 876</b> 	Organ. binder	Solids	Water	-40	+80	White	Air curing	Lip seals, O-rings, tyre valves	Elastomer coating, water based, two-component coating, noise damping, reduction of friction, good water resistance, wear resistant
<b>Berucoat AK 376</b> 	Organ. binder	PTFE	Water	-40	+120	Whitish	Air curing	Springs, spindles with small gears, plastic, leather, tissue, vinyl	Long-life lubrication for plastic and/or steel material combinations, no dust adsorption, prevents stick-slip, good protection against corrosion
<b>Berucoat AK 978</b> 	Organ. binder	Solids	Water	-40	+80	Grey-white	Air curing	Plastic, leather, tissue, vinyl	Water based interior AF-coating, prevents stick-slip and disturbing noises, highly compatible with plastics, transparent, free of formaldehyde

<sup>1)</sup> Value marked in grey indicates short term maximum temperature

## Approvals / references

(in alphabetical order)

- Boshoku Automotive
- Daimler
- Faurecia
- GM W16531-Type 4
- GM W16531-Type 5
- Johnson Controls
- Lear Corporation
- Porsche
- Stoz



# Perfluoropolyether (PFPE) products



The high performance PFPE based lubricants in the BECHEM range are chemically inert (non-reactive) towards most materials and therefore offer outstanding compatibility especially with plastics as well as excellent resistance to very high temperatures. PFPE based lubricant products are high-purity, fully synthetic base oils with an excellent ageing and oxidation stability.

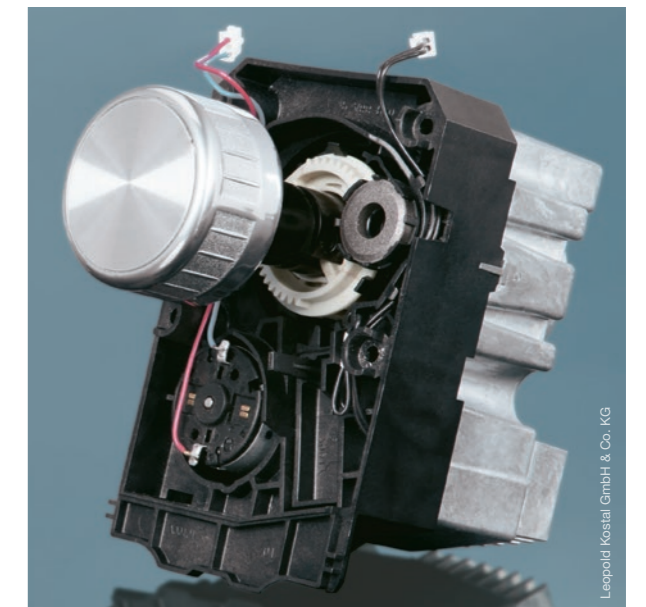
	PRODUCT	NLGI-grade					Applications	Noise damping	
		Base oil	Thickener	Base oil viscosity [mm <sup>2</sup> /s] at 40 °C / 100 °C	Service temperature range [°C]	Attributes			
Lubricating Greases/Pastes	<b>Berutox VPT 54-2</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	2	210/20	-30/+230	Instrument panel, seating systems and door module	●●●	Long-life lubricating grease, resistant to thermal and chemical decomposition, excellent oxidation stability, excellent compatibility with plastics, also available in NLGI-grade 1
	<b>Berutox VPT 64-2</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	2	330/30	-30/+260	Instrument panel, seating systems and door module	●●●	Long-life lubricating grease, even in case of vacuum, radiation and aggressive chemicals, excellent compatibility with plastics, outstanding thermal stability, neutral in smell, also available in NLGI-grade 1
	<b>Berutemp 500 G 2</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	Gel	2	510/45	-35/+260	Air vents, anti-squeak applications	●●●	High-temperature and long-life lubricant for ejector pins/slides (plastic industry), for noise damping (automotive/interior) and plain bearings, compatible with plastics and elastomers
	<b>Berulub FK-VPT 380</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	-	325/30	-40/+250	Connector gold-/silver contacts	●○○	PTFE containing special dispersion for life lubrication of plug-in connectors, high oxidation resistance, excellent compatibility with plastics, prevents formation of impurity layers
	<b>Beruglide L</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	1 - 2*	160/16	-40/+190	Electromechanically supported steering	●●●	Good noise damping properties, excellent compatibility with plastics and elastomer materials, good fogging behaviour, excellent oxidation resistance
	<b>Berulub FK 164-2 UV</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	Polytetrafluoroethylene (PTFE)	2	150/45	-60/+250	Plug-in connector, control current and power switch	●●●	Lubricating paste for gold and silver plated sliding/plug-in contacts, excellent plastics/elastomer compatibility, for currents from 10 mA up to 30 A
	<b>Beruglide H 50</b> Synthetic oil combination	Synthetic oil combination	Special lithium soap/PTFE	2	30/6	-60/+160	Actuators with low starting torque	●○○	Long-life lubrication for plastic/plastic, plastic/metal and non-ferrous metal/non-ferrous metal, excellent low temperature behaviour, noise damping, resistant to water, PTFE, hybrid technology
Fluids/Dispersions	<b>Berulub ND-Fluid 160</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	-	160/18	-40/+200	Noise reduction for interior parts	●○○	Noise damping, excellent material compatibility (polymers, elastomers, non-ferrous metals, leather), high thermal stability and oxidation resistance	
	<b>Berulub FK 164 Dispersion OZF 1-20</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	-	150/45	-60/+230	Noise damping fluid for areas difficult to access	●○○	Contact protection, a very thin lubricating film with very low contact resistance is formed after evaporation of the solvent, suitable for contact partners of silver and gold, 1 mA up to 500 mA	
	<b>Berutox VPT 64 Dispersion OZF 0,5 - 20</b> Perfluoropolyether (PFPE)	Perfluoropolyether (PFPE)	-	325/20	-40/+250	Noise damping fluid for areas difficult to access	●○○	Contact protection, a very thin lubricating film with very low contact resistance is formed after evaporation of the solvent, suitable for contact partners of silver and gold, 1 mA to 500 mA	

\*Value indicates unworked penetration  
●○○ noise damping ●●○ good noise damping ●●● very good noise damping

## Approvals/references

(in alphabetical order)

- BMW group
- Delphi Automotive
- Faurecia
- Grammer
- Jaguar
- Kostal
- VW-TL 52141



# Noise damping



Noise reduction is an important requirement of lubricant related issues inside the car. Disturbing noises caused by vibration have to be eliminated.

For this purpose, BECHEM offers an extensive product range. Especially for workshops, the BECHEM kit containing noise damping products and anti-friction coatings is available.

Please get in touch with your responsible sales contact to order the BECHEM noise damping kit.



# Elastomer and plastic compatibility

Plastic compatibility of lubricants used in the automotive industry is of growing importance. The following table is an extract from the BECHEM brochure „Lubricants compatible with elastomers and plastics“ and includes information regarding the compatibility of selected BECHEM products.

Greases	
Synthetic hydrocarbons with metal soaps, polyurea or inorganic thickeners	PFPE (perfluoropolyether oils) with PTFE (polytetrafluoroethylene)
<b>Berulub FH 57</b> <b>Berulub FR 16</b> <b>Berulub FR 43</b> <b>Berulub ND-Fluid 160</b> <b>Berulub ND-Fluid 160</b> <b>Berulub FK 164</b> <b>Dispersion OZF 1-10</b> <b>Berutox VPT 64</b> <b>Dispersion OZF 0,5-20</b>	<b>Beruglide L</b> <b>Berutox VPT 54-2</b> <b>Berulub FK 164-2</b> <b>Berulub ND-Fluid 160</b> <b>Berulub FK 164</b> <b>Dispersion OZF 1-10</b> <b>Berutox VPT 64</b> <b>Dispersion OZF 0,5-20</b>

Lubricating greases and their behaviour towards sealing materials (elastomers)

Abbreviation	Elastomers		
ACM	acrylate rubber	●	●
CR	chloroprene rubber	◐	●
EPDM	ethylene-propylene-diene rubber	◐	●
FKM/FPM	fluorinated rubber	●	●
FEPM	propylene-tetrafluoroethylene rubber	●	●
HNBR	hydrogenated nitrile-butadiene rubber	●	●
NBR	nitrile-butadiene rubber	◐	●
SBR	styrene-butadiene rubber	◐	●

Lubricating greases and their behaviour towards plastic materials

Abbreviation	Plastics		
ABS	acrylonitrile-butadiene-styrene	●	●
PA 6	polyamide (polycaprolactam)	●	●
PC	polycarbonate	◐	●
PC/ABS	polycarbonate/acrylonitrile-butadiene-styrene	◐	●
PE	polyethylene	●	●
PET/PBT	polyethylene-/polybutylene terephthalate	●	●
POM	polyoxymethylene, polyacetal	●	●
PP	polypropylene	●	●
PTFE	polytetrafluoroethylene	●	●
PU	polyurethane	●	●
PVC	polyvinyl chloride	●	●
TPE-E	thermoplastic elastomer (polyether/polyester)	◐	●

● resistant ◐ partly resistant ○ not resistant

The mentioned compatibilities are based on laboratory tests and references. In view of the variety of used raw materials as well as the complex chemical and morphological structure of the polymers the given information represent general tendencies only. In individual cases and especially prior to serial production the compatibilities should be confirmed by the supplier or verified in laboratory tests.

» Outstanding success worldwide – BECHEM products for plastic lubrication. «

# Lubrication solutions for industry



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