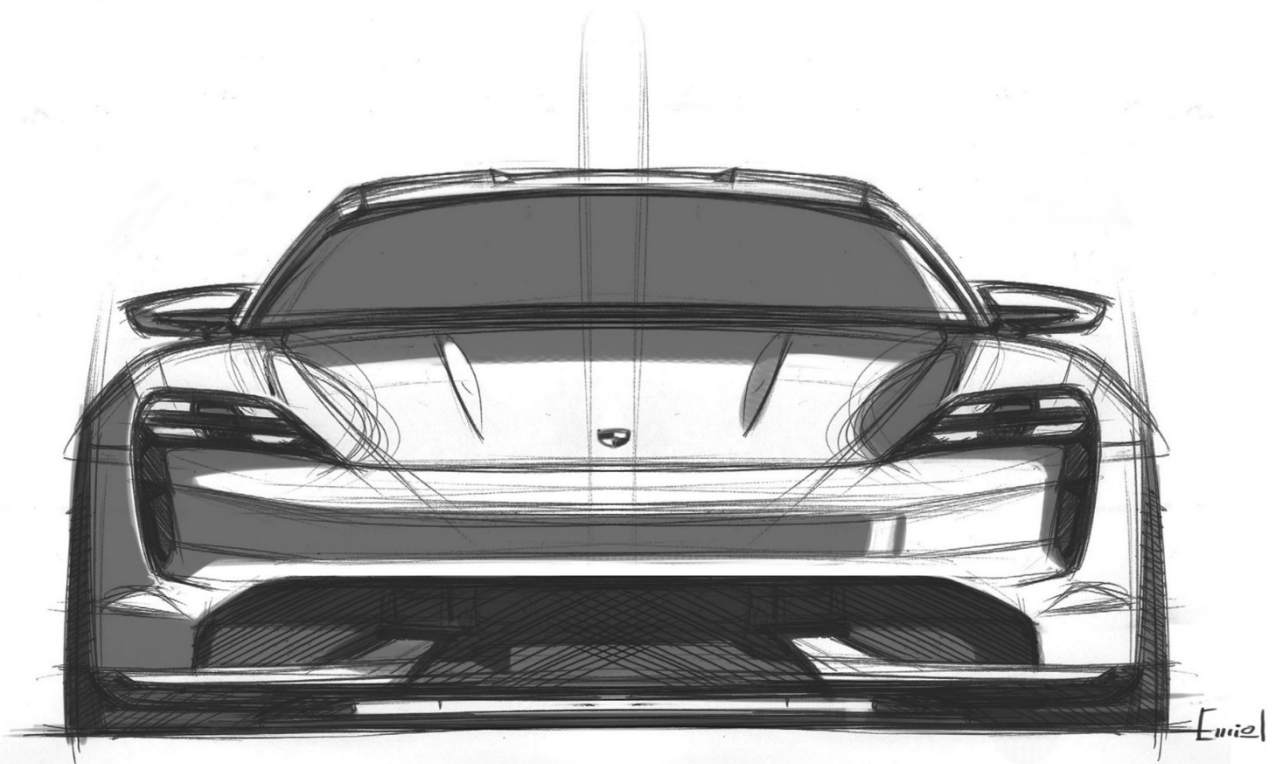


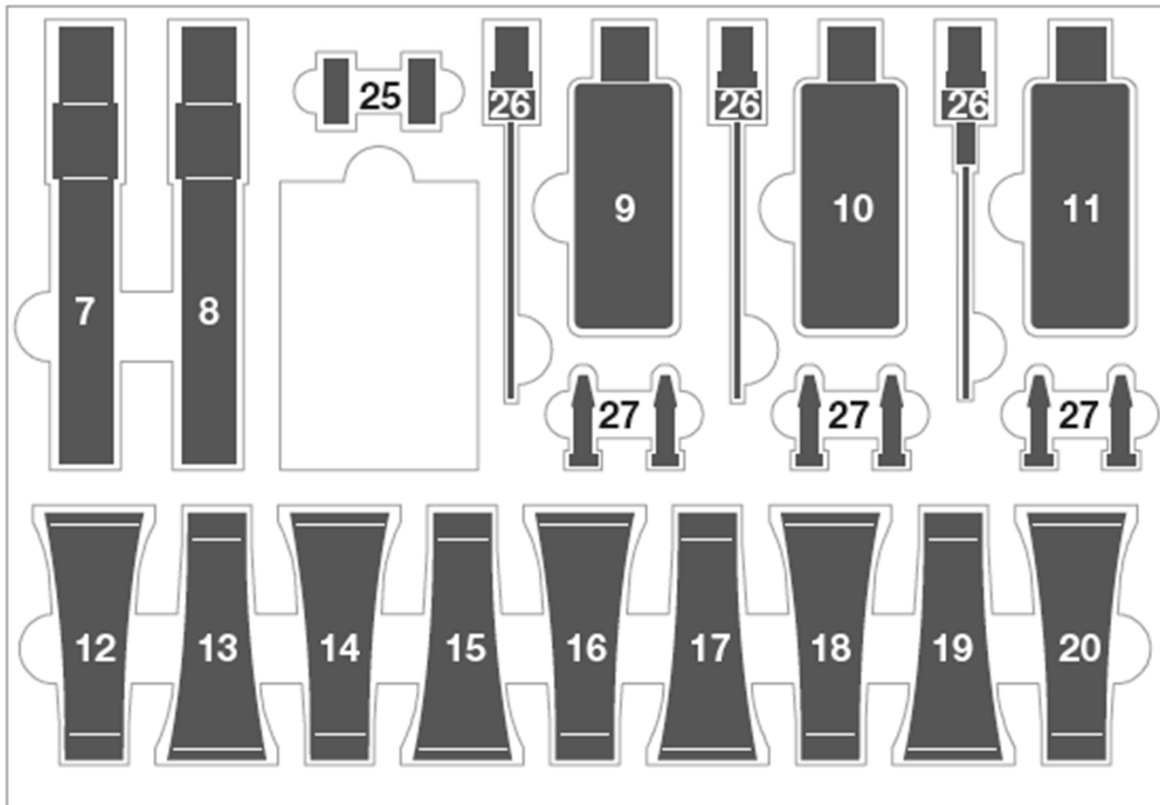
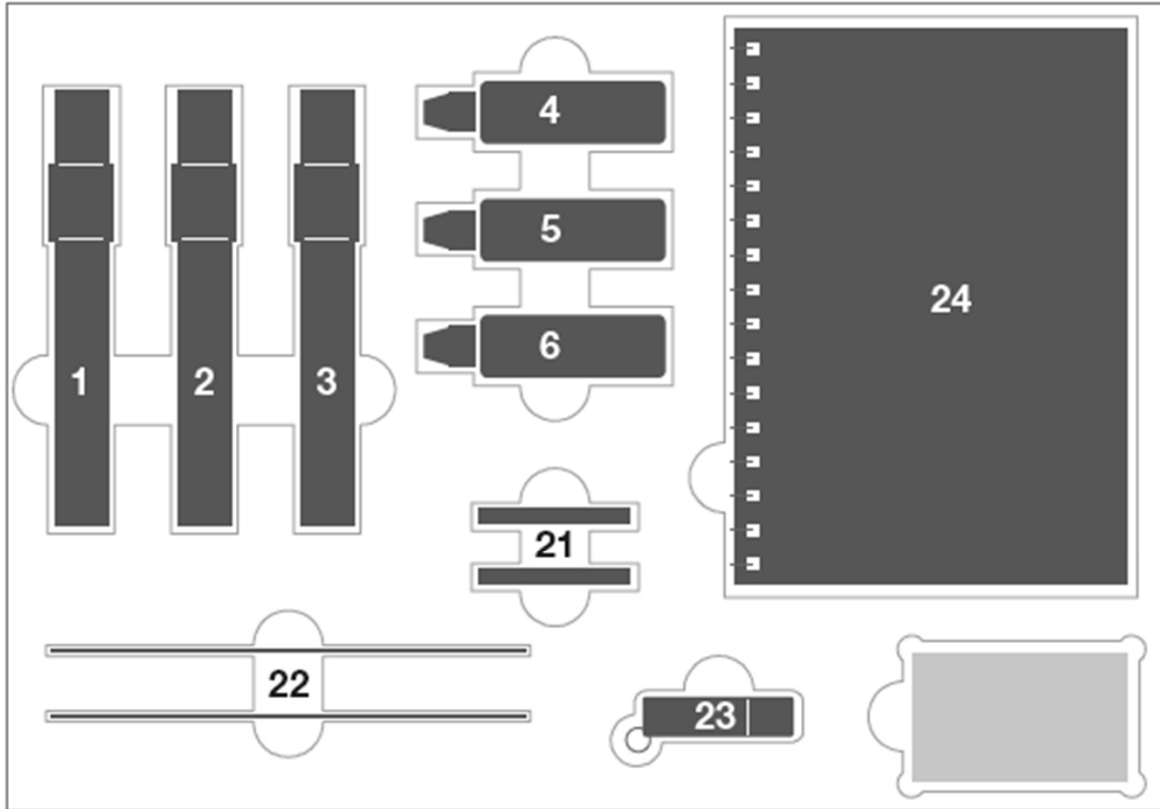
NVH Lubricant Kit Application Overview



Part Number PNA 721 NVH KIT

NVH Lubricant Kit
Overview of Content

KLÜBER
LUBRICATION



NVH Lubricant Kit

Overview of Content



Pos.	Product	Article-No.	Lubricant Description	Application	Possible Applications
1	Klüberalfa YM 3-30 N	0902052272	Low viscosity oil with good wetting properties for plastic friction points	Pen	Headrest Bars, ashtray, cup holders, locking mechanism
2	Klüberalfa DH 3-150 N	0902172272	Medium viscosity oil with good wetting properties for plastic friction points	Pen	Metal bars in armrest, sliding guides in center console, navigation screen
3	Klüberalfa DH 3-350 N	0902182272	Lubricating oil with damping and good wetting properties for plastic friction	Pen	Guidings in center console, ashtrays, door profile, sunroof profiles, metal-plastic or plastic-plastic pairing
4	Klüberplus S 06-100	0121022279	Assembly gels for elastomer components	Sponge applicator	Rubber hoses, door bumpers, exhaust system hangers, sealing elements or tires
5	Klüberplus S 06-100 M2	0123422279	Assembly gels for elastomer components	Sponge applicator	Rubber hoses, door bumpers, exhaust system hangers, sealing elements or tires
6	Klüberplus S 06-100 M4	0123432279	Assembly gels for elastomers	Sponge applicator	Rubber hoses and sealing elements
7	Klübertop TP 36-1300 N A/B Komp A	0992372267	Water-miscible two-component bonded coating for sealing rings and coloured elastomers	Pen, shake 1 min before application	Colored TPE profiles, molded parts, reduction of assembly forces for o-rings
8	Klübertop TP 29-1310 N A-B Komp A	0992242267	Water-miscible two-component bounded coating for elastomers	Pen, shake 1 min before application	Door seals, folding top seals and trunk seals
9	Klüberalfa MR 3	0902340387	Universal sliding fluid for seals, guideways and plastic friction points	Spraying, brush, sponge	For noise and friction reduction In combination with most materials, e.g. leather, textile and plastic
10	Klüberalfa MR 3-500 UV	0902350387	Universal sliding fluid for seals, guideways and plastic friction points – UV Indicator	Spraying, brush, sponge	For noise and friction reduction In combination with most materials, e.g. leather, textile or plastic
11	Klüberalfa MR 3-800	0902360387	Universal sliding fluid for seals, guideways and plastic friction	Spraying, brush, sponge	For noise and friction reduction for most materials, e.g. leather, textile or plastic
12	Klüberbeta RM 47-102	0222232286	Specialty lubricant for elastomers, polycarbonates and thermoplastics	Nozzle, brush, spatula	Air conditioning ventilation valves, automotive gear shift gates and linkages, elastomer seals (including EPDM types)
13	Klübertemp GR M 30 N	0902132285	Long term grease for a wide temperature range	Nozzle, brush, spatula	Electromechanical actuators and small gears
14	Isoflex Topas L32 N	0042272277	Special low temperature grease	Nozzle, brush, spatula	Small gears for window lifters, sunroofs, seats or fan flaps
15	Klübersynth LI 44-22 UV	0042902284	Synthetic low-temperature grease with good dampening properties	Nozzle, brush, spatula	Automatic locking systems, seat adjustment systems, seat rails or lumbar support
16	Klüberpaste HM 96-402	0051332283	Special paste for moving parts in drum and disc brakes	Nozzle, brush, spatula	Pad guides of drum and disc brakes
17	Klübersynth RA 44-702	0122642276	Grease for noise reduction and mechanical damping	Nozzle, brush, spatula	Mechanical switches and rotary controls, ventilation flaps, sun visors, ashtrays, cup holders, armrest and seat adjustment mechanisms
18	Klüberplex RA 44-2601	0203752282	High-viscosity damping lubricating grease for car interiors	Nozzle, brush, spatula	Kinematics, adjustment mechanisms of seats, arm rests and glove compartments, mechanical switches and regulators
19	Syntheso GLEP 1	0121422275	Special lubricating grease with EP additives, compatible with EPDM	Nozzle, brush, spatula	Plain bearings, e.g. in brake and clutch systems for linear motion in contact with brake fluids DOT 3, 4 and 5.1.
20	Klübersynth JIP 84-402	0941082281	Special grease for low frictional torques in ball joints	Nozzle, brush, spatula	Heavily loaded steel/plastic combinations (like steel/PEEK) and for ball joints of the material combination steel/ plastic
21	Artificial leather strip		Explanation, see flash drive		
22	Tensile bar		Explanation, see flash drive		
23	Flash drive		Contains TDS and SDS		
24	Information booklet				
25	Felt for pens		Spare part for pens		
26	Spray head		Applicator for 100ml bottles		
27	Nozzle		Applicator for 25ml tubes		

Overview of plastic compatibility

Properties	type	product name	ABS Acrylonitrile butadiene styre	PA Polyamide	PC Polycarbonate	HDPE High Density Polyethhylene	POM (Delrin) Acetal Resin	PP Polypropylene	PUR Polyurethane
Assembly aid	water miscible gel	4 Klüberplus S 06 - 100 5 Klüberplus S06-100 M2 6 Klüberplus S06-100 M4	limited compatibility	compatible	limited compatibility	compatible	compatible	limited compatibility	compatible
Anti squeaking	dispersion	9 Klüberalfa MR 3 10 Klüberalfa MR 3 - 500 UV 11 Klüberalfa MR 3 -800	compatible	compatible	compatible	compatible	compatible	compatible	compatible
	oil	1 Klüberalfa YM 3-30 N 2 Klüberalfa DH 3-150 N 3 Klüberalfa DH 3-350 N	compatible	compatible	compatible	compatible	compatible	compatible	compatible
	coatings	7 Klübertop TP 36-1300 N A/B Komp A 8 Klübertop TP 29-1310 N A- B Komp A	compatible	compatible	compatible	compatible	compatible	compatible	compatible
Noise & Haptics Damping	grease	17 Klübersynth RA 44 - 702 18 Klüberplex RA 44-2601	compatible	compatible	compatible	compatible	compatible	compatible	compatible
Low Temperature	grease	14 Isoflex Topas L 32 N	limited compatibility	compatible	Not compatible	compatible	compatible	limited compatibility	limited compatibility
		15 Klübersynth LI 44 - 22 UV	limited compatibility	compatible	limited compatibility	compatible	compatible	limited compatibility	limited compatibility
Long Term, Chemically inert, wide temperature range lubrication	grease	12 Klüberbeta RM 47-102 13 Klübertem GR M 30 N	compatible	compatible	compatible	compatible	compatible	compatible	compatible
EPDM compatibility	grease	19 Syntheso GLEP 1	limited compatibility	compatible	Not compatible	compatible	compatible	compatible	limited compatibility

Before serial production, we always recommend the compatibility test between the plastic and the lubricant

Overview of elastomer compatibility

Properties	type	product name	ACM Polyacrylate rubber	AEM (Vamac) Modified polyacrylate	AU Polyurethane	CR (Neoprene) Chlorine- butadiene	EPDM Ethylene propylene diene	FKM (Viton) Fluorocarbon rubber	HNBR Hydrogenated NBR	IIR Butyl rubber	NBR (Buna N) Acrylonitrile butadiene	SBR Styrene butadiene	VMQ (Silicone) Silicone rubber	FVMQ Fluorosilicone rubber
Assembly aid	water miscible gel	4 Klüberplus S 06 - 100 5 Klüberplus S06-100 M2 6 Klüberplus S06-100 M4	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible
Anti squeaking	dispersion	9 Klüberalfa MR 3 10 Klüberalfa MR 3 - 500 UV 11 Klüberalfa MR 3 -800	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible
	oil	1 Klüberalfa YM 3-30 N 2 Klüberalfa DH 3-150 N 3 Klüberalfa DH 3-350 N	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible
	coatings	7 Klübertop TP 36-1300 N A/B Komp A 8 Klübertop TP 29-1310 N A- B Komp A	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible
Noise & Haptics Damping	grease	17 Klübersynth RA 44 - 702 18 Klüberplex RA 44-2601	compatible	compatible	compatible	limited compatibility	Not compatible	compatible	compatible	Not compatible	limited compatibility	Not compatible	limited compatibility	Not compatible
Low Temperature	grease	14 Isoflex Topas L 32 N	compatible	compatible	compatible	limited compatibility	Not compatible	compatible	compatible	Not compatible	limited compatibility	Not compatible	limited compatibility	Not compatible
		15 Klübersynth LI 44 - 22 UV	compatible	compatible	compatible	limited compatibility	Not compatible	compatible	compatible	Not compatible	limited compatibility	Not compatible	limited compatibility	Not compatible
Long Term, Chemically inert, wide temperature range lubrication	grease	12 Klüberbeta RM 47-102	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	Not compatible	Not compatible
		13 Klübertem GR M 30 N	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible	compatible
EPDM compatibility	grease	19 Syntheso GLEP 1	limited compatibility	limited compatibility	Not compatible	limited compatibility	compatible	limited compatibility	limited compatibility	compatible	limited compatibility	limited compatibility	limited compatibility	limited compatibility

Before serial production, we always recommend the compatibility test between the elastomer and the lubricant

1

Klüberalfa YM 3-30 N, YM 3-65 N

Lubricating oils for synthetic material friction points with good wetting properties



Your benefits at a glance

- Optimised wetting properties enable the cost-effective application of the lubricant
- Due to high resistance to ageing, for applications with lifetime lubrication requirement
- Combinable with numerous material pairings
- Beneficial for application in the vehicle interior due to it being neutral in odour
- Klüberalfa YM 3-30 N is approved according to VW TL 52521 A1

Your requirements - our solution

As a manufacturer of modules or as a vehicle manufacturer, you need a lubricant that fulfils the demand for noise minimisation in the vehicle interior. Simultaneously you are interested in assembling the individual components simply and quickly into a unit. With its easy application, the lubricant should help to efficiently develop your process steps in series production.

We have designed the lubricants Klüberalfa YM 3-30 N and Klüberalfa YM 3-65 N especially for this requirement and manufactured them on a perfluoropolyether (PFPE) base. These lubricating oils distinguish themselves with good wetting properties and can therefore be used for a simple thin-film oiling of metals, elastomers and thermoplastics. The PFPE base provides outstanding ageing resistance for an extensive operating temperature range. Consequently, Klüberalfa YM 330 N and YM 3-65 N are also suitable for applications where a lifetime lubrication is required. The lubricants are non-flammable and insoluble in most common cleaning agents.

Application

Klüberalfa YM 3-30 N and Klüberalfa YM 3-65 N can be used for the wetting of metals and synthetic material parts of various configurations. Due to their good material compatibility, these products should be your first choice for the vehicle interior.

Application examples:

- Guide bars of headrests

- Impact, rubbing and sliding points, even of various material pairings, to minimise annoying noises in the components such as fittings, sliding guides in the centre console, cup holder, navigation screen, locking mechanism of trays, ventilation outlet valve, etc.

General conduct toward synthetic materials and elastomers:

Perfluoropolyethers are generally to be classified as widely neutral (possible exception: high fluorinated FKMs) in comparison to elastomers and synthetic materials. Despite this, prior to a series application, the compatibility of the lubricant with the material with which it is to come into contact, must be confirmed.

Application notes

Prior to initial lubrication with the product series Klüberalfa YM 3 N, we recommend cleaning the friction point with white spirit 180/210 and subsequently with Klüberalfa XZ 3-1. After this, treat the friction point with clean, dry compressed air or a hot air treatment in order to remove the white spirit residue-free. For the initial lubrication the friction point must always be blank (that means free of oils, greases and perspiration) and free of soil particles. For additional application notes, please refer to the safety data sheet.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberalfa YM 3-30 N	Klüberalfa YM 3-65 N
Canister 500 ml	+	+
Canister 5 l	+	+



Klüberalfa YM 3-30 N, YM 3-65 N

Lubricating oils for synthetic material friction points with good wetting properties

Product data	Klüberalfa YM 3-30 N	Klüberalfa YM 3-65 N
Article number	090205	090206
Chemical composition, type of oil	PFPE	PFPE
Lower service temperature	-50 °C / -58 °F	-40 °C / -40 °F
Upper service temperature	100 °C / 212 °F	120 °C / 248 °F
Appearance	clear	clear
Colour space	colourless	colourless
Density, DIN 51757, 20 °C	approx. 1.9 g/cm ³	
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 28 mm ² /s	approx. 60 mm ² /s
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 4.8 mm ² /s	approx. 8.5 mm ² /s
Viscosity index, DIN ISO 2909	>= 75	
Odour (based on VDA 270) 2 h / 80°C	<= 3	<= 3
Pour point, DIN ISO 3016	<= -50 °C	<= -40 °C
Refraction index nD20, DIN 51423, pt. 02, 20 °C, lower limit value	1.293	
Refraction index nD20, DIN 51423, pt. 02, 20 °C, upper limit value	1.297	
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months	60 months

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Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.

Klüber Lubrication München SE & Co. KG /
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Klüberalfa DH 3-150 N, DH 3-230 N, DH 3-350 N

Lubricating oil with good wetting properties for plastic friction points



Your benefits at a glance

- Optimised wetting properties enable cost-effective application of the lubricant
- Due to high resistance to ageing, for applications with lifetime lubrication requirement
- Can be combined with numerous material pairings
- Beneficial for application in the vehicle interior due to it being neutral in odour

Your requirements - our solution

Are you looking for a lubricant that reduces squeaking noises in cars? Do you wish to use this lubricant for a wide variety of applications and with different material pairings? Is ease of application, especially in serial uses, an important criterion for your lubricant selection?

We have designed the Klüberalfa DH 3 N oils based on perfluorinated polyether (PFPE) especially for these requirements. The lubricants' good wetting properties enable you to apply a thin oil film to various materials such as metal, elastomers or thermoplastics. The lubricant is therefore efficiently applied exclusively to where it is needed. Our high-quality PFPE base oil provides outstanding ageing resistance for an extensive operating temperature range. Consequently, Klüberalfa DH 3 N oils are also suitable for applications where lifetime lubrication is required. The lubricants are non-flammable and insoluble to most common cleaning agents.

Application

Klüberalfa DH 3 N can be used for the wetting of metals and synthetic material parts of various configurations. Due to their good material compatibility, these products should be your first choice for the vehicle interior. Application examples:

- Contact surfaces with different material pairings in the dashboard: minimisation of unwanted noises
- Impact, rubbing and sliding points inside cars, even of various material pairings
- Sliding guides in the centre console, cup holder, navigation screen

- Locking mechanism of trays, ventilation flaps, etc.

General behaviour towards plastics and elastomers

Perfluorinated polyether oils are generally regarded as neutral towards elastomers and plastics (possible exception: highly fluorinated rubber). Despite this, prior to a series application, the compatibility of the lubricant with the material with which it is to come into contact, must be confirmed.

Application notes

Prior to initial lubrication with the product series Klüberalfa DH 3 N, we recommend cleaning the friction point with white spirit 180/210 and subsequently with Klüberalfa XZ 3-1. After this, treat the friction point with clean, dry compressed air or hot air in order to remove the white spirit residue-free. For the initial lubrication the friction point must always be blank (that means free of oils, greases and perspiration) and free of soil particles. For additional application notes, please refer to the safety data sheet.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberalfa DH 3-150 N	Klüberalfa DH 3-230 N	Klüberalfa DH 3-350 N
Canister 500 ml	+	+	+
Canister 10 l	-	+	-



Klüberalfa DH 3-150 N, DH 3-230 N, DH 3-350 N

Lubricating oil with good wetting properties for plastic friction points

Product data	Klüberalfa DH 3-150 N	Klüberalfa DH 3-230 N	Klüberalfa DH 3-350 N
Article number	090217	090171	090218
Lower service temperature	-35 °C / -31 °F	-25 °C / -13 °F	-25 °C / -13 °F
Upper service temperature	180 °C / 356 °F	230 °C / 446 °F	230 °C / 446 °F
Colour space	colourless	colourless	colourless
Appearance	clear	clear	clear
Chemical composition, type of oil	PFPE	PFPE	PFPE
Density, DIN 51757, 20 °C	approx. 1.9 g/cm ³	approx. 1.91 g/cm ³	approx. 1.91 g/cm ³
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 150 mm ² /s	approx. 230 mm ² /s	approx. 350 mm ² /s
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 18 mm ² /s	approx. 24 mm ² /s	approx. 35 mm ² /s
Viscosity index, DIN ISO 2909	>= 120	>= 120	>= 120
Refraction index, DIN 51423 pt. 02, at 20 °C	approx. 1.301	approx. 1.301	approx. 1.303
Odour (based on VDA 270) 2 h / 80°C	<= 3	<= 3	<= 3
Pour point, DIN ISO 3016	<= -35 °C	<= -30 °C	<= -25 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months	60 months	60 months

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Klüberplus S 06-100, -100 M2, -100 M4

Assembly gels for elastomer components



Benefits for your application

- Environmentally sound
- Easy application
- Good adhesion
- Neutral to materials

Description

Klüberplus S 06-100, -100 M2, -100 M4 are water- miscible gels specially formulated for assembly of elastomer components.

During assembly the gels provide a temporary yet highly efficient lubricating effect which later disappears on evaporation of the water based carrier fluid. This ensures the elastomer component remains fixed in place on assembly.

Owing to the gel-like texture, Klüberplus S 06-100, -100 M2, -100 M4 adhere well to the mounted component, thus ensuring workplace cleanliness.

Klüberplus S 06-100, -100 M2, -100 M4 offer good stability and do not separate following long periods of storage. Stirring prior to use is not necessary.

Klüberplus S 06-100, -100 M2, -100 M4 are generally neutral towards most elastomers. Owing to the many different material compositions we recommend checking their compatibility prior to series applications in the complete component, if possible.

Application

Joining and assembly processes with rubber-elastic materials

Examples:

- Hoses(e.g. brake, cooling water and fuel hoses)
- Steering column boots
- Bellows
- Profiled seals e.g.door, window /door weather-strips

- Door bumpers
- Exhaust system hangers
- Tyres
- Sealing elements

Application notes

Klüberplus S 06-100, -100 M2, -100 M4 are ready-to-use products for application by brush or sponge. Their viscosity can be reduced by dilution with water. Immediately after dilution apply and use up the product. During application, Klüberplus S 06-100, -100 M2, -100 M4 provide short-term protection against rust and galvanic corrosion after complete evaporation of the water. We recommend using demineralised water in order to protect the components against lime deposits.

Protect from frost. If frozen let the product thaw at room temperature.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberplus S 06-100	Klüberplus S 06-100 M2	Klüberplus S 06-100 M4
Can 1 kg	+	+	+
Bucket 25 kg	-	+	+



Klüberplus S 06-100, -100 M2, -100 M4

Assembly gels for elastomer components

Product data	Klüberplus S 06-100	Klüberplus S 06-100 M2	Klüberplus S 06-100 M4
Article number	012102	012342	012343
Colour space	white	white	white
Density at 20 °C	approx. 1.00 g/cm ³	approx. 1.00 g/cm ³	approx. 1.00 g/cm ³
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 1 400 mm ² /s	approx. 75 mm ² /s	approx. 13 mm ² /s
pH-value, DIN ISO 976	approx. 8	approx. 8	approx. 8
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	12 months	12 months	12 months

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7 Klübertop TP 36-1300 N A-B

Water-miscible two-component bonded coating for sealing rings and coloured elastomers



Your benefits at a glance

- **Soft, visually appealing surface**
- **Reduction of assembly forces**
- **Can be coloured**
- **High chemical stability**
- **High elasticity**
- **Contains UV indicator (excitation at 300 - 400 nm)**

Your requirements - our solution

Klübertop TP 36-1300 N A/B is a colourless two-component bonded coating for elastomers and thermoplastics. It has a low friction coefficient and a high resistance to wear as well as chemical stability.

As Klübertop TP 36-1300 N A/B forms a nearly colourless dry film, it is particularly suitable for coloured seals and O-rings where increased operational reliability and colour fastness are equally important.

The bonded coating also shows good adhesion on materials like EPDM, TPE, NBR, HNBR, FPM and PA. Due to the large variety of materials, we recommend performing tests with the component prior to series application.

Application

- Coating of coloured TPE profiles, molded parts
- Reduction of assembly forces for O-rings

Application notes

Klübertop TP 36-1300 N A/B can be applied by spraying or by brush.

Spraying:

Feed pressure: approx. 2 bar

Nozzle diameter: 0.3 to 0.5 mm

Recommended coating thickness: approx. 5–10 µm

Ensure that only oil and water-free compressed air is used.

As component B use Klübertop TH 01.

In individual cases, the use of a primer or plasma treatment will improve adhesion.

Please contact us for further information on how to reduce assembly forces for O-rings.

Protect from frost and heat.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klübertop TP 36-1300 N A/B Komp. A
Can 1 l	+
Bucket 15 l	+

Klüber TP 36-1300 N A-B

Water-miscible two-component bonded coating for sealing rings and coloured elastomers

Product data	Klüber TP 36-1300 N A/B Komp. A
Article number	099237
Lower service temperature	-40 °C / -40 °F
Upper service temperature	100 °C / 212 °F
upper service temperatur (short-time)	180 °C
Density, DIN EN ISO 2811, at 20 °C	approx. 1.08 g/cm ³
Runout time, DIN EN ISO 2431, with flow cups, 4 mm nozzle	approx. 21 s
Mixing ratio of components (standard mixture)	100:4
Drying time, at approx. 20 °C, completely hardened	approx. 24 h
Drying time, at approx. 100 °C, dry to the touch	approx. 5 min
Yield with a tribo-film thickness of 10 micrometer	approx. 24 m ² /l
Recommended layer thickness, tribological coating	5 - 10 µm
Mandrel bending test, DIN EN ISO 1519, material EPDM, layer thickness 5-10 µm, test temperature -40 °C, mandrel diameter 10 mm , result	passed
Friction coefficient DIN 53375, against glass, sliding friction (µd)	approx. 0.3
Wear resistance on glass, (MG 9909 P/Toyota TSM 1708), 1 kg * layer thickness: approx. 25 µm, cycles depend on the EPDM shore hardness	approx. 10 000 cycles
Wear resistance to textile fabric, test path: 100 mm, testing speed: 100 mm/s, frequency: 60 strokes/min, layer thickness: approx. 10 µm, load 1 kg, material: compact rubber; cycles	approx. 10 000 cycles
Flexibility of coating after exposure to thermal stress, 96 h at -40 °C, after 100 % elongation	resistant
Flexibility of coating after exposure to thermal stress, 96 h at 100 °C, after 100 % elongation	resistant
Chemical resistance to FAM test fuel, DIN 51604, duration of exposure 10 min.	resistant
Chemical resistance to window cleaner (commercial product), duration of exposure 10 min	resistant
Chemical resistance to isopropanol, duration of exposure 10 min	resistant
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	12 months

Processing instructions for Klüber TP 36-1300 N A/B

Application method: spraying

(Information on other application methods is available on request.)

Klüber TP 36-1300 N A/B is a two-component system!

The specified A:B mixing ratio by weight must be observed.

As component B (hardener) use Klüber TH 01 component B.

Please follow these instructions when processing Klüber TP 36-1300 N A/B:

- Stir component A well before use – if possible with an electric agitator operating at low speed.
- Place component A on a balance and add component B.
NOTE: The A:B mixing ratio must be observed!

Parameters / Dimensions of dispersion disc

- Peripheral speed of dispersion disc: min. 1/ ms, max. 25 m/s (recommended range 18-25 m/s)
- Diameter of vessel: 2 to 3 times the diameter of the dispersion disc.
- Position of dispersion disc: in the lower third of the vessel.

IMPORTANT: Immediately after adding the hardener component B start mixing of A and B components!

- Mix both components for approx. 5 min. using an electric agitator operating at low speed. The mixture should then be filtered, e.g. using a nylon filter with a pore size of 125-150 µm.
- The product is ready for use after mixing. If the application requires the viscosity to be modified, use deionized water or tap water at a hardness of 10 °dH.



- When applying the mixture with an automatic spray system, we recommend installing an agitator in the storage container to prevent solid particles from settling.
- Cover the storage vessel containing the mixed product with a lid in order to prevent the formation of a solid top layer caused by air drafts.
- The maximum processing time (pot time) of the mixture is 8 hours. After this period we recommend removing all residues from the spraying equipment, feed lines and storage container before filling it with fresh material.
- Clean the spraying equipment, storage container, etc. with tap water (see also “Special notes”).
- Open packs should be closed again immediately after use.
- Klübertop TP 36-1300 N A/B is a water-based product requiring a minimum temperature to form a coating layer. It should therefore not be processed at ambient temperatures below 10 °C.
- Klübertop TP 36-1300 N A/B is dry to the touch after approx. 5 min. at 100 °C. Information on shorter drying periods and pertinent temperature requirements is available on request. The product is completely hard after 24 hours at approx. 25 °C.

Special notes

Converting a system from solvent-containing to water-miscible bonded coatings

Flammable coatings, adhesives, etc. usually contain organic solvents and binders which are not water-miscible.

Observe the following instructions when converting a system from solvent-containing to water-miscible bonded coatings in order to prevent incompatibility reactions or system clogging caused by paint precipitation:

In case of short-term conversions (e.g. for testing purposes) it is indispensable to use a HYBRID SOLVENT as an INTERMEDIATE CLEANING AGENT. It is important for the solvent to be compatible with the solvent-containing coating and also with the water-miscible coating.

The following INTERMEDIATE CLEANING AGENTS are suitable:

- a) acetone
- b) butyl glycol
- c) isopropanol
- d) n-methyl pyrrolidon (only for PTFE hoses)

Before using the intermediate cleaning agent, make sure it is compatible with the solvent-containing coating.

Steps of conversion to a water-miscible coating:

- a) Clean the equipment with a solvent/cleaner compatible with the flammable coating.
- b) Use an intermediate cleaner (as described above).
- c) Secondary cleaning with water.
- d) Apply the water-miscible coating.

For a permanent conversion to water-miscible coatings we recommend replacing all hoses, control valves and feed lines.

Klüber TP 29-1310 N A-B Komp. A

Water-miscible two-component bounded coating for elastomers



Benefits for your application

- Water-miscible two-component blanded coating for elastomers
- Soft, visually appealing surface
- For coating O-rings, sponge and conventional rubber profiles
- For offline coating
- High elasticity
- Good abrasion resistance
- Good adhesion
- Contains UV-indicator (excitation at 300 - 400 nm)

Description

Klüber TP 29-1310 N A/B is a black, two-component bonded coating for elastomers. As it is cross-linking at ambient temperature, it is particularly suitable for offline application on sponge and conventional rubber. Owing to its soft surface, Klüber TP 29-1310 N A/B can be used in all areas where an appealing appearance is just as important as reliable operation.

One of the main advantages of this product is its good adhesion on materials like EPDM and other elastomers.

Klüber TP 29-1310 N A/B contains selected solid lubricants and an organic, water-miscible binding agent and is free of co-solvent.

Klüber TP 28-1311, a one-component heat-setting coating with the same properties, is available for on-line processes.

Application

Klüber TP 29-1310 N A/B was developed for the offline coating of unflocked automotive seals made of sponge or conventional rubber, including:

- door seals
- folding top seals
- trunk seals

Application notes

Klüber TP 29-1310 N A/B can be applied by spraying or by brush.

Spraying:

Feed pressure: approx. 2 bar

Nozzle diameter: 0.5 mm to 0.8 mm

The recommended coating thickness is approx. 7 to 15 µm.

As component B (hardener) use Klüber TH 1 component B.

A primer should be used for all cases where improved adhesion is required.

Ensure that only oil and water-free compressed air is used.

Protect from frost and direct heat.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüber TP 29-1310 N A/B Komp. A
Can 1 l	+
Bucket 15 l	+

Klüber TP 29-1310 N A-B Komp. A

Water-miscible two-component bounded coating for elastomers

Product data	Klüber TP 29-1310 N A/B Komp. A
Article number	099224
Colour space	black
Density, DIN EN ISO 2811, at 20 °C	approx. 1.12 g/cm ³
Runout time, DIN EN ISO 2431, with flow cups, 4 mm nozzle	approx. 25 s
Yield with a tribo-film thickness of 10 micrometer	approx. 27.0 m ² /l
Chemical resistance to FAM test fuel, DIN 51604, duration of exposure 10 min.	resistant
Chemical resistance to ethanol/water (1:1), duration of exposure 10 min	resistant
Chemical resistance to isopropanol, duration of exposure 10 min	resistant
Chemical resistance to window cleaner (commercial product), duration of exposure 10 min	resistant
Chemical resistance to white spirit (145/200), duration of exposure 10 min	resistant
Drying time, at approx. 20 °C, completely hardened	approx. 24 h
Drying time, at approx. 100 °C, dry to the touch	approx. 5 min
Mixing ratio of components (standard mixture)	100:4
"Low-temperature stability [Mandrel bending test acc. to DIN EN ISO 1519 at the indicated temperature]"	-40 °C
"High-temperature stability [Flexibility (tensile strength acc. to DIN 53504) and adhesion of coating (cross cut acc. to DIN EN ISO 2409) after storage at the indicated temperature]"	180 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	9 months

Processing instructions for Klüber TP 29-1310 A/B

Application method: Spraying

(Information on other application methods is available on request.)

Klüber TP 29-1310 N A/B is a two-component system!

A mixing ratio of A:B = 100:4 by weight is MANDATORY.

As component B (hardener) use Klüber TH 01 component B.

Please follow these instructions when processing Klüber TP 29-1310 A/B:

- Stir component A well before use – if possible with an electric agitator operating at low speed.
- Place component A on a balance and add component B.
ATTENTION: The mixing ratio of A:B is 100:4 by weight!

Parameters / Dimensions of dispersion disc

- Peripheral speed of dispersion disc: 2-5 m/s
- Diameter of vessel: 2 to 3 times the diameter of the dispersion disc.
- Position of dispersion disc: in the lower third of the vessel.

IMPORTANT: Immediately after adding the hardener component B start mixing of A and B components!

- Mix both components for approx. 5 min. using an electric agitator operating at low speed. Foaming is to be avoided.
- The mixture should then be filtered, e.g. using a nylon filter with a pore size of 125-150 µm. The product is ready for use after mixing. If the application requires the viscosity to be modified, use deionized water or tap water at a hardness of ≤ 10 °dH.
- When applying the mixture with an automatic spray system, we recommend installing an agitator in the storage container to prevent solid particles from settling.
- Cover the storage vessel containing the mixed product with a lid in order to prevent the formation of a solid top layer caused by air drafts.
- Ideally, the mixture is processed immediately at an ambient temperature (25 °C). The maximum processing time (pot time) of the mixture is 5-8 hours. After this period we recommend removing all residues from the spraying equipment, feed lines and storage container before filling it with fresh material.
- Clean the spraying equipment, storage container, etc. with tap water (see also "Special notes"). Dried residues can only be removed with solvent.



- Open packs should be closed again immediately after use.
- Klübertop TP 29-1310 N A/B is a water-based product requiring a minimum temperature to form a coating layer. It should therefore not be processed at ambient temperatures below 10 °C.
- Please see the product data table for the drying and hardening conditions.

Special notes

Converting a system from solvent-containing to water-miscible bonded coatings

Flammable coatings, adhesives, etc. usually contain organic solvents and binders which are not water-miscible.

Observe the following instructions when converting a system from solvent-containing to water-miscible bonded coatings in order to prevent incompatibility reactions or system clogging caused by paint precipitation:

In case of short-term conversions (e.g. for testing purposes) it is indispensable to use a HYBRID SOLVENT as an INTERMEDIATE CLEANING AGENT. It is important for the solvent to be compatible with the solvent-containing coating and also with the water-miscible coating.

The following INTERMEDIATE CLEANING AGENTS are suitable:

- acetone
- butyl glycol
- isopropanol

Before using the intermediate cleaning agent, make sure it is compatible with the solvent-containing coating.

Steps of conversion to a water-miscible coating:

1. Clean the equipment with a solvent/cleaner compatible with the flammable coating.
2. Use an intermediate cleaner (as described above).
3. Secondary cleaning with water.
4. Apply the water-miscible coating.

For a permanent conversion to water-miscible coatings we recommend replacing all hoses, control valves and feed lines

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Klüberalfa MR 3, MR 3-500, MR 3-800

Universal sliding fluid for seals, guideways and plastic friction points



Your benefits at a glance

- Reduced noise and optimised friction
- Can be combined with numerous material combinations
- Easy and reliable application

Your requirements – our solution

Car manufacturers are confronted with the need to prevent creaking noises (NVH requirements), in particular when a new vehicle model is being launched.

The sliding fluids Klüberalfa MR 3 based on PFPE are resistant to evaporation and were specifically developed for NVH requirements and lifetime lubrication. They offer a less expensive alternative to other noise-reducing products such as films or adhesive tapes.

Klüberalfa MR 3 products are highly compatible with most elastomers and plastics. Due to their being visually neutral, they can be used for applications in car interiors as well as in other industrial sectors.

Klüberalfa MR 3 is available in three different viscosities and supplied in a pump spray dispenser that does not release greenhouse gases.

It is easy to use in economically small quantities and does not give off combustible or flammable solvent vapours. The product forms a homogeneous lubricating film.

Application

Due to its good compatibility, Klüberalfa MR 3 may be used in combination with most materials, e.g. leather, textile or plastic, in car interiors or on the car body.

Klüberalfa MR 3 is compatible with most thermoplastics or thermosetting plastics used, for example, in dashboards, seat and sunroof sliding rails, arm rests, seat adjustment mechanisms, door and sunroof seals.

Perfluorinated polyether oils are generally regarded as neutral towards elastomers and plastics (possible exception: highly fluorinated rubber). Nevertheless we recommend testing compatibility with the material to be used, especially prior to series application.

Application notes

For optimum lubrication results, we recommend cleaning the friction points with white spirit 180/210 followed by Klüberalfa XZ 3-1 before using Klüberalfa MR 3 for the first time. Then blow the surfaces with clean, dry compressed air or hot air to remove white spirit residues.

For initial lubrication, the friction points must be clean and bright, i.e. free from oil, grease, perspiration and contamination.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberalfa MR 3	Klüberalfa MR 3-500	Klüberalfa MR 3-800
Bottle 100 ml	+	+	+
Canister 500 ml	+	+	+
Canister 10 l	+	-	-
Canister 1 l	-	-	-
Canister 20 l	-	-	-



Klüberalfa MR 3, MR 3-500, MR 3-800

Universal sliding fluid for seals, guideways and plastic friction points

Product data	Klüberalfa MR 3	Klüberalfa MR 3-500	Klüberalfa MR 3-800
Article number	090234	090195	090236
Chemical composition, type of oil	PFPE	PFPE	PFPE
Chemical composition, solvent	fluorinated solvent	fluorinated solvent	fluorinated solvent
Upper service temperature	180 °C / 356 °F	200 °C / 392 °F	250 °C / 482 °F
Appearance	clear	clear	clear
Density at 20 °C	approx. 1.53 g/cm ³	approx. 1.55 g/cm ³	approx. 1.72 g/cm ³
Pour point, DIN ISO 3016	<= -45 °C	<= -30 °C	<= -15 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	24 months	24 months	36 months

Klüber Lubrication – your global specialist

Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.

**Klüber Lubrication München SE & Co. KG /
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Klüberalfa MR 3-500 UV, MR 3-800 UV

Universal sliding fluid for seals, guideways and plastic friction points



Your benefits at a glance

– Improved component performance

- due to low friction forces in numerous - especially plastic/plastic - material combinations
- due to noise-damping effect and optimised sliding
- due to exclusive haptic properties provided by nearly dry lubricant film

– Optimisation of the manufacturing process

- due to simple, safe low-cost application
- as quality inspection is enabled by integrated fluorescence indicator

Your requirements - our solution

Do you need to protect plastic/plastic friction points and elastomers against wear and attain low friction coefficients over a long time and across a wide temperature range?

Or maybe you are a car manufacturer who is repeatedly confronted with the need to prevent creaking noises (NVH requirements).

Klüberalfa MR 3-500 UV and Klüberalfa MR 3-800 UV are sliding fluids based on selected PFPE oils that were especially developed for the minimum-quantity lubrication of plastic and elastomer components, protecting them against wear and premature ageing. Moreover, these two fluids will help you prevent undesirable squeaking noises that are often generated where plastic components have dynamic contact.

The Klüberalfa MR 3-UV series is a variant of the tried-and-tested Klüberalfa MR 3 sliding fluids with a fluorescence indicator added to facilitate component inspection.

They are compatible with most elastomers and plastics, making them the obvious choice for applications in many industrial sectors.

The solvent contained enables straightforward and low-cost application. The thin lubricant film of nearly dry aspect remaining on the surface prevents the settling of dust or dirt as well as the contamination of other components or clothes with the lubricant. Klüberalfa MR 3-UV sliding fluids are visually hardly noticeable.

Application

Due to the good material compatibility, Klüberalfa MR 3-500 UV and Klüberalfa MR 3-800 UV may be used for applications in car interiors or on the car body.

More plastic and elastomer material pairings are to be found, for example, in energy chains in automatic equipment, robots or in machine tools.

Perfluorinated polyether oils are generally regarded as neutral towards elastomers and plastics (possible exception: highly fluorinated rubber). Despite this, prior to a series application, the compatibility of the lubricant with the material with which it is to come into contact, must be checked and confirmed.

Application notes

Prior to initial lubrication, the plastic and elastomer components should be free from contamination.

For optimum lubrication results, we recommend cleaning the friction points with white spirit 180/210 followed by Klüberalfa XZ 3-1 before using Klüberalfa MR 3 UV for the first time. After this, treat the friction point with clean, dry compressed air or hot air in order to remove the white spirit residue-free.

For an indication of Klüberalfa MR 3-800 UV and Klüberalfa MR 3-500 UV please use an appropriate UV lamp (emission at 360 nm) and avoid stray light.

On porous plastics and elastomers, visibility of the UV indicator can be time-limited.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.



Klüberalfa MR 3-500 UV, MR 3-800 UV

Universal sliding fluid for seals, guideways and plastic friction points

Pack sizes	Klüberalfa MR 3-800 UV	Klüberalfa MR 3-500 UV
Bottle 100 ml	+	-
Canister 1 l	+	-
Canister 20 l	+	-
Metal can, 1 kg	-	+

Product data	Klüberalfa MR 3-800 UV	Klüberalfa MR 3-500 UV
Article number	090216	090235
Appearance	clear	clear
Chemical composition, solvent	fluorinated solvent	fluorinated solvent
Chemical composition, type of oil	PFPE	PFPE
Density at 20 °C	approx. 1.72 g/cm ³	approx. 1.70 g/cm ³
UV control, wave length: 366 nm	blau-violett	blau-violett
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 80 mm ² /s	approx. 38 mm ² /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 800 mm ² /s	approx. 395 mm ² /s
Upper service temperature	120 °C / 248 °F	120 °C / 248 °F
Pour point, DIN ISO 3016	<= -15 °C	<= -30 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	24 months	24 months

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Klüberbeta RM 47-102

Speciality lubricant for elastomers, duroplastics and thermoplastics



Benefits for your application

- Low emissions and fogging values in vehicle passenger compartments
- Good low-temperature behaviour and wide service temperature range
- Compatible with a wide range of elastomers and plastics
- Good wetting of functional surfaces

Description

Klüberbeta RM 47-102 is based on silicone oil and a lithium special soap. It ensures smooth running across a wide temperature range from -40 °C to +180 °C and is extremely compatible with many elastomers, duroplastic and thermoplastic materials.

Application

Klüberbeta RM 47-102 is particularly suitable for lubrication of the following material combinations:

plastic/plastic, elastomer/plastic, plastic/metal.

Application examples for Klüberbeta RM 47-102 are:

- air conditioning ventilation valves
- automotive gear shift gates and linkages
- elastomer seals (including EPDM types)

Klüberbeta RM 47-102 enables lifetime lubrication whilst preventing annoying creaking or squeaking noises in mechanical components. It also assures "low fogging" and emission values, e.g. in air conditioning systems in car interiors.

Application notes

The lubricant can be applied by spatula, brush or grease gun. With regard to the many different compositions of elastomers and plastics, we recommend checking compatibility prior to series application. To ensure optimum adhesion, it is advisable to clean the friction points prior to initial application of the lubricant.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberbeta RM 47-102
Bucket 25 kg	+

Product data	Klüberbeta RM 47-102
Article number	022223
Lower service temperature	-50 °C / -58 °F
Upper service temperature	180 °C / 356 °F
Colour space	white
Density at 20 °C	approx. 0.96 g/cm ³
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	265 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	295 x 0.1 mm
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, lower limit value	2 000 mPas
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, upper limit value	8 000 mPas



Klüberbeta RM 47-102

Speciality lubricant for elastomers, duroplastics and thermoplastics

Product data	Klüberbeta RM 47-102
Oil separation, based on ASTM D 6184 [FTMS 791 C 321] after 30 h/150 °C	<= 3 % by weight
Drop point, DIN ISO 2176, IP 396	>= 220 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months

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Klübertemp GR M07 N, M30 N, M60 N

Long-term greases for a wide temperature range



Your benefits at a glance

- Versatile use for components under particularly demanding conditions
- over a wide service temperature range
- in contact with aggressive media
- where sensitive plastic materials are used

Your requirements - our solution

Klübertemp GR M-N greases are white long-term greases based on perfluorinated polyether (PFPE) oils and polytetrafluoroethylene (PTFE) thickener. The extremely high viscosity index, i.e. the very flat viscosity curve of the base oils, allows excellent sliding friction properties across a wide service temperature range.

Klübertemp GR M-N greases show a neutral behaviour towards most plastics and elastomers and can therefore be used for a variety of component materials.

These greases were tested for use with selected nonferrous metals.

Application

Klübertemp GR M07N, Klübertemp GR M30N and Klübertemp GR M60N greases are preferably used for the lubrication of electromechanical actuators and small gears where they show low breakaway torques at low temperatures, exceptionally low friction values as well as a reduced tendency to stick-slip.

General behaviour towards materials

Lubricants based on perfluorinated polyether oils and polytetrafluoroethylene are generally regarded as neutral towards most elastomers and plastics (possible exception: highly fluorinated rubber). Nevertheless, compatibility with the materials should be tested, especially prior to series application.

Application notes

For optimum lubrication results, we recommend cleaning the friction points with white spirit 180/210 followed by Klüberalfa XZ 3-1. Then blow the surfaces with clean, dry air or hot air to remove solvent residues. For initial lubrication, the friction points must be clean and bright, i.e. free from oil, grease, perspiration and contamination. Klübertemp GR M greases may be applied directly or by means of brush, spatula or lubricant dispenser.

The technical sales departments at Klüber Lubrication may be contacted at any time for advice to ensure optimum service life results.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klübertemp GR M07 N	Klübertemp GR M30 N	Klübertemp GR M60 N
Tube 100 g	+	+	+
Can 1 kg	+	+	+
Bucket 10 kg	+	+	+



Klübertemp GR M07 N, M30 N, M60 N

Long-term greases for a wide temperature range

Product data	Klübertemp GR M07 N	Klübertemp GR M30 N	Klübertemp GR M60 N
Article number	090212	090213	090214
Chemical composition, type of oil	PFPE	PFPE	PFPE
Chemical composition, solid lubricant	PTFE	PTFE	PTFE
Lower service temperature	-65 °C / -85 °F	-60 °C / -76 °F	-50 °C / -58 °F
Upper service temperature	180 °C / 356 °F	200 °C / 392 °F	230 °C / 446 °F
Colour space	white	white	white
Texture	homogeneous	homogeneous	homogeneous
Density at 20 °C	approx. 1.91 g/cm ³	approx. 1.94 g/cm ³	approx. 1.90 g/cm ³
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	310 x 0.1 mm	265 x 0.1 mm	265 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	340 x 0.1 mm	295 x 0.1 mm	295 x 0.1 mm
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 40 mm ² /s	approx. 160 mm ² /s	approx. 310 mm ² /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 11 mm ² /s	approx. 45 mm ² /s	approx. 85 mm ² /s
NLGI grade, DIN 51818	1	2	2
Copper corrosion, DIN 51811, (lubricating grease), 24h/100°C	1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree
Oil separation, based on ASTM D 6184 [FTMS 791 C 321], after 30 h/200 °C		<= 11 % by weight	<= 10 % by weight
Evaporation loss, ASTM D 2595 22h/120°C	<= 3 % by weight		
Evaporation loss, ASTM D 2595 22h/204°C		<= 2 % by weight	<= 2 % by weight
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months	60 months	60 months

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Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.

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ISOFLEX TOPAS L 32, L 32 N

Special low-temperature greases



Benefits for your application

- Exceed OEM requirements of -40 °C
- Long service life due to high corrosion protection and resistance to oxidation and ageing
- Many years of successful use in the automotive industry (specified and approved by most car manufacturers and component suppliers worldwide)

Description

ISOFLEX TOPAS L 32 and L 32 N have been designed for extremely low temperatures. These greases consist of a synthetic hydrocarbon oil and a special lithium soap. ISOFLEX TOPAS L 32 and L 32 N are resistant to ageing and oxidation and provide good corrosion protection as well as water resistance.

ISOFLEX TOPAS L 32 N also contains a UV indicator, which ensures quality checking even with minimum quantity lubrication.

Application

ISOFLEX TOPAS L 32 and L 32 N are especially used for the lubrication of small gears used in automotive engineering for electrical adjustment mechanisms, e.g. window lifters, sun roofs, seats, headlamps, fan flaps.

Both products have been approved by renowned car manufacturers, such as

- Volkswagen VW TL 778 A
- Daimler DBL 6827.40 and
- Daimler DBL 6827.41.

ISOFLEX TOPAS L 32 and L 32 N can also be used for:

- guideways, bowden cables, door locks
- rolling bearings in small motors, fans, pumps
- tooth flanks in plastic/plastic gears (e.g. POM, PA and PBT) or plastic/steel material combinations.

Application notes

The lubricant is applied by spatula, brush, grease gun or cartridge.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	ISOFLEX TOPAS L 32	ISOFLEX TOPAS L 32 N
Cartridge 370 g	+	+
Can 1 kg	+	+
Bucket 25 kg	+	+
Drum 170 kg	+	+

Product data	ISOFLEX TOPAS L 32	ISOFLEX TOPAS L 32 N
Article number	004130	004227
Lower service temperature	-60 °C / -76 °F	-60 °C / -76 °F
Upper service temperature	130 °C / 266 °F	130 °C / 266 °F

ISOFLEX TOPAS L 32, L 32 N

Special low-temperature greases

Product data	ISOFLEX TOPAS L 32	ISOFLEX TOPAS L 32 N
Colour space	beige	beige
Density at 20 °C	approx. 0.88 g/cm ³	approx. 0.86 g/cm ³
Texture	homogeneous	homogeneous
Texture	short-fibred	short-fibred
NLGI grade, DIN 51818	2	2
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	265 x 0.1 mm	265 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	295 x 0.1 mm	295 x 0.1 mm
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 17 mm ² /s	approx. 17 mm ² /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 3.8 mm ² /s	approx. 3.8 mm ² /s
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, lower limit value	2 000 mPas	2 000 mPas
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, upper limit value	4 500 mPas	5 000 mPas
Flow pressure of lubricating greases, DIN 51805-2, test temperature: -35 °C	<= 450 mbar	<= 450 mbar
Drop point, DIN ISO 2176, IP 396	>= 185 °C	>= 185 °C
Speed factor (n x dm)	1 000 000 mm/min	1 000 000 mm/min
Water resistance, DIN 51807 pt. 01, 3 h/90 °C, rating	<=1-90	<=1-90
Corrosion inhibiting properties of lubricating greases, DIN 51802, (SKF-EMCOR), test duration: 1 week, distilled water	<= 1 corrosion degree	<= 1 corrosion degree
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months	36 months

Klübersynth LI 44-22 UV

Synthetic low-temperature grease with good dampening properties



Benefits for your application

- Synthetic low-temperature grease with good dampening properties
- UV indicator for quality control
- Almost neutral towards many plastics
- Low frictional torques
- Resistant to ageing

Description

Klübersynth LI 44-22 UV is a fully synthetic, dynamically light low-temperature grease with good dampening and adhesion properties as well as water resistance. It is based on synthetic hydrocarbons, lithium soap, antifriction solid lubricants as well as corrosion and oxidation inhibitors.

Klübersynth LI 44-22 UV is almost neutral towards many plastics and elastomers.

Application

Due to its excellent low-temperature and dampening characteristics Klübersynth LI 44-22 UV is used in the precision engineering and automotive industry, e.g. for automatic locking systems, seat adjustment systems and small gears.

Klübersynth LI 44-22 UV is particularly suitable for plastic/ plastic and steel/plastic material pairings.

Application notes

Klübersynth LI 44-22 UV can be applied by brush, spatula or with conventional metering systems.

Owing to the many different compositions of elastomers and plastics, we recommend checking their compatibility prior to series applications.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klübersynth LI 44-22 UV
Bucket 25 kg	+
Drum 180 kg	+

Product data	Klübersynth LI 44-22 UV
Article number	004290
NLGI grade, DIN 51818	2
Chemical composition	UV additive
Chemical composition, solid lubricant	PTFE
Chemical composition, thickener	lithium soap
Chemical composition, type of oil	synthetic hydrocarbon oil
Texture	homogeneous
Texture	short-fibred
Colour space	beige
Density at 20 °C	approx. 0.90 g/cm ³



Klübersynth LI 44-22 UV

Synthetic low-temperature grease with good dampening properties

Product data	Klübersynth LI 44-22 UV
Lower service temperature	-60 °C / -76 °F
Upper service temperature	130 °C / 266 °F
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	265 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	295 x 0.1 mm
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 18 mm ² /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 4 mm ² /s
Flow pressure of lubricating greases, DIN 51805-2, test temperature: -60 °C	<= 1 400 mbar
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, lower limit value	2 500 mPas
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, upper limit value	5 000 mPas
Corrosion inhibiting properties of lubricating greases, DIN 51802, (SKF-EMCOR), test duration: 1 week, distilled water	<= 1 corrosion degree
Copper corrosion, DIN 51811, (lubricating grease), 24h/100°C	1 - 100 corrosion degree
Oxidation stability of lubricating greases, ASTM D942, 100 h/99 °C, pressure drop	<= 0.5 bar
Drop point, DIN ISO 2176, IP 396	>= 180 °C
Water resistance, DIN 51807 pt. 01, 3 h/90 °C, rating	<=1-90
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	24 months

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Klüberpaste HM 96-402

Special paste for moving parts in drum and disc brakes



Your benefits at a glance

- Prevents squeaking and creaking noises during brake operation
- EPDM compatible
- Resistant to washout

Your requirements - our solution

Your customer places an ever increasing value on smooth and quiet handling. Klüberpaste 96-402 could therefore optimally support you by preventing the unwanted noises when operating the brakes. They are often produced in the brake pad guides, where the base plates of the pads are subject to very high loads and have to slide short distances. The specialist concept of the Klüberpaste HM 96-402 enables a targeted prevention of this noise. Additionally, the special paste fulfils the challenge to the highest possible water washout resistance whilst simultaneously providing EPDM compatibility.

Application

Pad guides of drum and disc brakes.

Application notes

Klüberpaste HM 96-402 is easily applied manually to the point of lubrication using a brush or spatula. If you use automatic dosage systems, please be aware that products with a bentonite thickener as a base can suffer abrasive effects in the outlet nozzles and/or reducing valves. Applicable precautionary measures are to be discussed with the manufacturer of the dosage system.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberpaste HM 96-402
30 kg	+

Product data	Klüberpaste HM 96-402
Article number	005133
Lower service temperature	-30 °C / -22 °F
Upper service temperature	1200 °C / 2192 °F
Colour space	grey
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	310 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	340 x 0.1 mm
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 360 mm ² /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 57 mm ² /s
Copper corrosion, DIN 51811, (lubricating grease), 24h/100°C	2 - 100 corrosion degree
Four-ball tester, welding load, DIN 51350 pt. 04	>=2600N
Water resistance, DIN 51807 pt. 01, 3 h/90 °C, rating	<=1-90
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	24 months

Klübersynth RA 44-702, -1502, -3500, -3502

for noise reduction and mechanical damping



Your benefits at a glance

- Soft feel effect (haptics)
- Noise reduction
- Good compatibility with plastics
- Low oil separation

Your requirements - our solution

Klübersynth RA 44-702, RA 44-1502, RA 44-3500 and RA 44-3502 are fully synthetic special greases of high viscosity providing haptic and acoustic damping to your components for a better touch-feel. This enables you to provide mechanical damping to slow-moving components and hence reduce noises, e.g. inside cars.

Application

Klübersynth RA 44-702, RA 44-1502, RA 44-3500 and RA 44-3502 are preferably used for plastic/plastic and plastic/metal material pairings. These products enable you to set defined shifting forces and compensate for tolerances. All products of the Klübersynth RA series have a wide service temperature range from -40 °C to 130 °C (Klübersynth RA 44-702 even offers down to -50 °C). When applied to enclosed systems such as car seat backrest fittings, short-term peaks of up to 180 °C can be tolerated, e.g. in drying ovens.

Applications in motor cars:

mechanical switches and rotary controls, ventilation flaps, sun visors, ashtrays, cup holders, storage boxes, window lifter guide rails, armrest and seat adjustment mechanisms (vertical and horizontal), sunroofs, etc.

Further applications:

precision engineering and optical instruments, fasteners, household appliances and white goods, office machinery and computers, pneumatics and O-rings, sports equipment.

Compatibility with elastomers:

Klübersynth RA 44-702, RA 44-3500 and RA 44-3502 were especially developed for the lubrication of plastic parts inside cars. For this reason, comprehensive tests were performed according to DIN EN ISO 22088 (stress cracking). The results show that these greases are neutral to most plastic materials. Owing to the many different plastic compositions, we recommend checking the material's compatibility with the grease prior to series application.

Application notes

These products can be applied by means of grease gun, brush or spatula as well as via automatic lubricating systems. Klübersynth RA 44-702 and RA 44-3502 contain a UV indicator for easy quality inspection of minimum quantity lubrication. The UV check can be made with a wavelength of 366 nm.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klübersynth RA 44-702	Klübersynth RA 44-1502	Klübersynth RA 44-3500	Klübersynth RA 44-3502
Cartridge 400 g	+	-	-	-
Can 1 kg	+	+	+	+
Bucket 25 kg	+	+	+	+
Drum 170 kg	+	+	+	+

Klübersynth RA 44-702, -1502, -3500, -3502

for noise reduction and mechanical damping

Product data	Klübersynth RA 44-702	Klübersynth RA 44-1502	Klübersynth RA 44-3500	Klübersynth RA 44-3502
Article number	012264	012263	012311	012262
Chemical composition, type of oil	synthetic hydrocarbon oil	synthetic hydrocarbon oil	synthetic hydrocarbon oil	synthetic hydrocarbon oil
Chemical composition, thickener	lithium soap	lithium soap	lithium soap	lithium soap
Lower service temperature	-50 °C / -58 °F	-40 °C / -40 °F	-40 °C / -40 °F	-40 °C / -40 °F
Upper service temperature	130 °C / 266 °F	130 °C / 266 °F	130 °C / 266 °F	130 °C / 266 °F
Colour space	beige	beige	beige	beige
Density at 20 °C	approx. 0.87 g/ cm ³	approx. 0.87 g/ cm ³	approx. 0.85 g/ cm ³	approx. 0.88 g/ cm ³
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	265 x 0.1 mm	285 x 0.1 mm	340 x 0.1 mm	275 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	295 x 0.1 mm	315 x 0.1 mm	370 x 0.1 mm	305 x 0.1 mm
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, lower limit value	6 000 mPas	8 000 mPas	12 000 mPas	16 000 mPas
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, upper limit value	12 000 mPas	15 000 mPas	18 000 mPas	23 000 mPas
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 720 mm ² /s	approx. 1 500 mm ² /s	approx. 3 500 mm ² /s	approx. 3 500 mm ² /s
Corrosion inhibiting properties of lubricating greases, DIN 51802, (SKF-EMCOR), test duration: 1 week, distilled water	<= 1 corrosion degree	<= 1 corrosion degree	<= 1 corrosion degree	<= 1 corrosion degree
Oil separation, DIN 51817 N, after 7 d/40 °C	<= 3 % by weight	<= 3 % by weight	<= 5 % by weight	<= 3 % by weight
Flow pressure of lubricating greases, DIN 51805, test temperature: -40 °C		<= 1 400 mbar	<= 1 400 mbar	<= 1 400 mbar
Flow pressure of lubricating greases, DIN 51805-2, test temperature: -50 °C	<= 1 400 mbar			
Low-temperature torque, IP 186, -40 °C, start	approx. 150 mNm			approx. 510 mNm
Low-temperature torque, IP 186, -40 °C, running	approx. 140 mNm			approx. 290 mNm
Drop point, DIN ISO 2176, IP 396	>= 180 °C	>= 180 °C	>= 180 °C	>= 180 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months	24 months	24 months	36 months

Klüberplex RA 44-2601

High-viscosity damping lubricating grease for car interiors



Your benefits at a glance

- **Good acoustical and mechanical damping properties for**
 - optimal noise reduction in the car interior
 - improved haptical characteristics of car components
- **Wide service temperature range due to specially selected raw materials**
- **For use with many types of plastic and elastomer**

Your requirements - our solution

As a manufacturer of components for car interiors and as an OEM you want to make driving as comfortable as possible for your customers. For this purpose, the components in the car need to move noiselessly. At the same time, they have to provide a pleasant touch-feel. Lubricants supporting the optimum function of your components play an important role in this respect.

The high-viscous lubricant Klüberplex RA 44-2601 is made to match the increasing requirements throughout the service life of the vehicle. It creates an upmarket tactile feel due to its mechanical and acoustical damping properties. Moreover, carefully selected high-quality raw materials ensure that Klüberplex RA 44-2601 can be used in a wide service temperature range.

Application

Klüberplex RA 44-2601 can be used for plastic/plastic, plastic/metal and metal/metal material combinations. This lubricant enables you to set defined shifting forces without having to modify components or use additional elements like springs or dampers.

Applications in the car interior:

Typical applications include kinematics, adjustment mechanisms of seats, arm rests and glove compartments, mechanical switches and regulators, air vents, sun visors, storage trays, ashtrays and cup holders.

Application notes

Klüberplex RA 44-2601 was developed for the lubrication of plastic components in car interiors. However, due to the great variety of plastics, we recommend checking the compatibility with the materials in contact, especially prior to series application.

Klüberplex RA 44-2601 can be applied by grease gun, brush, spatula or using automatic systems.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberplex RA 44-2601
Can 1 kg	+
Bucket 25 kg	+
Drum 170 kg	+

Product data	Klüberplex RA 44-2601
Article number	020375
Chemical composition, thickener	lithium soap
Colour space	white



Klüberplex RA 44-2601

High-viscosity damping lubricating grease for car interiors

Product data	Klüberplex RA 44-2601
Chemical composition, type of oil	synthetic hydrocarbon oil
Density at 20 °C	approx. 0.83 g/cm ³
Flow pressure of lubricating greases, DIN 51805, test temperature: -40 °C	<= 1 400 mbar
Corrosion inhibiting properties of lubricating greases, DIN 51802, (SKF-EMCOR), test duration: 1 week, distilled water	<= 1 corrosion degree
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 2 500 mm ² /s
Lower service temperature	-40 °C / -40 °F
Upper service temperature	130 °C / 266 °F
Oil separation, DIN 51817 N, after 7 d/40 °C	<= 5 % by weight
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, lower limit value	10 000 mPas
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, upper limit value	18 000 mPas
Low-temperature torque, IP 186, -40 °C, running	<= 1 000 mNm
Low-temperature torque, IP 186, -40 °C, start	<= 1 000 mNm
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	295 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	325 x 0.1 mm
Drop point, DIN ISO 2176, IP 396	>= 200 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months

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SYNTHESO GLEP 1

Special lubricating grease with EP additives, compatible with EPDM



Benefits for your application

- Special lubricating grease for the assembly and lifetime lubrication of elastomers
- Almost neutral towards most sliding material pairings like EPDM/metal or plastic
- Reduces friction and wear

Description

SYNTHESO GLEP 1 is a special lubricant for a wide variety of applications with an almost neutral behaviour towards many elastomers (including EPDM) and plastics (except PC and ABS). SYNTHESO GLEP 1 can be used in a wide service temperature range and offers efficient protection against wear, good adhesion and resistance to water.

Application

SYNTHESO GLEP has been designed for the lubrication of metal – metal; elastomer – metal, plastic – metal, plastic – plastic sliding material combinations. The product is typically used in the automotive industry as assembly grease for plain bearings, e.g. in brake and clutch systems for linear motion in contact with brake fluids DOT 3, 4 and 5.1. Application examples: guide bushes and bolts, EPDM and SBR seals, clutch master and slave cylinders, corrosion protection of brake pad supports in disc brake calipers, brake boosters and noise reduction in elastic axle bearings, seals of steering columns. In such applications, SYNTHESO GLEP 1 facilitates assembly and provides reliable lubrication. Due to its good resistance to EPDM elastomers, SYNTHESO GLEP 1 is mainly used in car

brakes as it offers good advantages versus silicone greases, like better load-carrying capacity, good adhesion and compatibility with electric contacts.

Application notes

SYNTHESO GLEP 1 can be applied by brush, spatula, grease gun or the usual central lubrication systems. A wear test should be carried out prior to using SYNTHESO GLEP 1 in context with aluminum or aluminum alloys under dynamically high load conditions. Owing to the many different elastomer and plastic compositions we recommend checking their compatibility prior to series application. The possibility of a change in colour is inherent in this product concept. It has, however, no influence on product performance.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	SYNTHESO GLEP 1
Can 1 kg	+
Bucket 25 kg	+
Drum 180 kg	+

Product data	SYNTHESO GLEP 1
Article number	012142
Chemical composition, thickener	special lithium soap
Chemical composition, type of oil	PAG
Lower service temperature	-50 °C / -58 °F
Upper service temperature	150 °C / 302 °F
Colour space	beige
Texture	homogeneous



SYNTHESO GLEP 1

Special lubricating grease with EP additives, compatible with EPDM

Product data	SYNTHESO GLEP 1
Texture	fibrous
Density at 20 °C	approx. 0.97 g/cm ³
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	280 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	310 x 0.1 mm
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 360 mm ² /s
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, lower limit value	3 000 mPas
Shear viscosity at 25 °C, shear rate 300 s ⁻¹ , equipment: rotational viscometer, upper limit value	5 500 mPas
Corrosion inhibiting properties of lubricating greases, DIN 51802, (SKF-EMCOR), test duration: 1 week, distilled water	<= 1 corrosion degree
Copper corrosion, DIN 51811, (lubricating grease), 24h/100°C	1 - 100 corrosion degree
Drop point, DIN ISO 2176, IP 396	>= 220 °C
Flow pressure of lubricating greases, DIN 51805, test temperature: -45 °C	<= 1 400 mbar
Water resistance, DIN 51807 pt. 01, 3 h/90 °C, rating	<= 1-90
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months

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Klübersynth JIP 84-402

Special grease for low frictional torques in ball joints



Benefits for your application

- Energy savings achieved through particularly low friction coefficient
- Reduction of stick-slip and breakaway noise
- For heavily loaded plastic/steel combinations
- Particularly good corrosion protection
- Cost-effective alternative to PFPE greases with similar friction coefficient

Description

Klübersynth JIP 84-402 shows particularly low friction coefficients under high percentages of sliding friction for the material combination steel/plastic. The main aim of product development was to achieve particularly low friction values in heavily loaded ball joints of the material combination steel/PEEK. Breakaway torque was completely eliminated in a component test.

Application

For very heavily loaded steel/plastic combinations (like steel/PEEK) to achieve very low friction coefficients under sliding friction and for ball joints of the material combination steel/plastic. Developed to meet the special requirements of wheel-, supporting- and guiding joints.

Application notes

Klübersynth JIP 84-402 can be applied by brush, spatula, grease gun, grease metering gun, automatic metering units, grease cartridge, conventional metering systems and central lubrication systems (single-line systems). We recommend to test metering under practical conditions with the original equipment prior to use.

Material safety data sheets

Material safety data sheets can be requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klübersynth JIP 84-402
Can 1 kg	+
Bucket 25 kg	+
Drum 200 kg	+

Product data	Klübersynth JIP 84-402
Article number	094108
Chemical composition, solid lubricant	PTFE
Chemical composition, thickener	lithium soap
Chemical composition, type of oil	synthetic hydrocarbon oil
Lower service temperature	-40 °C / -40 °F
Upper service temperature	120 °C / 248 °F
Colour space	beige
Texture	fibrous
Texture	homogeneous
Density at 20 °C	approx. 1.10 g/cm ³



Klübersynth JIP 84-402

Special grease for low frictional torques in ball joints

Product data	Klübersynth JIP 84-402
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	250 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	300 x 0.1 mm
Corrosion inhibiting properties of lubricating greases, based on DIN 51802, SKF-EMCOR, test duration: 3 weeks, synthetic saltwater	<= 2 corrosion degree
Drop point, DIN ISO 2176, IP 396	>= 185 °C
Flow pressure of lubricating greases, DIN 51805, test temperature: -40 °C	<= 1 400 mbar
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	12 months

Klüber Lubrication – your global specialist

Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.

**Klüber Lubrication München SE & Co. KG /
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The data in this document is based on our general experience and knowledge at the time of publication and is intended to give information of possible applications to a reader with technical experience. It constitutes neither an assurance of product properties nor does it release the user from the obligation of performing preliminary field tests with the product selected for a specific application. All data are guide values which depend on the lubricant's composition, the intended use and the application method. The technical values of lubricants change depending on the mechanical, dynamical, chemical and thermal loads, time and pressure. These changes may affect the function of a component. We recommend contacting us to discuss your specific application. If possible we will be pleased to provide a sample for testing on request. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this document at any time without notice.

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Porsche Approvals



Klüber Product Name	Application
Isoflex Topas L 32	Electrical motor for rear spoiler in Porsche Boxter and guiding of electrical window lifter supplied by Brose
Polylub GLY 151	Gearbox
Isoflex Topas NB 52	Seat mounting for seats from Hammerstein
Isoflex Topas AK 50	Bowden cable for inner door handle
Syntheso GLK 1	Clutch encoder cylinder, supplied by Ebert
Unisilikon GLK 112	Cable for acceleration pedal, supplied by Platen
Unisilikon TK 44 N 2	Paste for brakes
Klüberplus S06-100	Assembly aid for grommet Porsche 911
Syntheso GLEP 1	O-ring assembly and plastic parts for engines
Klüberplus S06-100	Assembly aid for different elastomers in Porsche Cayenne, e.g. fixation of instrument panels and brake hose
Syntheso GLEP 1	Porsche grease in 50 g tubes, private label for after market / workshops
Klüberalfa HM 83-801	Clutch actuator in 997 series and Porsche Boxter S. Lube points include: guide sleeve, bearing of release lever and actuation of release lever
Klüberalfa HM 83-801	Porsche clutch grease in 50 g tubes for clutch actuation of 997 series, private label for after market / workshops
Klübertemp HM 83-402	Used for spring on fuel filler flap and spring in clutch pedal
Klüberalfa MR 3	Approved for noise issues in profiles
Centoplex 2 EP	Porsche multi purpose grease, replacement of Shell Retinax EP 2 for after market / workshops
Isoflex Topas NB 152	Grease for wheel hub bearing
Klüberpaste HEL 46-450	High temperature screw paste
Polylub GLY 151	Grease for roof systems, supplied by CTA
Microlube GNY 202	Splined shaft for hang on gear box