

Klüber top TN 01-311 A-B

Two-component high-performance bonded coating for metal components



Benefits for your application

- **Increased component performance**
 - excellent wear protection for long component life
 - for a wide service temperature range
 - lifetime lubrication is possible
 - also in combination with oil and grease lubrication
- **Very good corrosion protection, in particular for zinc-phosphated components**

Description

Klüber top TN 01-311 A/B is a thermosetting, black-coloured high-performance bonded coating made up of two component parts with nanoparticles for excellent wear protection. It has an organic binder containing PTFE as the solid lubricant. With nanoparticles for increased stability, the bonded coating is resistant to very high loads compared to other PTFE-based coatings.

Klüber top TN 01-311 A/B reduces friction and wear on metal/metal and metal/plastic material pairings. This bonded coating can be used for high mechano-dynamic loads as well as with high temperatures. The bonded coating is supplied in liquid form and with a viscosity ready to use. It contains an inflammable solvent mixture.

Once applied and hardened, the bonded coating forms a dry lubricating layer with a wide service temperature range, low friction coefficients and excellent resistance to wear. Its resistance to chemicals and anticorrosive effect are good.

Application

Klüber top TN 01-311 A/B is used as a dry lubricant for components that require a low friction coefficient but where contamination by oil or grease is highly undesirable. Typical applications are found, for example, in the automotive industry or in bearing technology and power transmission engineering as well as in many other sectors of the machine building industry. Due to its good resistance to media and wear, the bonded coating is also particularly suitable for dynamic loads when used in combination with oil lubrication.

Application notes

Klüber top TN 01-311 A/B consists of Component A (art. no. 099210) and Component B. Klüber top TH 06 is used as Component B (art. no. 099200). Component B is mixed with component A at a 5 wt. % to 95 wt. % ratio. Example: 50g of Component B are mixed with 950g of Component A. Prior to

mixing the components, stir Component A to remove any bottom deposits. Use a slow-moving stirrer (500-800 rpm, stir for at least 15 mins) or a high-speed jetstream stirrer, e.g. made by Ystral, drive x 40/36, shaft LDT-1, mixing generator Ø 65 mm (approx. 10 000 rpm, stir for 5 mins). Upon stirring, add component B.

The mixture should be homogenised either by the above-mentioned slow-moving stirrer for 15 mins, or by the high-speed jetstream stirrer for 5 mins. If the high-speed stirrer is used, make sure the temperature of the mixture does not significantly exceed 30 °C. After mixing, pass the mixture through a polyethylene filter with approx 150 µm pore size. The mixing container should always be covered with a lid.

The mixture of components A and B can be processed for approx. 24 h provided the ambient temperature is not much above 25 °C (pot life). Any tubes in contact with the mixture must be made of polyethylene or PTFE.

The mixture is applied to the component by means of spraying. The recommended layer thickness for tribological loads is 5 to 25 µm (dried coating). For special applications, layers up to 30 µm thickness may be applied.

For application by means of spray systems, we recommend a stirrer to be installed in the mixture container and circulating mixture feed. This helps to prevent the solid lubricants from settling. Please ensure that the relative atmospheric humidity is fairly low (max. 60 %) during application processes (coating and deaeration). If atmospheric humidity is too high, water will be absorbed into the wet applied film (product is hygroscopic). This may impair the lubricating film's performance, especially if the coating is applied wet-on-wet. To clean the spray equipment and dilute the bonded coating, the Klüber solvent and cleaning agent SOLUTIN C 10 (art. no. 058036) may be used.

Opened containers of both components should be closed again immediately after use.

Drying / hardening

When subjected to a heat treatment of 80 °C the coated parts are dry to the touch after approx. 10 minutes.



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The coating is hardened at 230 °C object temperature for at least 20 mins. The product will only offer its full performance if hardened completely as described.

Hardening temperatures up to 250 °C and hardening times up to 60 mins even increase the wear resistance of the hardened bonded coating.

To obtain a bubble-free coating, especially when its thickness is > 15 µm, the coated component should be allowed to deaerate for 10 to 15 min at a temperature between 80 °C and 120 °C prior to hardening at 230 °C.

Pretreatment

To attain optimum adhesion of the bonded coating, the component surface must be cleaned and degreased. It should also be roughened prior to coating, either by means of sandblasting or application of a phosphate layer. When applied under bonded coatings, phosphate layers also help to increase corrosion resistance. The maximum storage temperature of 25 °C should not be exceeded but for a short time.

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 top TH 06 Komponente B	Klüber top TN 01-311 A/B Komp. A
Can 950 ml	-	+
Bucket 17.1 l	-	+

Product data	Klüber top TN 01-311 A/B Komp. A	Klüber top TH 06 Komponente B
Article number	099210	099200
Service temperature, lower limiting value (standard mixture)	-40 °C	
Operating temperature, upper limit value (standard mixture)	220 °C	
Colour space	black	yellow
Colour space, (standard mixture)	black	
Density, DIN EN ISO 2811, at 20 °C	approx. 1.04 g/cm ³	approx. 1.06 g/cm ³
Density DIN EN ISO 2811, 20°C (standard mixture)	approx. 1.05 g/cm ³	
Runout time. DIN EN ISO 2431. with flow cups. 3 mm nozzle		approx. 50 s

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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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