

Klüber TP 42 N A-B

Two-component bonded coating for metal components



Benefits for your application

- **Good component performance achieved**
 - through very good wear resistance
 - through very good chemical resistance
 - through delayed tribo-corrosion
 - for a wide service temperature
 - particularly when applied in a double layer system together with Klüber TP N 41 A-B
 - as layers of a thickness of up to 40 µm can be applied
- **Lubricated clean and dry surfaces**
 - no contamination or lubricant loss
 - no adhesive bonding effect of lubricated components

Description

Klüber TP 42 N A-B is a thermosetting, two-component, black-coloured bonded coating. It has an organic binder containing PTFE-free wear protection additives.

Klüber TP 42 N A-B reduces friction and wear in metal/metal combinations. It has a particularly high level of wear resistance and a relatively high friction coefficient for a bonded coating. For this reason, the combination of Klüber TP 42 N A-B as a base coat and Klüber TP 41 N or Klüber TP 39 N A-B as a surface layer lead to particularly high component performance. The two components have been de-signed for “wet-on-wet” spray application, which means that the second layer can be applied before the first one has dried.

This bonded coating can be used for high mechano-dynamic loads as well as with high temperatures.

Klüber TP 42 N A-B excels due to its excellent high wear resistance plus good adhesion on steel and aluminium surfaces.

The bonded coating is liquid and delivered in a ready-to-use viscosity. It contains an inflammable solvent mixture (former hazard category A II) which evaporates during curing.

Once applied and hardened the bonded coating forms a dry lubricating layer which is active across a wide service temperature range. It shows very good chemical resistance and good corrosion protection.

Application

Klüber TP 42 N A-B can be used as a dry lubricant on components where fluid or pasty lubricants cannot be used and wherever high wear resistance is required. Typical applications are found, for example, in the automotive industry or in electrical and precision engineering.

Owing to its good media resistance and high wear resistance, the bonded coating is particularly suitable as a base coating in combination with oil or grease lubrication for dynamic loading.

Application notes

Klüber TP 42 N A-B consists of:

Component A (Art. No. 099203) and component B. Klüber TH 06 component B (Art. No. 099200) is used as component B.

Component B is mixed with component A at a 5 wt. % to 95 wt. % ratio.

Example: 50 g of component B with 950 g of component A.

Prior to mixing the components, stir component A to remove any bottom deposits. Use a slow-moving stirrer (500 to 800 rpm, stir for at least 15 min) or a high-speed jet stream 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 min).

During stirring, add component B. The mixture should be homogenised either by the above-mentioned slow-moving stirrer for 15 min, or by the high-speed jet stream stirrer for 5 min. If the high-speed stirrer is used, make sure the temperature of the mixture does not significantly exceed 30 °C

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in order to avoid a drop in viscosity (reversible), which would increase the tendency of the bonded coating to drip off the component.

After mixing, pass the mixture through a poly-ethylene filter with approx. 150 µm pore size.

The mixing container should always be covered with a lid to avoid evaporation and contamination. 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).

As the bonded coating shows thixotropic properties, it should be stirred after standing > 12 hours in order to re-establish its original viscosity (5 minutes at approx. 500 rpm is sufficient).

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 40 µm thickness may be applied.

We recommend a stirrer be installed in the spray container and circulating mixture feed to prevent the solid lubricants from settling in the mixture.

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 6 (Art. No. 058037) may be used. Opened containers of both components should be closed again immediately after use.

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. For coating thicknesses > 15 µm this is absolutely necessary to ensure sufficient bonded coating adhesion. When applied under bonded coatings, phosphate layers also help to increase corrosion resistance.

Drying / hardening

The coating is hardened at 230 °C object temperature for at least 15 min.

The product will only offer its full performance if hardened completely as described. We recommend allowing the bonded coating to evaporate for approx. 15 min at room temperature prior to heat treatment / drying to achieve maximum adhesion of the lubricant on the surface.

When subjected to a heat treatment of 100 °C the coated parts are dry to the touch after approx. 6 – 10 minutes.

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.

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 TP 42 N A/ BKomp. A
Can 950 ml	+
Bucket 17.1 l	+
Bottle 50 ml	-
Can 900 ml	-



Product data	Klüber TP 42 N A/ BKomp. A
Article number	099203
Service temperature, lower limiting value (standard mixture)	-40 °C
Operating temperature, upper limit value (standard mixture)	230 °C
Colour space	black
Colour space, (standard mixture)	black
Density, DIN EN ISO 2811, at 20 °C	approx. 1.06 g/cm ³
Density DIN EN ISO 2811, 20°C (standard mixture)	approx. 1.06 g/cm ³
Runout time, DIN EN ISO 2431, with flow cups, 3 mm nozzle	
Runout time, DIN EN ISO 2431, with flow cups, nozzle 6 mm	approx. 60 s
Runout time, DIN EN ISO 2431, with flow cups, 6 mm nozzle (standard mixture)	approx. 55 s
Flash point, DIN EN ISO 1516, -30 °C to 110 °C	approx. 30 °C
Cross-cut adhesion (test plate), PA-063 based on DIN EN ISO 2409, value	0-1 Gt
Mandrel bending test, DIN EN ISO 1519, substrate tinplate, layer thickness approx. 30 µm, temperature -40 °C, mandrel diameter 3 mm	passed
Yield with a tribo-film thickness of 15 micrometer (standard mixture)	approx. 12.5 m ² /l
Media resistance of coatings, based on DIN EN ISO 2812-1, tested at room temperature, layer thickness approx. 15 µm, substrate steel, medium soda lye, result: film resistant, tested up to	1 000 h
Media resistance of coatings, based on DIN EN ISO 2812-1, tested at room temperature, layer thickness approx. 15 µm, substrate steel, medium 0.1n hydrochloric acid, result: film resistant, tested up to	1 000 h
Salt spray test, DIN EN ISO 9227, linked with DIN EN ISO 7253, 5% NaCl, temperature 35°C, material steel zinc-phosphatized, layer thickness 15 µm, corrosion after	>= 300 h
Salt spray test, DIN EN ISO 9227, 5% NaCL, temperature 35°C, material steel ST 1405, layer thickness 15 µm, corrosion after	>= 150 h
Friction coefficient, Tannert sliding indicator, room temperature, v _{max} = 0.243 mm/s, F = 50 - 300 N	approx. 0.06
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	12 months



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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.

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