

Klüber TP 42 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**
 - **across a wide service temperature range from -40 to +230 °C**
 - **particularly when applied in a double layer system together with Klüber TP 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 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 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 A/B as a base coat and Klüber TP 41 or Klüber TP 39-311 A/B as a surface layer lead to particularly high component performance. The two components have been designed for “wet-on-wet” spray application, which means that the second layer can be applied before the first one has dried. Layers of a thickness of up to 40 µm can be applied.

This bonded coating can be used for high mechano-dynamic loads as well as with high temperatures (permanent temperatures up to 230°C).

Klüber TP 42 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 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 application examples are applications 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 A/B consists of component A (Art. No. 099191) and component B, Klüber TH 05 (Art. No. 099190).

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

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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 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 tubing in contact with the mixture must be made of polyethylene or PTFE.

The mixture should be applied by 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 should be 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. 3–10 minutes.

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

Minimum shelf life

The minimum shelf life is approx. 12 months if the product is stored in its unopened original container in a dry, frost-free place.

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 downloaded or requested via our website www.klueber.com. You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüber TP 42 A/B	Klüber TH 05
Bottle 50 ml	-	+
Can 900 ml	-	+
Can 950 ml	+	-
Bucket 17.1 l	+	-



Product data	Klüber TP 42 A/B	Klüber TH 05
Article number	099191	099190
Operating temperature, upper limit value (standard mixture)	230 °C	
Service temperature, lower limiting value (standard mixture)	-40 °C	
Runout time, DIN EN ISO 2431, with flow cups, nozzle 4 mm		approx. 23 s
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	
Density, DIN EN ISO 2811, at 20 °C	approx. 1.06 g/cm ³	approx. 1.1 g/cm ³
Density DIN EN ISO 2811, 20°C (standard mixture)	approx. 1.07 g/cm ³	
Mandrel bending test, DIN EN ISO 1519, material steel, layer thickness 15 µm, test temperature 20 °C, mandrel diameter 3 mm, result	passed	
Colour space	black	
Flash point, DIN EN ISO 1516	approx. 28 °C	approx. 52 °C
Cross-cut adhesion (test plate), PA-063 based on DIN EN ISO 2409, value	<= 1 Gt	
Media resistance of coatings, DIN EN ISO 2812-1, test temperature 20 °C, layer thickness 15 µm, material steel ST 1303, medium 0.1n sodium hydroxide solution, corrosion after	>= 800 h	
Media resistance of coatings, DIN EN ISO 2812-1, test temperature 20 °C, layer thickness 15 µm, material steel ST 1303, medium 0.1n hydrochloric acid, corrosion after	>= 1 000 h	
Fog 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	approx. 300 h	
Fog test, DIN EN ISO 9227, 5% NaCl, linked with DIN EN ISO 7253, temperature 35°C, material steel sand blasted, layer thickness 15 µm, corrosion after	approx. 240 h	
Friction coefficient, Tannert sliding indicator, room temperature, v _{max} = 0.243 mm/s, F = 50 - 300 N	approx. 0.08	
Stick-slip, Tannert sliding indicator, room temperature, v _{max} = 0.243 mm/s, F = 300 N, evaluation	no stick slip	
Drying time, at approx. 100 °C dry to the touch, layer thickness 30 µm	approx. 5 min	
Drying time, at approx. 80 °C dry to the touch, layer thickness 30 µm	approx. 7 min	
Heat-setting time at 230 °C, (standard mixture)	>= 15 min	
Yield with a tribo-film thickness of 15 micrometer (standard mixture)	approx. 12.5 m ² /l	



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