

Klüber^{top} TM 06-111

Thermosetting bonded coating for high loads and good corrosion protection

Benefits for your application

- **Cost savings due to wear and corrosion protection also under high loads**
 - long component life due to good surface smoothing at high loads
 - highly resistant at high loads in combination with corrosive influences
 - low friction coefficients at high loads
 - **Clean and dry surfaces with lubricating effect**
 - no contamination by fluid lubricant
 - no sticking of lubricated components during automated assembly
 - lubricant firmly incorporated, no risk of lubrication starvation in the friction point
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Description

Klüber^{top} TM 06-111 is a thermosetting, grey-black bonded coating based on molybdenum disulphide (MoS₂) and an organic binding agent.

Klüber^{top} TM 06-111 is a fluid, ready-to-use product containing a flammable mixture of solvents (previously VbF All group).

Once applied and hardened, the coating ensures:

- good wear resistance
- excellent corrosion protection
- wide service temperature range
- no stick-slip at low relative speeds.

Application

Klüber^{top} TM 06-111 is used for the lubrication of metal components in

- precision engineering
- electrical engineering
- automotive engineering
- locks and fittings
- textile machines,

where the coating has to meet high requirements in terms of corrosion protection and pressure resistance.

With Klüber^{top} TM 06-111, small and mass-produced items can be economically coated, e.g.

- pins, straight pins, pivots
- screws and bolts, nuts
- automotive components (locks, safety belts)
- lock mechanisms

Application notes

Stir or shake well before use.

Klüber^{top} TP 06-111 can be applied by immersion, spraying or by brush. The surfaces to be coated must be cleaned and degreased and be completely free from oil, grease, water, corrosion and scale.

Roughening of the surface by phosphatizing (zinc or manganese) or by sand blasting is recommended to increase adhesion.

When applying Klüber^{top} TM 06-111 by spraying, use a spray gun.



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Other application conditions

Feed pressure: 2 bar
 Spraying distance: approx. 20 cm
 Spray nozzle diameter: 0.8 mm

Make sure that only compressed air is used which is free from oil and water.
 When spraying by hand, it is recommended to apply the product in a zig-zag pattern.
 When spraying systems are used, an agitator should be installed in the container to prevent the solid particles from settling.

When applying the product by immersion, use containers which are resistant to solvents.

The recommended film thickness for sliding loads is between 5 and 20 µm.

To clean the spray gun and, if necessary, to dilute KlüberTM 06-111, the diluting and cleaning agent SOLUTIN C 8 can be used.

KlüberTM 06-111 is ready to handle after approx. 30 min at a component temperature of 20°C and a layer thickness between approx. 5 µm and 20 µm.

The hardening time is 30 min at a component temperature of 180°C.

Its yield is 20 m²/l at a layer thickness of 15 µm.

Minimum shelf life

The minimum shelf life is approx. 36 months if the product is stored in its unopened original container in a dry place at 20 °C.

Pack sizes

1 l can
 20 l bucket

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.

Product data	Klüber TM 06-111
Color	dark grey
Density, DIN EN ISO 2811, at 20 °C, [g/cm ³], approx.	1.20
Runout time, DIN EN ISO 2431, flow cup, nozzle 4 mm, [s], approx.	24
Service temperature range*, [°C]	- 40 to 220
Yield at layer thickness 15 µm, [m ² /l], approx.	20

* The service temperatures indicated are approximate values which refer to the hardened coating and may vary depending on the substrate and the type and duration of load.

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Additional data¹⁾

Service life and friction coefficient in continuous operation pin/disk, (ball, $v = 10\text{m/min}$, normal force $F = 10\text{ N}$) at $T = 25\text{ °C}$ sliding distance s , approx. friction coefficient μ , approx.	150 m 0.16
Tannert sliding indicator ($v_{\text{max}} = 0.243\text{ mm/s}$; $F = 300\text{ vN}$; $T = 20\text{ °C}$) friction coefficient μ , approx.	0.16; no stick-slip
Wear resistance (mod. Reichert method), ($T = 20\text{ °C}$, $v = 1.8\text{m/s}$; $F = 100\text{ N}$), sliding distances, approx.	18 m
Cross-cut adhesion test, DIN EN ISO 2409	Gt 0
Corrosion test based on DIN EN 3026; layer thickness: $15\text{ }\mu\text{m}$, testing medium: distilled water steel, St 13 O3 galvanized steel aluminium	corrosion after $\geq 500\text{ h}$ $\geq 500\text{ h}$ $\geq 500\text{ h}$
Salt spray test based on DIN 50 021, layer thickness: $15\text{ }\mu\text{m}$; test plates: steel (St 13 O3), bright steel (St 13 O3), zinc-phosphated	 $\geq 240\text{ h}$ $\geq 400\text{ h}$
Media resistance acc. to DIN EN ISO 2812-1, layer thickness: $15\text{ }\mu\text{m}$; a) steel St 37, b) zinc-phosphated steel 0.1 n hydrochloric acid 0.1 n sodium hydroxide solution mineral oil diester oil	 a) $\geq 100\text{ h}$, b) $\geq 200\text{ h}$ a), b), $\geq 400\text{ h}$ a), b), $\geq 500\text{ h}$ a), b), $\geq 500\text{ h}$

1) The a.m. data are reference values which may vary depending on the material and the pretreatment. No fixed product characteristics can be derived from these test data.

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