FLUOROPAN® 340 A/B

Thermosetting two-component dry lubricant for tribo systems

Description

FLUOROPAN 340 A/B is a thermosetting, black two-component dry lubricant for tribo systems with a PTFE base (polytetrafluoroethylene) (component 340 B) and an organic binder.

FLUOROPAN 340 A/B is a fluid, ready-to-use product containing a mixture of solvents classified into the A II group according to the relevant statutory order on combustible liquids.

Once applied and hardened, this dry lubricant for tribo systems has a high resistance to wear, a long service life, a wide service temperature range, and a low friction coefficient. It prevents stick slip at low sliding speeds and shows excellent anticorrosion properties.

Application

FLUOROPAN 340 A/B reduces friction and wear in metal/metal or metal/plastic sliding contacts. It has proven effective under extreme ambient conditions (impact of dust and dirt) and when there are oscillating movements. It protects the base material reliably from corrosion.

FLUOROPAN 340 A/B is also suitable for components used in electrical engineering, precision engineering and textile machines, where contamination by oil or grease should be avoided, e. g. slideways, pins, bushings and similarly shaped items.

FLUOROPAN 340 A/B has proven particularly effective for dry lubrication under high mechanical load and in connection with increased service life requirements, e. g. for armatures used in electrical engineering.

Application notes

Shake or stir the FLUOROPAN 340 A and B components well before use. Mix component A and component B at a ratio of 1:1.

The mixture must be homogenized well, which requires an agitator when mixing more that 1 liter.

FLUOROPAN 340 A/B can be applied by spraying or by brush. Spraying ensures an even coating thickness.

Other types of application are indicated upon request.

The surfaces to be coated must be cleaned/degreased and must be completely free from oil, grease, water, corrosion and scale.

Roughening of the surface by means of sand blasting is recommended to increase adhesion. Chemical pretreatment, as e.g. phosphatizing, also results in very good adhesion, which is especially important in cases where increased anticorrosive properties are called for.

When applying FLUOROPAN 340 A/B by spraying, use a spray gun.

Other application conditions:

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

Ensure that only pressurized air is used which is free from oil and water.

The recommended film thickness for tribological loads is between 5 and 25 µm. In the case of spraying by hand, it is recommended to apply the product in a zig-zag pattern.

FLUOROPAN 340 A/B

- particularly wear-resistant dry lubricant for tribo systems (component 340 B on a PTFE base)
- very long service life
- very low friction coefficient
- good anticorrosion properties
- good resistance to chemicals and oil

When spraying systems are used, an agitator should be installed in the container to prevent the solid particles from settling.

To clean the spray gun and, if required, to dilute FLUOROPAN 340 A/B, use the SOLUTIN C 6 dilutig and cleaning agent.

FLUOROPAN 340 A/B is ready to handle after 5 min at 100 °C. The thermosetting process requires the component to be heated to 250 °C for 15 min.

Storage

The minimum shelf life of the individual components is approx. twelve months in the closed package at 20 °C in a non-corrosive atmosphere.

Once mixed, the minimum shelf life of the product is approx. three days.

Pack sizes

1 l can per component
20 l drum per component

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Thermosetting two-component dry lubricant for tribo systems

Product data	
Colour	black
Service temperature [°C]	-40 – 230
Service life in continuous operation (pin/disk, 20 °C, v = 10 m/min, F = 10 N) Sliding distance [m]	approx. 960
Elasticity in acc. with bending test, tested with a coating thickness of 7 µm, DIN 53 152 (ISO 1519) 2 mm mandrel (steel DIN 1544), 20 °C, -40 °C 10 mm mandrel, -40 °C	passed
Cross-cut adhesion test, DIN 53 151	cross cut 0
Stick-slip in acc. with Tannert, 20 °C, V_{max} = 0.243 mm/s, F = 300 N	none
Ready to handle at ... [°C] / after ... [min]	100 / 5
Burning-in temperature [°C] / hardening time [min]	250 / 15
Resistance to wear (in acc. with Reichert), 20 °C, v = 1.8 m/s, F = 100 N, sliding distance [m]	approx. 50
Friction coefficient in acc. with Tannert, 20 °C, V_{max} = 0.243 mm/s, F = 300 N	approx. 0.04
Friction coefficient measured with pin/disk, 20 °C, v = 10 m/min, F = 10 N	approx. 0.09
Resistance to distilled water, tested with a coating thickness of 15 µm, DIN EN 3026, a) St 1303, DIN 1623, b) hot-galvanized steel, c) aluminum (DIN EN 2091), [h]	a), b), c) > 500
Anti-corrosion, tested with a coating thickness of 15 µm, DIN 50 021, ISO 3768, test sheet a) bright steel, b) zinc-phosphated steel, c) sandblasted steel, [h]	a) < 50, b) > 150, c) < 50
Resistance to chemicals, tested with a coating thickness of 15 µm, DIN 53 168 B, test component of steel St 37 and steel St 1303 in acc. with DIN 1623, a) bright steel, b) zinc-phosphated steel, [h]	
0.1 n hydrochloric acid	a), b) > 250
0.1 n caustic soda	a) > 150, b) > 450
blended mineral oil	a), b) > 500
diester oil	a), b) > 500
Yield at 10 µm coating thickness, [m^2/l]	approx. 17

FLUOROPAN® 340 A/B
Safety Data Sheet

1.1 **Product name: a) FLUOROPAN 340 A b) FLUOROPAN 340 B**
Code-No: a) 099 139 b) 099 140 04.05.1998

1.2 Klüber Lubrication München KG
Geisenhausenerstr. 7
D-81379 München,
Tel. ++49 - 89 - 7876 - 0 telephone exchange
Fax ++49 - 89 - 7876 - 333

Emergency telephone no:
++49 - 089 - 7876-0

2. Composition / information on ingredients

Chemical characterization: (preparation)
a) + b) Colourant, organic binding agent, solvent (N-Methylpyrrolidone, xylene
b) Solid lubricants (PTFE)
Hazardous ingredients:

CAS-Nr.	Components	Value	Symbols	R-phrases
1330-20-7	xylene	a) ~ 10 % b) ~ 20 %	Xn	10-20/21-38
872-50-4	N-methylpyrrolidone	~ 60 %	Xi	36/38

3. Hazards identification

a) Xi – Irritant b) Xn – Harmful
R-phrases: a) 10-36/38 b) 10-20/21-36/38
a) + b) Flammable.
Irritating to eyes and skin b) Harmful by inhalation and in contact with skin
Vapours may form explosive mixtures with air

4. First aid measures

After inhalation : Move to fresh air. If symptoms persist, call a physician
After contact with skin: Wash off with soap and plenty of water
After contact with eyes: Rinse with plenty of water
After ingestion : Do not induce vomiting. Obtain medical attention
Advice to doctor: Treat symptomatically. If swallowed or in the event of vomiting, risk of product entering the lungs

5. Fire-fighting measures

Suitable extinguishing media: Water spray, foam, dry powder, carbon dioxide (CO_2)
Unsuitable extinguishing media: High volume water jet
Special hazards: In case of fire the following can be released: Carbon monoxide, hydrocarbons
Special protective equipment for firefighters: Standard procedure for chemical fires
Additional information: Water mist may be used to cool closed containers. In the event of fire and/or explosion do not breathe fumes

6. Accidental release measures

Personal precautions: Risk of slipping due to leakage / spillage of product. Ensure adequate ventilation. Remove all sources of ignition
Environmental precautions: Do not flush into surface water or sanitary sewer system
Methods for cleaning up/taking up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Dispose of absorbed material in accordance with the regulations
Additional information: None

7. Handling and storage

Advice on safe handling: Use only in well-ventilated areas
Advice on protection against fire and explosion: Keep away from sources of ignition – No smoking. Take precautionary measures against static discharges. Vapours may form explosive mixture with air.
Requirements on storage rooms and vessels: Unsuitable materials: light metals
Incompatible materials: Incompatible with oxidizing agents. Do not store together with food
Further information on storage conditions: Keep in a well-ventilated place. Keep away from heat

8. Exposure controls / personal protection

Additional advice on system design: Provide appropriate exhaust ventilation at machinery
Ingredients and specific control parameters:
TLV value of N-methylpyrrolidone: 100 ml/m³ (Germany)
TLV value of xylene: 100 ml/m³ (Germany)
Respiratory protection: No special protective equipment required
Hand protection: Protective gloves
Eye protection: Safety glasses
Body protection: No special protective equipment required
Other protection measures: No special protective equipment required
General protection and hygiene measures: Avoid prolonged and / or repeated contact with skin. Clean skin thoroughly after work; apply skin cream. Remove soiled or soaked clothing immediately. Do not breath vapours or spray mist

9. Physical and chemical properties

Form	liquid
Colour	black
Odour	amine-like
Boiling point	> 135 °C
Flash point	approx. 47 °C, DIN ISO 1516
Flammability	flammable °C
Ignition temperature	approx. 270 °C, DIN 51 794
Autoflammability	no data available
lower explosion limit	approx. 1,0 Vol. %
upper explosion limit	approx. 9,5 Vol. %
Vapour pressure-first	approx. 8 mbar
Density	a) approx. 1,07 g/cm³, 20 °C, DIN 51 757 b) approx. 1,03 g/cm³, 20 °C, DIN 51 757
Water solubility	partly miscible, g/l
pH value	no data available
Outpoor time	a) approx. 124 s, 40 °C, DIN EN ISO 2431 b) approx. 30 s, 40 °C, DIN EN ISO 2431

Run-out time (DIN-cup) determined with nozzel: a) 6 mm
b) 2 mm

10. Stability and reactivity

Conditions to avoid: Do not heat above flash point
Materials to avoid: Strong acids and oxidizing agents
Hazardous decomposition products: None under normal use
Additional information: None

11. Toxicological information

The toxicological data has been taken from products of similar composition
Acute toxicity: LD_{50}/oral/rat = > 2g/kg (literature data)
Chronic toxicity: None
Human experience: Prolonged skin contact may cause skin irritation and/or dermatitis. Solvents may degrease the skin

12. Ecological information

Information on elimination (persistence and degradability): The product has not been tested
Behavour in environmental compartments: Ecological injuries are not known or expected under normal use
Ecotoxic effects: The product has not been tested
Additional information: Should not be released into the environment

13. Advice on disposal

Disposal: Can be incinerated when in compliance with local, state and federal regulations
Dispose of contaminated packaging and recommended cleaning: Offer rinsed packaging material to local recycling facilities

14. Transport information

GGVS / GGVE: Cl. 3, no. 31 c. Name: Xylenes solution
ADN / ADNR: not classified
IMDG-Code: Cl. 3.3. UN number: 1307. UN packaging group: III. EMS: 3-07.
MFAG: 310, no Marine-pollutant. Name: Xylenes solution
ICAO / IATA-DGR: Cl. 3. UN/ID number. 1307. ICAO-packaging group: III.
Name: Xylenes solution
Further Information: None

15. Regulatory Information

Labelling according to EU-guidelines: The product is classified and labelled in accordance with EC-directives / German regulations on dangerous substances
Hazards: a) Xi-Irritant b) Xn-Harmful
Hazardous component(s) to be indicated on label: a) N-methylpyrrolidone
b) Xynol, N-methylpyrrolidone
R-phrases: a) 10-36/38 b) 10-20/21-36/38
a) + b) Flammable. b) Harmful by inhalation and in contact with
Irritating to eyes and skin skin
S-phrases: 41. In case of fire and/or explosion do not breathe fumes

16. Other Information

Issue-department of Safety Data Sheet:
Chemical Documentation , Tel. ++49 - 089 - 7876-564

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid if the material is used incombination with any other materials or if it is processed, unless specified in the text.

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