UNIMOLY® C 220 Hygrosetting dry lubricant for tribo systems



Description:

UNIMOLY C 220 is a hygrosetting grey dry lubricant for tribo systems with an MoS₂ base (molybdenum disulfide) and an inorganic binding agent.

UNIMOLY C 220 is a fluid, readyto-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 is very resistant to pressure and has a wide temperature range. Owing to its structure, UNIMOLY C 220 is particularly suitable for high-vacuum applications.

Adhesion is very good on special steel, metal and electroplated surfaces.

Application:

UNIMOLY C 220 reduces friction and wear in metal/metal sliding contacts.

It prevents nuts and bolts from seizing, and ensures a uniform tightening moment and low friction.

UNIMOLY C 220 is also used as a running-in agent, e.g. for gears.

Other fields of application are clinch bolts, hinge and lock components, slideways, spindles and other slowly sliding components subject to high loads.

Components operating under very high or low temperatures and not subject to humidity are imparted an especially long service life.

As a spray UNIMOLY C 220 is particularly suitable as an assembly aid and for maintenance and repair purposes.

Application notes:

Stir or shake well before use. This also applies to the spray version.

UNIMOLY C 220 can be applied by immersion, spraying or by brush.

Other types of application are indicated upon request.

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

When applying UNIMOLY C 220 by spraying, use a lacquer 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.

In the case of 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. In addition, make sure that the immersion bath is not exposed to an increased degree of humidity. Therefore, if you have an open bath system, only use a small amount of UNIMOLY C 220.

The recommended film thickness for tribological loads is between 5 and $15 \ \mu m$.

For cleaning the spray gun and, if required, diluting UNIMOLY C 220, the SOLUTIN C 9 diluting and cleaning agent can be used.

UNIMOLY C 220

- Hygrosetting at room temperature
- Suitable for high pressures
- Resistant to low and high temperatures
- Suitable for vacuum applications
- Excellent adhesion on metals
- Suitable for materials susceptible to cold welding, e.g. special steel nuts and bolts
- Well-proven as an assembly aid
- Improves the running-in process
- · Prevents stick slip

UNIMOLY C 220 is ready to handle after approx. 5 min at 20 °C. The hardening process is completed after 30 min. at 20 °C.

Minimum shelf life:

The minimum shelf life is approx. 12 months if the product is stored in the original closed container in a dry place at 20 °C.

Pack sizes:

400 ml spray can 1 l can 20 l drum

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Product data:

Colour	grey
Service temperature [°C]*	– 180 450
Service life in continuous operation* (pin/disk, 20 °C, v = 10 m/min, F = 10 N) Sliding distance [m]	3600
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), a) 20 °C, b) – 40 °C 10 mm mandrel, – 40 °C	a) passed, b) failed 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] ¹⁾ / after [min]	20 / 5
Hardening time at [°C] ¹⁾ / after [min]	20 / 30
Resistance to wear (in acc. with Reichert), 20 °C, v = 1.8 m/s, F = 100 N, sliding distance [m]	18
Friction coefficient in acc. with Tannert, 20 °C, V _{max} = 0.243 mm/s, F = 300 N	0.10
Friction coefficient measured with pin/disk, 20 °C, v = 10 m/min, F = 10 N	0.05
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) aluminium (DIN EN 2091), [h]	a), b), c) < 30
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), b), c) < 12
Resistance to chemicals, tested with a coating thickness of 15 µm, DIN 53 168, test sheet 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 0.1 n caustic soda blended mineral oil diester oil	a) < 24, b) < 150 a) < 24, b) < 150 a), b) 500 a), b) 500
Yield at 10 µm coating thickness, [m²/l], approx.	8

¹⁾ The indicated temperature refers to the component.

* Service temperatures are guide values which depend on the lubricant's composition, the intended use and the application method. Lubricants change their consistency, apparent dynamic viscosity or viscosity depending on the mechano-dynamical loads, time, pressure and temperature. These changes in product characteristics may affect the function of a component.

UNIMOLY® C 220 Safety Data Sheet

1.1	Product name: UNIMOLY C 220 Code-No.: 011 062 03.07.2000		9. Physical and Form Colour	
1.2	Klüber Lubrication München KG Emergency telephone no.: Geisenhausenerstraße 7 ++49 - 89 7876 - 0 D-81379 München - Tel. ++49 - 89 78 76 - 0 telephone exchange - Fax: ++49 - 89 78 76 - 333 -	Odour Boiling point Flash point Ignition tempe		
2.	Composition / information on ingredients Chemical characterization (preparation): Solid lubricants (MoS ₂), inorganic binding agent, solvent (ester) Hazardous ingredients CAS-No. Components Value Symbols R-phrases 123-86-4 n-butyl acetate ~ 40% 10-66-67 71-36-3 1-butanol 5 – 10% Xn 10-22-37/38-41-67 5593-70-4 butyl titanate 20 – 25% Xi 38-41		Lower explosi Upper explosi Vapour press Density Water solubili pH value Outpoor time Further inform	Lower explos Upper explos Vapour press Density Water solubili pH value Outpoor time Further inform
3.	Hazards identification Xi – Irritant. R phrases: 10-38-41. Flammable. Irritating to skin. Risk of serious damage to eyes. Vapours may form explosive mixture with air	10.	Stability and Conditions to	
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		Materials to a Hazardous de Additional info	
	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	11.	Toxicologica Prolonged ski Solvents may	
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	12.	Ecological in Information or insoluble in w plants Behaviour in a known or exp Ecotoxic effec Additional info	
6.	Accidental release measures Personal precautions: Ensure adequate ventilation. Remove all sources of ignition Environmental precautions: Do not flush into surface water or sanitary sewer system	13.	Advice on Di Disposal: Car federal regula Dispose of co rinsed packag	
	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	14.	Transport in GGVS / GGV	
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: No special storage conditions required Incompatible materials: Incompatible with oxidizing agents. Do not store together with food Further information on storage conditions: Keep in a well-ventilated		ADN / ADNR: IMDG-Code: UN packaging No Marine-po Name: Butyla ICAO / IATA-I ICAO-packag Name: Butyla Further inform	
8.	place. Keep away from heat Exposure controls / personal protection Additional advice on system design: Provide appropriate exhaust ventilation at machinery Ingredients and specific control parameters: TLV value of n-butyl acetate: 200 ml/m ³ (Germany). TLV value of 1-butanol: 100 ml/m ³	15.	Regulatory in Labelling acco labelled in acc dangerous su Hazards: Xi – R phrases: 10 damage to ex	
	Respiratory protection: No special protective equipment required Hand protection: Protective gloves Eye protection: Safety glasses Body protection: No special protective equipment required		S phrases: 23 eyes, rinse im Wear eye/fac National regu	
	Other protection measures: No special protective equipment required General protection and hygiene measures: Clean skin thoroughly after work; apply skin cream. Remove soiled or soaked clothing immediately.	16.	Other inform	

ester-like ~ 120 °C n-butylacetate approx. 24 °C, DIN ISO 1516 erature approx. 400 °C n-butylacetate ion limit approx. 2 Vol.% n-butylacetate approx. 8 Vol.% ion limit approx. 14 hPa, 20 °C n-butylacetate ure-first approx. 1.06 g/cm3, 20 °C, DIN 51 757 insoluble ity not applicable approx. 29 s, DIN EN ISO 2431 Run-out time (DIN-cup) determined with nozzle: 3 mm nation reactivity avoid: Do not heat above flash point void: Strong oxidizing agents ecomposition products: None under normal use ormation: None al information in contact may cause skin irritation and/or dermatitis. formation n elimination (persistence and degradability): Product is vater. May be separated out mechanically in purification environmental compartments: Ecological injuries are not ected under normal use cts: Aquatic toxicity is unlikely due to low solubility ormation: Should not be released into the environment isposal n be incinerated when in compliance with local, state and ations ntaminated packaging and recommended cleaning: Offer ging material to local recycling facilities formation E: Cl. 3, no. 31 c cetates solution not classified Class 3.3 UN number: 1123 g group: III EMS: 3-07 MFAG: 330 Silutant cetates solution DGR: Class 3 UN / ID number: 1123 ing group: III icetates solution nation: None nformation ording to EU-guidelines: The product is classified and cordance with EC-directives/German regulations on ubstances Irritant

chemical properties

liquid grey

0-38-41. Flammable. Irritating to skin. Risk of serious /es

3-26-39-51. Do not breathe vapours. In case of contact with mediately with plenty of water and seek medical advice. e protection. Use only in well-ventilated areas lations

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nent of Safety Data Sheet: Chemical Documentation, 9 7876 - 564

The data in this product information is based on our general experience and knowledge at the time of printing and is intended to give information of possible applications to a reader with technical experience. It constitutes neither an assurance of product properties nor does it release the user from the obligation of performing preliminary tests with the selected product. We recommend contacting our Technical Consulting Staff to discuss your specific application. If required and possible we will be pleased to provide a sample for testing. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this product information at any time without notice



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Klüber Lubrication München KG Postfach 70 10 47, D-81310 München Tel. (0 89) 78 76-0, Telefax (0 89) 78 76-333