Klüberpaste HEL 46-450

High-temperature screw paste

Your benefits at a glance

- Reliable screw connection ensured by constant and sufficient preload force
- Easy release also after long time at high temperature
- Approved in Ford tox. No. 138624

Your requirements - our solution

Klüberpaste HEL 46-450 is a black hot screw paste for high-alloy steels. It contains fully synthetic polyalkylene glycol and ester base oils and a combination of inorganic solid lubricants.

Klüberpaste HEL 46-450 is suitable for a temperature range between -40 °C and 1000 °C. In the normal temperature range (i.e. below 200 °C) it shows good anticorrosion behaviour and good water resistance. Above 200 °C it acts as a dry lubricant.

Application

Screw paste for conventional and high-alloy steels (Cr-Ni steels) up to 1000 °C.

Lubricating and assembly paste for connections in hot air ducts (e.g. automotive exhaust systems). For connecting elements in turbochargers and compressors.

Application notes

It is important to clean and degrease the contact surfaces thoroughly before applying Klüberpaste HEL 46-450.

A thin layer of paste is then applied by brush, leather cloth or plastic sponge.

Klüberpaste HEL 46-450 spreads easily over the entire surface and thus prevents excess lubrication.

Close container immediately after use in order to prevent contamination.

The friction values indicated on page 2 in the Section Product Data were determined with two different materials. Other materials/surfaces have to be checked accordingly.

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	Klüberpaste HEL 46-450
Cartrigde 600 g	+
Can 750 g	+
Bucket 30 kg	+
Drum 180 kg	+

Characteristics	Klüberpaste HEL 46-450
Article number	089032
Colour space	black
Service temperature, lower limit	-40 °C

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Characteristics	Klüberpaste HEL 46-450
Service temperature, upper limit	1000 °C
Density, Klüber method: PN 024, 20°C	approx. 1.43 g/cm³
Worked penetration, DIN ISO 2137 / ASTM D217, 25°C, lower limit	325 0.1 mm
Worked penetration, DIN ISO 2137 / ASTM D217, 25°C, upper limit	340 0.1 mm
SKF-EMCOR, DIN 51802, Klüber method: distilled water, 168 h	≤ 1 corrosion degree
Flow pressure, DIN 51805-2, -35°C	≤ 600 mbar
Dropping point, DIN ISO 2176 / IP 396	≥ 250 °C
Four-ball tester, welding load, DIN 51350-4	≥ 5000 N
Friction coefficient screw test, hexagon bolts M10 x 30-8.8, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, nut M10-8, plain and degreased, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 50 Nm, averaged bearing surface friction coefficient (initial tightening), external test	0.11
Friction coefficient screw test, hexagon bolts M10 x 30-8.8, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, nut M10-8, plain and degreased, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 50 Nm, averaged thread friction coefficient (initial tightening), external test	0.09
Friction coefficient screw test, hexagon bolts M10 x 30-8.8, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, nut M10-8, plain and degreased, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 50 Nm, standard deviation (S) of averaged bearing surface friction coefficient (initial tightening), external test	0.015
Friction coefficient screw test, hexagon bolts M10 x 30-8.8, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, nut M10-8, plain and degreased, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 50 Nm, standard deviation (S) of averaged thread friction coefficient (initial tightening), external test	0.01
Friction coefficient screw test, hexagon bolts M10 x 50-A2-70, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, material of the nut A2, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 40 Nm, averaged bearing surface friction coefficient (initial tightening), external test	0.09
Friction coefficient screw test, hexagon bolts M10 x 50-A2-70, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, material of the nut A2, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 40 Nm, averaged thread friction coefficient (initial tightening), external test	0.12
Friction coefficient screw test, hexagon bolts M10 x 50-A2-70, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, material of the nut A2, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 40 Nm, standard deviation (S) of averaged bearing surface friction coefficient (initial tightening), external test	0.006
Friction coefficient screw test, hexagon bolts M10 x 50-A2-70, DIN EN ISO 4017, tightening speed n = 5 min⁻¹, number of screws = 20, material of the nut A2, face material 42CrMo4 with roughness Ra 1.6, tightening torque MA = 40 Nm, standard deviation (S) of averaged thread friction coefficient (initial tightening), external test	0.03
Water resistance, DIN 51807-1, 3 h, 90°C	≤ 1 - 90 rating

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Characteristics	Klüberpaste HEL 46-450
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months

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 90 years.

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