

# Klüberbio AG 39-602

Environmentally acceptable adhesive lubricant for open gears and steel cables



## Benefits for your application

- Complies with the requirements for Environmentally Acceptable Lubricants as defined in Appendix A of the 2013 Vessel General Permit
- Reduced environmental impact in the event of discharge into water. The base oil is derived from renewable resources
- Good adhesion and water resistance for long relubrication intervals
- Selected additives ensure longer component life and reduced wear
- Corrosion protection under seawater influence due to especially selected anti-corrosion additives

## Description

Klüberbio AG 39-602 is an adhesive lubricant for open gears and steel cables based on ester oil and selected additives. Klüberbio AG 39-602 contains > 60 % of renewable raw materials.

Their biodegradability acc. to OECD 301 F is  $\geq 60$  % after 28 days. Klüberbio AG 39-602 contributes to long component life and good corrosion and wear protection. The finished product meets the biodegradability, minimally toxic and non-bioaccumulative standards established by the US EPA for the 2013 Vessel General Permit. With its good adhesion to surfaces, Klüberbio AG 39-602 leads to reduced lubricant consumption and reduced labour costs.

## Application

Klüberbio AG 39-602 was developed for the lubrication of open pinion gears on winches and jack-up platforms, as well as steel cables in contact with water.

The product can also be used in other maritime applications that require lubricants to have good water washout resistance, very good anti-corrosion resistance and/or good load-carrying capacity such as with low-speed plain bearings, guide rails and open winch gears.

## Application notes

Klüberbio AG 39-602 can be applied continuously through transfer lubrication with pinion or by brush. Compressed-air lubrication equipment can be used for the lubrication of steel cables. The required lubricant quantity depends on the operating conditions in each individual case.

Our Sales Engineers will be glad to assist you in determining the correct quantity for your application.

Please note that the colour of Klüberbio AG 39-602 changes to red under the influence of UV radiation. This does not impair the lubricating grease's effectiveness.

## Material safety data sheets

Material safety data sheets can be requested via our website [www.klueber.com](http://www.klueber.com). You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberbio AG 39-602
Cartridge Polypropylene (PP) 400 g	+
Can 1 kg	+
Bucket 25 kg	+
Drum 200 kg	+



# Klüberbio AG 39-602

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Product data	Klüberbio AG 39-602
Article number	009042
Chemical composition, type of oil	ester oil
Chemical composition, thickener	calcium soap
Lower service temperature	-20 °C / -4 °F
Upper service temperature	100 °C / 212 °F
Colour space	yellow
Texture	homogeneous
Texture	fibrous
Density at 20 °C	approx. 0.97 g/cm <sup>3</sup>
Worked penetration, DIN ISO 2137, 25 °C, lower limit value	290 x 0.1 mm
Worked penetration, DIN ISO 2137, 25 °C, upper limit value	330 x 0.1 mm
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 600 mm <sup>2</sup> /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 85 mm <sup>2</sup> /s
Copper corrosion, DIN 51811, (lubricating grease), 24h/100°C	1 - 100 corrosion degree
Corrosion inhibiting properties of lubricating greases, DIN 51802, (SKF-EMCOR), test duration: 1 week, distilled water	<= 1 corrosion degree
Oil separation, DIN 51817 N, after 7 d/40 °C	<= 5 % by weight
Flow pressure of lubricating greases, DIN 51805, test temperature: -20 °C	<= 1 400 mbar
Drop point, DIN ISO 2176, IP 396	>= 120 °C
Four-ball tester, welding load, DIN 51350 pt. 04	>= 3 400 N
Biodegradability according to OECD 301 F, (within 28 days)	>= 60 %
Water resistance, DIN 51807 pt. 01, 3 h/90 °C, rating	0 - 90
FZG scuffing test, based on DIN ISO 14635, A/2,76/50, scuffing load stage	>= 12
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 80 years.

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