

Klüberbio LR 9-32, 9-46, 9-68

Environmentally acceptable synthetic hydraulic fluids



Your benefits at a glance

- **Comply with the requirements for Environmentally Acceptable Lubricants as defined in Appendix A of the EPA 2013 VGP (Vessel General Permit)**
- **Readily biodegradable, non-toxic products reducing environmental impact in the event of leakage**
- **Enable start-up of hydraulic systems at very low temperatures and generally use over a wide temperature range due to very good viscosity-temperature behaviour and low solidification point**

Your requirements - our solution

Klüberbio LR 9 oils are readily biodegradable, eco-friendly hydraulic fluids based on synthetic ester oils. Their biodegradability acc. to OECD 301 B is $\geq 60\%$ after 28 days. Klüberbio LR 9 oils contain $>90\%$ of renewable raw materials and comply with the European Ecolabel.



The EU Ecolabel is a label of environmental excellence that is awarded to products and services meeting high environmental standards throughout their life-cycle: from raw material extraction, to production, distribution and disposal.

Attaining EU Ecolabel certification provides ship owners and/or operators with independent assurance that the product achieves the U.S. EPA's requirements for classification as an Environmentally Acceptable Lubricant (EAL). Therefore, these high-performance lubricants meet the biodegradability, minimally toxic, and non-bioaccumulating standards set in Appendix A of the U.S. EPA's VGP (Vessel General Permit).

In addition, Klüberbio LR 9 oils meet or even exceed the minimum requirements stipulated in ISO 15380, Bosch Rexroth RE 90221-01 and Swedish Standard SS 15 54 34.

well as for use in the building and water engineering sectors. They are also preferred in stationary hydraulic equipment operating in ecologically sensitive environments, e.g. in hydroelectric power plants and waterway locks.

Application notes

Klüberbio LR 9 oils meet ISO 15380 requirements in terms of compatibility with standard reference elastomers. Nevertheless, due to the large variety of materials available, compatibility with seals and paint coatings should be verified.

In general, Klüberbio LR 9 oils are miscible with hydraulic oils based on mineral oil. However, a miscibility test should be performed in order to totally rule out the possibility of an incompatibility between different additives. Prior to changeover, we recommend flushing the hydraulic system with the Klüberbio LR 9 oil.

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.

Application

Klüberbio LR 9 oils are intended for applications in mobile hydraulic systems, e.g. in the marine and offshore industries as

Pack sizes	Klüberbio LR 9-32	Klüberbio LR 9-46	Klüberbio LR 9-68
Canister 20 l	+	+	+
Drum 200 l	+	+	+



Klüberbio LR 9-32, 9-46, 9-68

Environmentally acceptable synthetic hydraulic fluids

Product data	Klüberbio LR 9-32	Klüberbio LR 9-46	Klüberbio LR 9-68
Article number	009034	009035	009036
EU Ecolabel registration number	DE/027/068	DE/027/069	DE/027/070
Appearance	clear	clear	clear
Colour space	yellow	yellow	yellow
Density, DIN 51757, 20 °C	approx. 0.91 g/cm ³	approx. 0.92 g/cm ³	approx. 0.93 g/cm ³
Flash point, DIN EN ISO 2592, Cleveland, open-cup apparatus	>= 200 °C	>= 200 °C	>= 200 °C
FZG scuffing test, DIN ISO 14635-1, A/8.3/90, scuffing load stage	>= 10	>= 10	>= 10
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 6.9 mm ² /s	approx. 9.2 mm ² /s	approx. 12.1 mm ² /s
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 32 mm ² /s	approx. 46 mm ² /s	approx. 68 mm ² /s
Anticorrosive properties on steel, DIN ISO 7120, method A, steel, 24 h/60 °C	no rust	no rust	no rust
Classification HEES acc. to ISO 15380-2011	HEES 32	HEES 46	HEES 68
Copper corrosion, DIN EN ISO 2160, 3 h/100 °C	1 - 100 corrosion degree	1 - 100 corrosion degree	1 - 100 corrosion degree
Pour point, DIN ISO 3016	<= -40 °C	<= -40 °C	<= -40 °C
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months	36 months	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.

**Klüber Lubrication München SE & Co. KG /
Geisenhausenerstraße 7 / 81379 München / Germany /
phone +49 89 7876-0 / fax +49 89 7876-333.**

The data in this document is based on our general experience and knowledge at the time of publication 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 field tests with the product selected for a specific application. All data are guide values which depend on the lubricant's composition, the intended use and the application method. The technical values of lubricants change depending on the mechanical, dynamical, chemical and thermal loads, time and pressure. These changes may affect the function of a component. We recommend contacting us to discuss your specific application. If possible we will be pleased to provide a sample for testing on request. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this document at any time without notice.

Publisher and Copyright: Klüber Lubrication München SE & Co. KG. Reprints, total or in part, are permitted only prior consultation with Klüber Lubrication München SE & Co. KG and if source is indicated and voucher copy is forwarded.



a company of the Freudenberg Group