Wilhelmsen Ships Service

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KLÜBERBIO LM2-46 200 LTR

Product group: **681** Product number: **210075**

KLÜBERBIO LM 2-46 is a fully biodegradable, eco-friendly hydraulic fluid based on synthetic ester oils.



Product information

Klüberbio LM 2 oils are fully biodegradable, eco-friendly hydraulic fluids based on synthetic ester oils.

Klüberbio LM 2 oils are intended for applications in mobile hydraulic systems, e.g. in the marine and offshore industries as 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

Features

- Fully biodegradable, eco-friendly hydraulic fluids based on synthetic ester oils.
- Complies with the U.S. Environmental Protection Agency's requirements for classification as an Environmentally Acceptable Lubricant (EAL) in terms of biodegradability, toxicity and bioaccumulation standards according to Appendix A of the EPA's Vessel General Permit (VGP).
- Meets or even exceeds the minimum requirements of HEES oils according to ISO 15380

Benefits

- Comply with the requirements for Environmentally Acceptable Lubricants as defined in Appendix A of the EPA 2013 VGP (Vessel General Permit).
- Fully biodegradable, non-toxic products reducing environmental impact in the event of leakage Facilitate start-up of hydraulic systems at very low temperatures due to very good viscosity-temperature behaviour and low pour point; can therefore be used in hydraulic systems with high temperature fluctuations.
- In addition, Klüberbio LM 2 oils meet or even exceed the minimum requirements of HEES oils according to ISO 15380.

Specification

General

Suggested Inventory Hazard Material classification	C-3

Physical properties

Appearance	clear
Biodegradability of the base oil, acc. to OECD 301 F, (within 28 days) [%]	>= 60 %
Colour	green
Density at 20°C [g/cm³]	approx. 0.918 g/cm³ (DIN 51757)
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C [mm²/s]	approx. 7.8 mm²/s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C [mm²/s]	approx. 46 mm²/s

Dimensions/Weight

Packing Size	200 LTR

Technical data

Chemical composition, type of oil	ester oil
ISO viscosity grade of the base oil, DIN ISO 3448	46
Shelf life [months]	48
Vessel General Permit	fulfilled
Viscosity index, DIN ISO 2909	>= 135

Performance data

Anticorrosive properties on steel, DIN ISO 7120, method A, steel, 24 h/60 °C	no rust corrosion degree
Copper corrosion, DIN EN ISO 2160, 3 h/100 °C	1 - 100 corrosion degree
Flash point, DIN EN ISO 2592, Cleveland, open-cup apparatus [°C]	>= 200 °C
Foam test, ASTM-D 892, ISO 6247, sequence I/24 °C [ml]	<= 150/0 ml
Foam test, ASTM-D 892, ISO 6247, sequence II/ 93.5 °C [ml]	<= 80/0 ml
Foam test, ASTM-D 892, ISO 6247, sequence III/24°C [ml]	<= 150/0 ml
FZG scuffing test, based on DIN ISO 14635-1, A/8.3/90, scuffing load stage	>= 12
Lower service temperature	-40 °C / -40 °F
Pour point, DIN ISO 3016 [°C]	<= -42 °C
Upper service temperature	110 °C / 230 °F

Documents

SDoC and MD for IHM

Directions for use

KLÜBERBIO LM 2-46 is intended for applications in mobile hydraulic systems, e.g. in the marine and offshore industries as 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

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