SYNTHESO D

Synthetic high-temperature lubricating oils

Benefits for your application

- **Good resistance to ageing and oxidation**
- **Excellent viscosity-temperature relation**

Description

SYNTHESO D oils are synthetic high-temperature oils on a polyglycol basis. They are very resistant to ageing and oxidation and have a very good viscosity-temperature relation.

Application

SYNTHESO D oils are used for the lubrication of friction points subject to high temperatures. They are also used as pressure fluids in high-temperature applications, and as heat carrier fluids. Owing to the base oil's high pressure absorption capacity and good wear protection, SYNTHESO D oils are particularly suitable for hydraulic or heat transfer applications where lubricity has to be ensured at high temperatures.

Application notes

SYNTHESO D oils are suitable for immersion and circulation lubrication systems. If they are used as heat carrier fluids it is important not to exceed a specific load of approx. 1.5 W/cm^2 in case of free convection and approx. 2 W/cm^2 in case of forced convection. For the maximum surface temperature of the heat exchanger (film load limit) please refer to the product data.

SYNTHESO D oils are not miscible with mineral oils and synthetic hydrocarbons. We recommend cleaning the lubrication points prior to conversion, and rinsing gears or closed lubrication systems with the SYNTHESO D oil that will be used for lubrication.

SYNTHESO D oils are neutral towards ferrous materials and almost all nonferrous metals. There may be increased wear when the contact surfaces of design elements made of aluminium or aluminium alloys are exposed to dynamic loads (sliding speed and high loads). If necessary, wear tests should be carried out. Depending on the temperature and exposure time, synthetic lubricants on a polyglycol base may have an impact on the functional capacity of rubber-elastic sealing materials. Seals made of NBR can be used at permanent temperatures up to 80 °C. At higher temperatures seals made of FKM or VQM should be used. It has to be taken into account that different elastomer qualities produced by one manufacturer or different manufacturers may show a different behaviour.

Paints may be attacked by synthetic lubricants. When applying SYNTHESO D oils we recommend the use of two-component paints (reactive paints). Oil gauge glasses should preferably be made of natural glass or polyamide materials. We recommend testing the suitability of design materials in contact with the selected lubricants, especially for series application.

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.

SYNTHESO D

Synthetic high-temperature lubricating oils

Pack sizes	SYNTHESO D 32
Canister 20 kg	+
Drum 180 kg	+

Product data	SYNTHESO D 32
Article number	012052
Lower service temperature	-40 °C / -40 °F
Upper service temperature	180 °C / 356 °F
Density, DIN 51757, 20 °C	approx. 0.98 g/cm³
Flash point, DIN EN ISO 2592, Cleveland, open-cup apparatus	>= 220 °C
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 34 mm²/s
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 150°C	approx. 3.7 mm²/s
Kinematic viscosity, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 6.5 mm²/s
ISO viscosity grade, DIN ISO 3448	32
Viscosity index, DIN ISO 2909	>= 140
Pour point, DIN ISO 3016	<= -40 °C
Thermal expansion coefficient (cubic), between 20 °C and 80 °C	approx. 0.0008 1/K
Thermal conductivity at 20 °C	approx. 0.16 W / (K * m)
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	36 months

SYNTHESO D 68	SYNTHESO D 220	SYNTHESO D 460	SYNTHESO D 680	SYNTHESO D 1000
+	+	+	+	+
+	+	+	+	+

SYNTHESO D 68	SYNTHESO D 220	SYNTHESO D 460	SYNTHESO D 680	SYNTHESO D 1000
012078	012051	012065	012067	012090
-35 °C / -31 °F	-25 °C / -13 °F	-25 °C / -13 °F	-25 °C / -13 °F	-20 °C / -4 °F
180 °C / 356 °F	180 °C / 356 °F	180 °C / 356 °F	180 °C / 356 °F	180 °C / 356 °F
approx. 1.04 g/cm³	approx. 1.05 g/cm³	approx. 1.05 g/cm³	approx. 1.06 g/cm³	approx. 1.06 g/cm³
>= 200 °C	>= 220 °C	>= 220 °C	>= 220 °C	>= 220 °C
approx. 68 mm²/s	approx. 220 mm²/s	approx. 460 mm²/s	approx. 680 mm²/s	approx. 1 000 mm²/s
approx. 7.5 mm²/s	approx. 18.4 mm²/s	approx. 35 mm²/s	approx. 43 mm²/s	approx. 71 mm²/s
approx. 14 mm²/s	approx. 38 mm²/s	approx. 75 mm²/s	approx. 110 mm²/s	approx. 165 mm²/s
68	220	460	680	1 000
>= 180	>= 200	>= 230	>= 250	>= 265
<= -40 °C	<= -30 °C	<= -30 °C	<= -25 °C	<= -20 °C
approx. 0.0008 1/K	approx. 0.0078 1/K	approx. 0.0008 1/K	approx. 0.0008 1/K	approx. 0.0008 1/K
approx. 0.175 W / (K * m)	approx. 0.175 W / (K * m)	approx. 0.175 W / (K * m)	approx. 0.175 W / (K * m)	approx. 0.178 W / (K * m)
36 months	36 months	36 months	36 months	36 months

Product information

SYNTHESO D

Synthetic high-temperature lubricating oils

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.**