

Klüberalfa® YV 93-302

High-pressure sliding agent for valves and installations carrying gaseous and liquid oxygen, and for medical, diving and breathing equipment



Description

Klüberalfa YV 93-302 is a pasty, fully synthetic, non-flammable high pressure sliding agent with good wetting properties. It is based on fluorinated polyether oil and a solid lubricant, and is particularly resistant to most conventional chemicals and anaesthetics. Klüberalfa YV 93-302 is characterized by a wide service temperature range (minimum evaporation at high temperatures and pliant structure at low temperatures: see technical data) and can be used without any pressure limit in installations or components carrying liquid oxygen.

Application

Klüberalfa YV 93-302 is suitable as a sliding agent for valves and installations carrying gaseous and liquid oxygen and for applications in context with chemical plants and apparatuses. It fulfills the requirements set forth in the US "Guidelines of sec. 21 CFR, § 178-3570 of FDA regulations" and is registered as NSF H1 and therefore can be used as sliding agent in diving and breathing equipment. The German Institute for Materials Research and Testing (BAM) does not have any safety-related concerns in context with gaseous oxygen under the following operating conditions:

Temperature	Maximum oxygen pressure
up to 60 °C	260 bar
> 60 °C up to 150 °C	230 bar
> 150 °C up to 200 °C	210 bar

Owing to the chemical and physical properties of Klüberalfa YV 93-302, application in medical equipment is possible. Tests for compliance with the medical product law have to be carried out by the manufacturer of the equipment.

Klüberalfa YV 93-302 can be used in autoclaves in the medical sector. The product is still present at the friction point after 10 cycles (at 134 °C, 2.5 bar and 25 minutes cycle time).

The product was subjected to an accumulation test for anaesthetics (halothane) in a saturated chloroform atmosphere with a stainless steel dish in acc. with DIN 58 397/1. The mass increase after 24 h and 50 h was < 4%. The accumulated residual mass after evaporation within 1 h at room temperature was < 1%.

Klüberalfa YV 93-302

- High-pressure sliding agent for applications in context with gaseous and liquid oxygen
- Upper service temperature limit at an operating temperature of
 - up to 60 °C 260 bar
 - > 60 °C up to 150 °C 230 bar
 - > 150 °C up to 200 °C 210 bar
- Service temperature range*:
 - O₂-enriched gases
 - > 21% by vol. of O₂:
 - 60 °C to 200 °C
 - O₂ content
 - ≤ 21% by vol. of O₂:
 - 60 °C to 260 °C
 - Registered as NSF H1
 - Particularly resistant to chemicals and aggressive media
 - Compatible with most materials
 - Resistant to autoclaving
 - Good resistance to halothane
 - High pressure-absorption capacity
 - Low friction coefficient

Application notes

Prior to the first application, clean all friction points with white spirit 180/210 and then with Klüberalfa XZ 3-1. Afterwards blow the friction points carefully with clean, dry compressed air or hot air in order to remove all white spirit residues.

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Remove all sliding agent residues with Klüberalfa XZ 3-1 before reapplying the product. The application point must be bright (i.e. there must not be any oil, grease or traces of perspiration) and free from contaminating particles. The application process must also be "oxygen-clean" because this is the only way to ensure a "ready for oxygen service" condition. We recommend contacting our application engineers to ensure maximum service life.

Minimum shelf life

The minimum shelf life is approx. 60 months if the product is stored in the closed original container, at room temperature in a dry place.

Pack sizes

1 kg can
60 g glass jar
4 g PE tube with nozzle

Product data

Service temperature range* a) oxygen-enriched gases, > 21% by volume of O ₂ , °C b) oxygen content ≤ 21% by volume, °C	– 60 °C to 200 °C – 60 °C to 260 °C
Color, texture	white, homogeneous
Density, g/cm ³ at 20 °C, approx.	2.00
Drop point**, DIN ISO 2167, °C	not measurable
Worked penetration, DIN ISO 2137 at 25 °C (0,1 mm), approx.	265 to 295
Flow pressure, DIN 51 805, at – 60 °C, mbar	< 1400
Apparent dynamic viscosity, Klüber viscosity class***	M
Four-ball tester, welding force, DIN 51 350/ 4, N, approx.	5000
Copper corrosion, DIN 51 811, 24 h / 100 °C, rating	1 – 100
Upper oxygen pressure limit at an operating temperature up to 60 °C > 60 °C up to 150 °C > 150 °C up to 200 °C	260 bar 230 bar 210 bar
BAM test, log no.	6123/97 II-5259 I
NSF Reg. No. Category Code H1	129521

* Service temperatures are guide values which depend on the lubricant's composition, the intended use and the application method. Lubricants change their consistency, apparent dynamic viscosity or viscosity depending on the mechano-dynamical loads, time, pressure and temperature. These changes in product characteristics may affect the function of a component.

** In acc. with DIN ISO 2176 the drop point of this grease is not measurable (it does not melt); however, a certain degree of oil separation may occur above 170 °C

*** Klüber viscosity grades: EL = extra light lubricating grease; L = light lubricating grease; M = medium lubricating grease; S = heavy lubricating grease; ES = extra heavy lubricating grease

The data in this product information is based on our general experience and knowledge at the time of printing 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 tests with the selected product. We recommend contacting our Technical Consulting Staff to discuss your specific application. If required and possible we will be pleased to provide a sample for testing. Klüber products are continually improved. Therefore, Klüber Lubrication reserves the right to change all the technical data in this product information at any time without notice.



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