

# Klüberalfa YV 93-1202

Premium sliding agent for valves, fittings and installations carrying oxygen under very high partial pressure



## Benefits for your application

- **High operational safety for installations and components carrying gaseous oxygen**
  - due to high oxygen pressure resistance (see product data)
  - due to good compatibility with most materials used in this branch of industry
  - due to a wide service temperature range
- **Also suitable for installations and components carrying liquid oxygen**
- **Each product batch is checked for its reactivity to oxygen**

## Description

Klüberalfa YV 93-1202 is a white sliding agent with a good wetting capacity on the basis of perfluorinated polyether oils and solid lubricants.

Klüberalfa YV 93-1202 provides an exceptionally high stability to oxygen surges and very good resistance to various chemicals.

To ensure continuous adherence to this high quality standard, Klüberalfa YV 93-1202 is manufactured in small series subject to strict hygiene requirements and each batch is inspected based on M 034-1 list of nonmetallic materials (213-075).

Klüberalfa YV 93-1202 is registered according to NSF H1, complies with FDA 21 CFR § 178.3570 and can be used in the food-processing industry.

## Application

Klüberalfa YV 93-1202 is used as a sliding agent for the lubrication of valves, fittings and installations carrying gaseous and/or liquid oxygen, in individual cases subject to gas pressures considerably above 300 bar, or in chemical installations and equipment requiring high resistance to various gases.

(Conclusion by analogy based on chemical composition. We recommend users conduct their own component tests using the complete component under conditions similar to series application).

The product's high pressure-absorption capacity and consistent friction values over a wide temperature range ensure constant actuation forces. Test results show the product's usability for an O<sub>2</sub> content > 21 % by vol. under operating conditions specified in the product data section of this product information leaflet.

Possible applications are:

- Oxygen valves
- Peripheral aggregates of chemical installations

- Hose couplings, e.g. oxygen pipe connections, sliding and plain bearings, bolts, slideways, etc.
- Steel and heavy industry
- Assembly aid for most rubber-elastic materials and plastics
- For industrial handling, maintenance and care of oxygen components

### Behaviour towards metal, elastomers and plastics

Klüberalfa YV 93-1202 is normally neutral towards metallic materials, plastics and elastomers within the envisaged temperature range. Nevertheless, we recommend checking the compatibility of the sliding agent with materials prior to the introduction of this product.

## Application notes

All surfaces to be wetted must be thoroughly cleaned prior to product application. The friction and lubrication points of these surfaces/components must be clean and bright (i.e. free from oil, grease, dirt particles or perspiration, etc.). For optimum lubrication results, we recommend cleaning the friction points with clean white spirit and then Klüberalfa XZ 3-1, ensuring residue-free surfaces when dried. Application to equipment, valves and fittings carrying oxygen must also be "oxygen clean" to attain a "ready for oxygen service" condition.

For use at low temperatures, e.g. where components are in direct contact with liquid oxygen, experimental testing and approval by the component manufacturer is required since the design and power ratings, for example in actuator gears, may play a decisive role in this context.

For optimised service life, please contact our service engineers.

\* Notes on the lower service temperature limit (see product data): The service temperature is defined on the basis of physical and mechanical-dynamic product characteristics. At very low temperature and pressure, however, where oxygen remains fluid, the product retains its stability in liquid oxygen tests. If the product is intended to be used below the lower

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service temperature limit, it has to be checked if reliable operation of the component is ensured under these conditions. In cases of doubt, application-specific tests would have to be performed.

\*\* Notes on the upper service temperature limit (see product data): The service temperature is defined on the basis of physical and mechanical-dynamic product characteristics. When working in an atmosphere with added oxygen and/or under high oxygen partial pressure, the upper service temperature limit may be reduced due to a reaction with oxygen. To assess whether use in a particular application is safe, please refer to the product data section in this product information. In cases of doubt, application-specific tests would have to be performed.

Safety advice:

The resistance to oxygen was determined with the unused, contamination-free product. If the product is decomposed during use due to physical (temperature, electric discharge,

pressure surges) or chemical influence or contaminated by foreign substances (e.g. easily oxidisable organic or inorganic materials, particularly iron metals, magnesium, aluminium, titanium or their alloys, e.g. rubbed-off particles, contamination from the environment), decomposition products or foreign substances can be generated which clearly reduce oxygen resistance. Furthermore, operating conditions have a major impact on the lubricant's behaviour in the application. Therefore, it can be necessary or prescribed to conduct own safety-relevant examinations on the equipment or lubricated component.

## 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	Klüberalfa YV 93-1202
Can 1 kg	+



Product data	Klüberalfa YV 93-1202
Article number	013006
NSF-H1 registration	141 427
Chemical composition, type of oil	PFPE
Chemical composition	solid lubricant
Lower service temperature *	-60 °C
Upper service temperature **	200 °C
Colour space	white
Density at 20 °C	approx. 2.00 g/cm <sup>3</sup>
NLGI grade, DIN 51818	2
Shear viscosity at 25 °C, shear rate 300 s <sup>-1</sup> , equipment: rotational viscometer, lower limit value	7 000 mPas
Shear viscosity at 25 °C, shear rate 300 s <sup>-1</sup> , equipment: rotational viscometer, upper limit value	12 000 mPas
Flow pressure of lubricating greases, DIN 51805, test temperature: -60 °C	<= 1 400 mbar
Upper oxygen pressure limit up to a maximum operating temperature of 60 °C, reactivity when exposed to oxygen pressure surges, adiabatic procedure	450 bar
Upper oxygen pressure limit up to a maximum operating temperature of 200 °C, reactivity when exposed to oxygen pressure surges, adiabatic procedure	200 bar
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months



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## 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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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.

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