

#### Why are PFPE lubricants so useful?



PFPE (perfluorinated polyether) is a long-chain polymer which consists of carbon, oxygen and fluorine atoms. The molecular structure can be branched, linear, or a combination of both, depending on the desired properties. The fluorine and oxygen atoms are strongly bonded to the carbon atoms. PFPE is extremely inert, as no element of the molecule is available for a reaction to take place. This inertness provides excellent high-temperature performance and makes PFPE extremely useful in the presence of highly reactive chemicals such as corrosives, acids and liquid oxygen.

#### BARRIERIA & more – different from other PFPEs

Most of our PFPE oils are exclusively produced for Klüber Lubrication using a unique manufacturing technology, leading to the highest degree of purity in the market. With the same care Klüber Lubrication manufactures its PFPE greases with outstanding homogeneity. Our accurate production processes consequently lead to the outstanding performance of our PFPE products.

#### Versatile lubrication solutions

Powerful oils and greases for all components, including bearings, seals, valves, O-rings. Approved by many OEMs.

#### Your benefits

##### More safety due to ...

- non-flammable products
- non-toxic substances
- no VOC materials or chlorine
- chemically inert and silicone-free
- compatibility with a wide range of elastomers
- compatibility with many chemicals

##### Long service life ...

- under the influence of aggressive chemicals
- at high temperatures
- at strongly fluctuating temperatures
- due to low evaporation losses

your global specialist

Solutions for high performance and safety.

PFPE products for the chemical industry

F15005002/Edition 10.15  
Publisher and Copyright:  
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## BARRIERTA & more - increasing safety for the chemical industry



### High operational availability under extreme conditions ...

Global competition puts pressure on production capacities, plant availability and reduction of maintenance and repair costs in the chemical industry.

### ... presents challenges for you ...

The lifetime of stressed components such as rolling bearings as well as operational safety can be improved by selecting a suitable PFPE speciality lubricant meeting the extreme demands of the unit while reducing the costs for the aggregate.

### ... which we help to solve.

BARRIERTA greases, tried and tested over decades, are typically used in bearing, valve, seal and O-ring applications.

Selected examples of machines/applications	Lubrication point	Klüber Lubrication PFPE solution	Main criteria for product selection
High-temperature applications: calenders, rotoformers, autoclaves	Rolling bearings	<b>BARRIERTA L 55 series</b>	High-temperature grease for a wide range of speeds and for applications under the influence of chemicals and vapours, available in NLGI classes 0, 1, 2, 3, NSF H1-registered for food and pharmaceutical applications.
Centrifugal pumps, conveyors under the influence of aggressive chemicals	Rolling bearings, plain bearings	<b>BARRIERTA KM 192</b>	Influence of aggressive chemicals counteracted by very good corrosion protection. Unique oil and thickener combination e.g. for small, fast-running bearings (speed factor approx. 600,000 mm/min).
Low-temperature applications	Rolling bearings, plain bearings	<b>BARRIERTA KL 092</b>	Extreme low-temperature resistance down to minus 65 °C.
Fittings in high-temperature areas	V-shaped packings	<b>Klüberalfa HPX 93-1202</b>	Special high-temperature stability up to 300 °C.
Ball valves, butterfly valves, also for liquid and gaseous oxygen	Upper and lower bearings	<b>Klüberalfa YV 93-302, Klüberalfa YV 93-1202</b>	High operational safety for installations and components carrying liquid and gaseous oxygen.
Fine- and high-vacuum applications, e.g. vacuum pumps, also for pumping gaseous oxygen	Working fluids in mechanical backing pumps, diffusion pumps and turbomolecular pumps	<b>Klüber Tyreno Fluid 3-6V, Klüber Tyreno Fluid 6-14V, Klüber Tyreno Fluid 12-25V</b>	For high-vacuum conditions, very good resistance against hydrocarbons, solvents, common acids and bases or other aggressive chemicals.
Mechanical seals used in pumps and reactors to keep hazardous process fluids in the vessel	Barrier fluid		Usable as barrier fluid for mechanical seals due to high chemical stability and resistance against aggressive media.

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