



Krytox™
Performance Lubricants

High Performance Lubricants for Valve Applications

Product Information

Valves are critical components in a myriad of industrial processes and operations across the world. Chemours knows from first-hand experience the benefits that lubricants provide to support operational safety requirements of the chemical manufacturing industry. Chemours offers a broad selection of perfluoropolyether (PFPE) based lubricants that can deliver lasting performance to satisfy the needs of critical reactive gas valve applications.

Krytox™ lubricants keep valves operating smoothly while reducing maintenance needs. These PFPE oils and greases offer exceptional corrosion resistance, enhanced performance, and extended life—even in harsh environments—as well as extending the life of valve seals. Compatible with most chemical and corrosive/reactive gases, Krytox™ lubricants support valve applications across existing industries and in emerging markets such as clean energy. Their high-performance characteristics help manufacturers meet demanding valve performance standards across all industries.

Design Advantages with Krytox™ Lubricants

- Safe and non-reactive with aggressive chemicals used in industrial applications
- Undamaged by steam, moisture, and pressure
- Insoluble in aqueous solutions, fuels, and common solvents
- Non-volatile
- Non-toxic
- Nonflammable

- Excellent compatibility with gasket, seal and O-ring materials
- Noncorrosive towards common valve construction materials
- High temperature stability—maintain lubricity and viscosity throughout a wide range of temperatures
- Indefinite shelf life
- Effective lubrication to extend equipment use-life and reduce maintenance requirements
- Minimal environmental footprint—chemically and biologically inert and silicone-free



For reactive gas valve applications, Chemours generally recommends additive free Krytox™ oils and greases to ensure maximum process fluid compatibility across a wide range of industries. Several grades of Krytox™ greases are suitable for valves, depending on the application type and temperature range encountered.

Table 1. Recommended oils and greases

| Krytox™ Grade | Base Oil Viscosity at 40 °C, cSt | Temperature Range °C/°F |
|---------------------------|----------------------------------|-------------------------|
| Oil¹ | | |
| GPL103 | 30 | -60-154/-76-310 |
| GPL104 | 60 | -51-180/-60-355 |
| GPL105 | 160 | -36-204/-33-400 |
| GPL106 | 243 | -36-260/-33-500 |
| Grease² | | |
| GPL203 | 30 | -60-154/-76-310 |
| GPL204 | 60 | -51-180/-60-355 |
| GPL205 | 160 | -36-204/-33-400 |
| GPL206 | 243 | -36-260/-33-500 |
| XHT-S | 500 | -20-300/-4-572 |
| XHT-SX | 738 | -10-300/14-572 |
| Thread Sealant | | |
| TS4 | 160 | -54-149/-65-300 |

¹Oils are typically recommended as an assembly aid.

²Greases are typically recommended for longer in-service use.

Compatibility with a Broad Range of Materials

Krytox™ PFPE oils and greases thickened with PTFE exhibit exceptional chemical stability. Krytox™ oils and greases will not react with most chemicals (with the exception of Lewis acids and alkali metals) and other lubricants, nor cause them to degrade. Krytox™ performance lubricants are not only resistant to oxygen and reactive gases, but they are inert to virtually all chemicals commonly used in most industries.

Krytox™ oils and greases are inert and do not react with elastomers or plastics, and have been used successfully as a lubricant with these materials for over 40 years. Krytox™ lubricants will not cause elastomers or plastics to swell, shrink, or crack. They do not affect the performance of the elastomer, nor improve the upper temperature capabilities of the material—the thermal stability of the elastomer or plastic itself constitutes any limitation.

Table 2. Krytox™ lubricant compatibility with common industrial chemicals and materials of construction of valves

| Material | Krytox™ Compatibility |
|--------------------------|-----------------------|
| Reactive Chemical | |
| Chlorine | ✓ |
| HF | ✓ |
| Oxygen | ✓ |
| NOX | ✓ |
| HCl | ✓ |
| Metal | |
| Iron | ✓ |
| Stainless Steel | ✓ |
| Titanium | ✓ |
| Inconel | ✓ |
| Hastelloy | ✓ |
| Monel | ✓ |
| Elastomer | |
| PTFE | ✓ |
| EPDM | ✓ |
| FKM | ✓ |
| NBR | ✓ |
| Polyisoprene | ✓ |
| Neoprene | ✓ |
| Trifluoroethylene | ✓ |
| PVDF | ✓ |

Proven Field Performance

Krytox™ lubricants can be used for valve lubrication in the following industries:

- Chemical Processing
- Medical
- Clean Energy
- Aerospace
- Industrial Manufacturing
- Power Generation

Krytox™ lubricants provide smooth valve operation, less frequent re-lubrication, and field-proven performance that can save you time and money. Krytox™ lubricant solutions are deployed in valves used in chemical and industrial manufacturing facilities across the globe. In Mexico, Krytox™ GPL 105 oil is used to lubricate the moving parts of valves used to prevent leaks of TiCl₄, a corrosive chemical. A Korean valve manufacturer was able to reduce damage claims to its pilot-type solenoid valves by applying Krytox™ GPL 103 oil to the solenoid coil in the assembly to reduce friction and heat. Krytox™ GPL 205 grease has been used for years to lubricate brass plug valves in domestic gas appliances. And in Icelandic geothermal power plants, Krytox™ GPL 206 grease has been able to meet the challenging lubrication requirements of steam valve bushings, which frequently come in contact with acidic gases of high temperature steam.

Krytox™ Lubricants: Proven Compatibility for Harsh Environments

PFPE-based Krytox™ lubricants have been independently studied and tested by companies and organizations such as BOC, AIR Liquide, National Renewable Energy Laboratory (NREL), West German Federal Institute for Materials Testing (BAM), Wendell Hull Associates and General Dynamics. They have been confirmed as compatible for use with oxygen and other reactive chemicals. Additionally, Krytox™ products are referenced in The Chlorine Institute Pamphlet 164 edition 4 as being acceptable lubricant materials for chlorine services.

Table 3. Typical performance of Krytox™ lubricant products in tests that determine suitability to employ in oxygen service. Please note the information below represents typical performance and is not meant to be inclusive of any one product. Contact the Krytox™ High-Performance Lubricants Team.

| Test Type | Temperature °C/°F | Result |
|--|-------------------|--|
| Ignition in gaseous oxygen ¹ | 400/752 | No ignition at 13 Mpa |
| Pressure Drop in gaseous oxygen ² | 99/210 | No pressure drop after 600 hrs at 0.7 Mpa |
| Mechanic Impact in liquid oxygen | Ambient | No reaction in 20 trials at 98 joules ^{3,4,5} |
| Mechanic Impact in liquid oxygen | Ambient | No reaction in 10 trials at 122 joules ¹ |

¹British specification 3N100
²ASTM D-942
³Marshall Space Flight Center specification 106B
⁴NASA Handbook 8060.1B, Test 13 P1
⁵ASTM D-2512

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