

DuPont™ Krytox®

oils and greases

Oxygen Applications

Introduction

DuPont Krytox® is the lubricant of choice for oxygen and reactive gas service with over 40 years of experience.

Krytox® oils and greases are completely nonflammable, chemically inert, thermally stable, and completely safe to use in all areas of oxygen service. Our wide range of products provide excellent lubricity at extremes of both low and high temperature. Krytox® technology has set the standard for lubrication in automotive, electronics, paper, chemical, aviation, aerospace, and other industries.

Krytox® fluoropolymer lubricants have been used in oxygen service by NASA and the aerospace industry for over 40 years. Krytox® has been used in cryogenic pumps from the following manufacturers: Cryostar, Cryomec, Estritio, Cosmodyne, and APD. Krytox® has also been used in cryogenic blowers, bearings, compressors, connecting rods, oxygen bombs, valves, fittings, and O-rings, amongst other mechanical components. Krytox® oils are used prevalently as vacuum pump fluids in oxygen service by major corporations such as BOC Edwards, Leybold, and Ebara. The nonflammability and inertness to processing chemicals provides safe performance and eliminates potential explosive reactions.

Krytox® has been tested and approved for safe use in oxygen service by BOC, Air Liquide, West German Federal Institute for Materials Testing (BAM), Praxair, Air Products, NASA, and General Dynamics, amongst other oxygen industry authorities.

Challenge

Conventional mineral oil and synthetic lubricants are not compatible with oxygen or other oxidizing chemicals

Oxygen will react with conventional lubrication technologies, leading to potential for explosion, fire, and deterioration of the lubricant and component failure. Oxygen accelerates the decomposition of

hydrocarbon lubricants. They rapidly form tars and varnish, causing bearings to fail. Oxygen will react with conventional additives, leading to degradation, reduced lubricant life, and a need for more frequent lubrication.

The use of non-compatible lubricants requires components be installed in explosion-proof barriers and the use of a nitrogen purge. To avoid fire and explosion, flammable lubricants need to be kept below their explosive limits by purging with nitrogen. This can keep them below the ignition point, but is cumbersome and expensive and relies on mechanical equipment and interlocks that can fail. Standard lubricants are also at risk of compression autoignition, if contacted by a surge of oxygen.

Conventional lubricants are subject to oxidation, attack by harsh chemical or solvents, flammability, and volatilization of the base oil, leading to failure of the lubrication system and associated hazards. Conventional lubricant properties are often not adequate for critical systems where failure is not an option.

Solution

The wide range of chemically inert Krytox® oils and greases provide the best available lubrication for all oxygen service equipment.

Krytox® lubricants are 100% compatible with oxygen and completely nonflammable. Krytox® products provide excellent lubricity, leading to extended equipment life vs. alternative technologies. In addition to being nonreactive towards oxygen, they are also safe for use with other oxidizing chemicals such as fluorine, chlorine, bromine, HF, etc.

Krytox® compatibility and nonflammability may allow for the elimination of auxiliary systems designed to prevent fire and explosion.

Grades of Krytox® oil and grease are available to meet every lubricating requirement for oxygen and compressed gas users.

Cryogenic applications require soft greases and anti-corrosion additives to prevent skidding during start-up and corrosion resulting from temperature cycling. The Krytox® patented XP additive is the first robust soluble antiwear/anticorrosion additive for fluoropolymer lubricants and provides excellent protection for cryogenic applications. The XP additive provides the best available antiwear and anticorrosion prevention in an oxygen compatible lubricant. Krytox® XP was named the NASA Tech Briefs product of the month in 1998. Soft Krytox® greases with XP are excellent for cryogenic oxygen applications.

Krytox® has also been tested at temperatures greater than 482°C (900°F) in the presence of oxygen with no ignition and tested at pressures above 345 bar with no impact.

Summary

Krytox® lubricants are ideal to improve the safety and reduce the complexity of your oxygen system. The use of Krytox® will provide safe operation for all mechanical components. Call us today at (800) 424-7502 or visit us on the web at www.krytox.com to move a step closer to solving your most difficult lubrication problems.

For more information or technical assistance, call:

(800) 424-7502

or visit us on the Web:

<http://www.krytox.com>

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