Krytox® Case History

DUPONT™ KRYTOX® VACUUM PUMP FLUIDS GIVE PRAXAIR THE RELIABILITY THEY NEED WITH SAFETY AND PRODUCTIVITY IN OXYGEN CYLINDER FILLING OPERATIONS

"KRYTOX® OFFERED RELIABLE, LOCAL STOCK WHILE GUARDING AGAINST OXYGEN COMBUSTION."

—LUIZ WERNECK, BLACK BELT—PRODUCTION AND PRODUCTIVITY MANAGER, WHITE MARTINS GASES INDUSTRIAIS LTD.

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IMPROVED SAFETY, INCREASED PRODUCTIVITY, AND OEM RECOMMENDED

Problem:

- Explosion risk
- Supplier reliability

Solution:

- Krytox® VPF 1514, proven for 20 years
- OEM recommended
- Safety tested in oxygen and chlorine service

Using the proper vacuum pump fluids is critical to the performance and safety of mechanical vacuum pumps and compressors, as White Martins Gases Industriais Ltd., Brazil, is well aware. The company, part of the global operations of Praxair Inc., supplies atmospheric, process, medical and specialty gases to a diverse group of industries. White Martins air separation plants are leaders in manufacturing and marketing cylinders for Brazil's market.

In the Brazil operations, White Martins plants fill cylinders with oxygen for medical applications. They use non-cryogenic oxygen producing Vacuum Pressure Swing Absorption (VPSA) Systems—BOC Edwards and HF vacuum pumps.

Identifying the Problem

White Martins required a higher assurance of stock availability for their vacuum pump fluids from a supplier that could provide them with the level of safety that they demanded. The company knew that using conventional lubricants in the vacuum pumps could lead to dangerous operations, even explosions, should the fluid come in contact with small residues of oxygen, so when seeking a replacement it was critical that the new supplier be able to meet their existing safety standards.

Solving the Problem

White Martins plants initiated a project to replace their previous fluid with Krytox® VPF 1514 fluid. They identified DuPont™ Krytox® as the solution because it affordably offered reliable, local stock while continuing to guard against oxygen combustion, says Luiz Werneck, White Martins' Production and Productivity Manager. DuPont was well qualified to offer a solution, as a supplier of lubricants for vacuum pumps for more than 20 years. The non-contaminating and durable Krytox® product lubricates and seals moving parts in the vacuum pumps. It goes beyond fire resistance, offering a fireproof formulation that will not explode, ignite or serve as a fuel for fires. It has been safety tested in oxygen and chlorine service.

Achieving Results

"White Martins management is very positive about the results," says Werneck. The program resulted in the safety profile to which White Martins was committed while providing the supply reliability the company had sought.

DuPont™ Krytox® NRT series oils and greases may offer the ideal solution to lubricate your oxygen and reactive chemical equipment. To find the right lubricant for your application, please consult our product guide on the reverse page.

DUPONT®

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DuPont Lubricants for Oxygen and Reactive Chemistry Compatibility

Application	Lubricant Grade	Optimal Temperature Range	ISO Viscosity	Properties
Valves, Regulators	Krytox® NRT 8900	–51°C to +121°C	19	Safe in all reactive gases including oxygen, chlorine, fluorine, bromine. Won't react with acids or bases. Compatible with seal and o-ring materials.
	Krytox® NRT 8904	–51°C to +179°C	60	
	Krytox® NRT 8906	–36°C to +260°C	240	
	Krytox® NRT 8908	–40°C to +180°C	46	Safe for use in extreme high pressure applications. 350 bar BAM rating.
	Krytox® NRT PLSS	–36°C to +260°C	240	NSF H1 approved.
Pump and Motor Bearings	Krytox® NRT 8904	–51°C to +179°C	60	Safe for use with reactive gases. Won't wash out. Compatible with seal and o-ring materials.
	Krytox® NRT 8906A	0°C to +200°C	240	Safe for use with common acids, bases, solvents, and reactive gases. Won't wash out from water, steam or solvents. Compatible with seals and o-rings.
	Krytox® NRT 8990	–75°C to +150°C	15	Linear PFPE grease with high viscosity index to provide effective lubrication over a wider temperature range, making it a great choice for liquid oxygen service.
	Krytox® NRT 8950	+100°C to +325°C	500	Extreme high temperature grease. Safe for use with common acids, bases, solvents, and reactive gases. 180 bar BAM rating.
High Pressure Applications	Krytox® NRT 8950	–15°C to +325°C	500	Extreme high temperature grease. 180 bar BAM rating.
	Krytox® NRT 8908	–40°C to +180°C	46	Safe for use in extreme high pressure applications. 350 bar BAM rating.
Thread Lubricant and Sealant	Krytox® NRT 8906	–36°C to +260°C	240	Safe in all reactive gases including oxygen, chlorine, fluorine, bromine. Won't react with acids or bases.
	Krytox® NRT 8908	–40°C to +180°C	46	Safe for use in extreme high pressure applications. 350 bar BAM rating.
	Krytox® NRT PLSS	–36°C to +260°C	240	NSF H1 approved.
Compressor Oil	Krytox® NRT 8805	–40°C to +160°C	81	Safe for use with common acids, bases, solvents, and reactive gases. Compatible with common seals.
Vacuum Pump Fluid	Krytox® NRT 8805	–40°C to +160°C	81	10^{-7} torr vapor pressure, compatible with all chemicals.
O-Rings	Krytox® NRT 8900	–51°C to +121°C	19	Safe in all reactive gases including oxygen, chlorine, fluorine, bromine. Won't react with acids or bases. Compatible with seal and o-ring materials.
	Krytox® NRT 8906	–36°C to +260°C	240	

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