

InfinX Vacuum Fluids and Grease

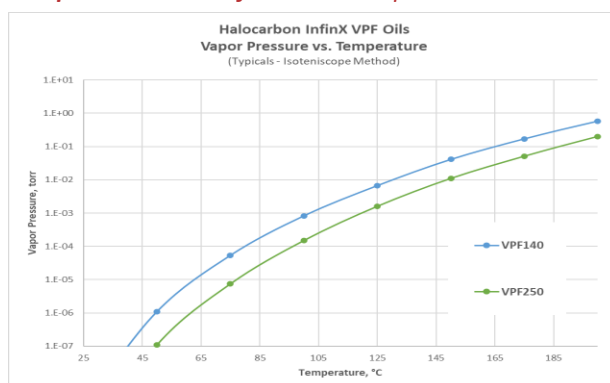
Precision PFPE Lubricants for Use in Vacuum Systems

Vacuum pump fluids and grease specifically engineered for optimum safety, reliability, and performance

InfinX PFPE Vacuum Pump Fluids (VPF) and InfinX HaloVac Ultra grease are fluorinated lubricants engineered specifically for the low vapor pressures and viscosity characteristics required in precision vacuum systems. PFPE lubricants like these have been used for many decades as a safe and reliable choice for maximizing the operational life of critical components in high performance vacuum and cryogenic applications.

The Halocarbon InfinX line offers fluorinated oils and grease for vacuum applications based on PFPE technology. PFPE chemistry provides for deeper vacuum, reactive chemical resistance and broad material compatibility. These products are equivalent in performance to other competitive PFPE products. Unlike hydrocarbon-based oils, InfinX VPF oils and the HaloVac Ultra grease are nonflammable, chemically inert, and compatible with oxygen and chlorine, as well as most other reactive materials.

Vapor Pressure Profile: Isotenoscope Method



InfinX Vacuum Pump Fluids

The InfinX PFPE VPF oils are manufactured using K-fluid PFPE technology. Due to their higher molecular weight, they have lower vapor pressures and can sustain deeper vacuum compared to competitive fluids. These oils are nonflammable, nonreactive, and have a broad material compatibility.

The InfinX VPF line includes the VPF 140 and VPF250 fluids, which have been engineered specifically for the low vapor pressures and viscosity characteristics required in precision vacuum pump applications. These PFPE vacuum pump fluids are routinely used in applications ranging from plasma etching and chemical vapor deposition in semiconductor fabrication to reactive gas handling and electron microscopy. These fluids significantly reduce the exposure and safety risks that are associated with the routine operation, maintenance and waste disposal common in these applications.

Typical Properties: InfinX Vacuum Pump Fluids

Properties	Units	VPF140	VPF250	
Density @ 20 °C (68 °F) <i>ASTM D4052</i>	<i>g/cm³</i>	1.89	1.90	
Kinematic Viscosity <i>ASTM D445</i>	<i>cSt</i>	@ 20 °C (77 °F)	140	260
		@ 40 °C (104 °F)	49	83
		@ 100 °C (212 °F)	8	12
		Pour point <i>ASTM D97</i>	<i>°C (°F)</i>	-48 (-54)
Vapor Pressure <i>ASTM D2879</i>	<i>Torr</i>	@ 20 °C (77 °F)	2 x 10 ⁻⁷	6 x 10 ⁻⁷
		@ 100 °C (212 °F)	2 x 10 ⁻⁴	6 x 10 ⁻⁴
		Heat of Vaporization @ 200 °C	<i>cal/g</i>	8
Evaporation Loss, 22 hours <i>ASTM D2595</i>	<i>%</i>	@ 121 °C (250 °F)	2	1
		Service Temperature	<i>°C</i>	-48 to 180

InfinX HaloVac Ultra Grease

The InfinX HaloVac Ultra grease is part of the new Halocarbon KF Grease series which is comprised of greases that are formulated using perfluoropolyether K-fluids (PFPE) and superior, non-irradiated micro powders of PTFE (polytetrafluorethylene). Both components offer unsurpassed material and chemical stability and inertness. These products are specifically designed for use in a broad range of applications and markets that require high temperature stability, low vapor pressure, or chemical inertness.

The InfinX HaloVac Ultra grease is a specialized version of PFPE grease thickened with PTFE for use in vacuum applications where low vapor pressure and minimal volatility is desired above the already excellent performance of other PFPE grease products. The InfinX HaloVac Ultra grease is nonflammable, inert to both acids and bases, and performs well over a wide operating temperature range and at very low vapor pressures.

Typical Properties: InfinX HaloVac Ultra Grease

Properties	HaloVac Ultra
Base Oil Viscosity <i>cSt ASTM D445</i>	
@ 40 °C (104 °F)	780
@ 100 °C (212 °F)	71
NLGI Grade	2
Pour point °C (°F) <i>ASTM D97</i>	-15 (5)
Vapor Pressure <i>Torr VPE-9000 *</i>	
@ 20 °C (77 °F)	6.0 x 10 ⁻¹¹
@ 50 °C (122 °F)	1.7 x 10 ⁻⁹
@ 100 °C (212 °F)	1.4 x 10 ⁻⁷
Evaporation Loss, 22 hours @ 260 °C % <i>ASTM D2595</i>	0.2
Specific Gravity <i>g/cm³</i>	1.92
Molecular Weight	10,000
Appearance	Creamy White

VPE-9000 Method Test Data *

The following table compares the Vapor Pressure data between InfinX HaloVac Ultra grease and the current leading competitive PFPE grease using the VPE-9000 testing method.

VPE-9000 Method Data *	InfinX HaloVac Ultra	Leading PFPE Competitor
Vapor Pressure <i>Torr</i>		
@ 20 °C (77 °F)	6.0 x 10 ⁻¹¹	5.2 x 10 ⁻¹¹
@ 50 °C (122 °F)	1.7 x 10 ⁻⁹	1.8 x 10 ⁻⁹
@ 100 °C (212 °F)	1.4 x 10 ⁻⁷	1.9 x 10 ⁻⁷

Typical Applications & Key Performance Attributes:

InfinX VPF oils and the InfinX HaloVac Ultra grease are designed for use as nonflammable and nonreactive lubricants in continuous operations that involve oxidizing environments, cleanrooms, or hazardous chemicals. Below is a list of the key performance attributes that make InfinX products the ideal lubricant for vacuum applications:

- Chemically inert
- Non-toxic
- No sludge-formation
- High thermal stability
- Low vapor pressure
- Low surface tension
- Nonflammable (no flash or fire point)
- Exceptional resistance to Lewis-Acids
- Highly resistant to gaseous and liquid oxygen
- Compatible with most metals and plastics
- Compatible with most elastomers
- Excellent sealing and lubricating properties

Suitable for:

- continuous operations
- oxygen service
- chlorine service
- nitrous oxide service

Resistant to:

- fluorine (F2)
- chlorine (Cl2)
- hydrofluoric acid (HF)
- silicon tetrachloride (SiCl4)
- arsenic trifluoride (AsF3)
- boron trifluoride (BF3)
- aluminum trichloride (AlCl3)

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