

Technical Information

Introduction

Opteon™ SF10 specialty fluid is a clear, colorless, nonflammable, thermally stable, fluorinated fluid developed in response to worldwide market demand for a low environmental impact solvent for cleaning, as a carrier fluid, and many other applications. The fluid has a boiling point of 110 °C (230 °F), zero ozone depletion potential (ODP), and a very low global warming potential (GWP) of 2.5 (100-yr ITH). Opteon™ SF10 specialty fluid is appropriate to replace PFCs, PFPEs, HFEs, HFCs, and HCFCs in carrier fluid applications.

Typical Applications

- Cleaning agent
- Carrier fluid in coatings, inks, lubricants, and adhesives
- Aerosol solvent

Safety, Toxicity, and Environmental

Opteon™ SF10 specialty fluid is a nonflammable fluid and does not become flammable during boiling or evaporation. The material has safe toxicity profile in mammalian studies, and it's not a skin or eye irritant in laboratory tests. In environmental studies, Opteon™ SF10 specialty fluid exhibited low concern for aquatic life. Results of extensive toxicity testing studies are available in the Safety Data Sheet (SDS).

Environmental Properties

Property	Opteon™ SF10 Specialty Fluid
Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP) 100-yr ITH	2.5

Physical Properties

Property (at 25 °C [77 °F])	Units	Opteon™ SF10 Specialty Fluid
Molecular Weight	-	362
Boiling Point	°C (°F)	110 (230)
Freezing Point	°C (°F)	<-90 (<-130)
Critical Temperature	°C (°F)	240 (464)
Kb Value		6
Liquid Density	kg/m ³ (lb/gal)	1580 (13.1)
Liquid Viscosity	cSt	0.71
Liquid Specific Heat	kJ/kg-K	1.0
Liquid Thermal Conductivity	W/m-K	0.065
Surface Tension	dyn/cm	18
Vapor Pressure	kPa	2.9
Heat of Vaporization	kJ/kg	115
Solubility in Water	ppm (w/w)	<1
Water Solubility	ppm (w/w)	80
Flash Point, CC, ASTM D56	-	None
Flash Point, OC, ASTM D1310	-	None
Vapor Flammability, ASTM E681	-	None

Vapor Pressure

Please refer to the following equation to predict vapor pressure as a function of temperature.

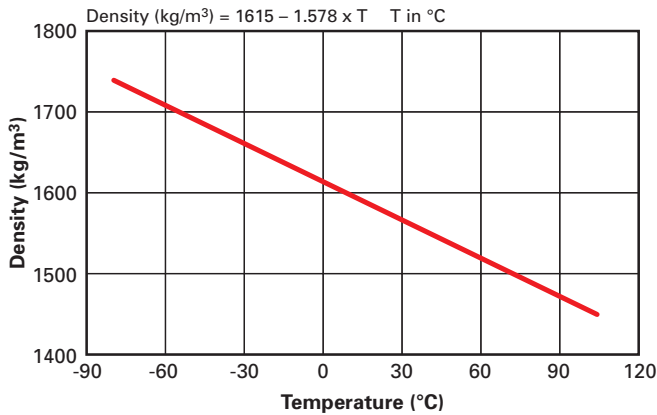
$$\text{Vapor Pressure (kPa)} = \exp(14.65 - 3280/(T + 216.4)) T \text{ in } ^\circ\text{C}$$

Storage and Handling

Opteon™ SF10 specialty fluid is thermally stable, does not oxidize or degrade during storage, and has no shelf life. Store product in a clean dry area, protect from freezing temperatures, and do not allow stored container to exceed 46 °C (115 °F). Package sizes for Opteon™ SF10 specialty fluid are available in 6 and 15 kg net weight in high density polyethylene containers and in 300 kg stainless steel drums. When pumping or transferring Opteon™ SF10 specialty fluid from a drum, a braided stainless steel hose is recommended. If a flexible hose is desired, a static charge dissipation hose is recommended, i.e., one constructed with carbon black-filled nylon inner core conductive material.

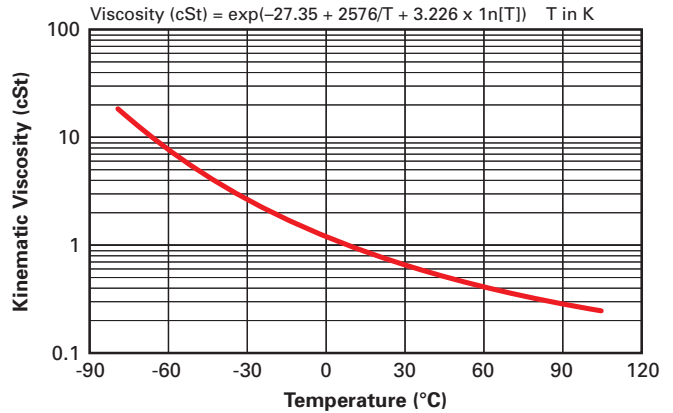
Liquid Density

The temperature dependence of liquid density for Opteon™ SF10 specialty fluid is shown below.



Liquid Viscosity

The temperature dependence of liquid viscosity for Opteon™ SF10 specialty fluid is shown below.



For more information on the Opteon™ family of refrigerants, or other refrigerants products, visit opteon.com or call (800) 235-7882.

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