

Technical Information

Introduction

Opteon™ Suprion carrier 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™ Suprion carrier fluid is appropriate to replace PFCs, PFPEs, HFEs, HFCs, and HCFCs in carrier fluid applications.

Typical Applications

- Cleaning agent
- Carrier fluid in coatings and adhesives
- Aerosol solvent

Safety, Toxicity, and Environmental

Opteon™ Suprion carrier fluid is a nonflammable fluid and does not become flammable during boiling or evaporation with thermal stability up to more than 175 °C (347 °F). 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™ Suprion carrier fluid exhibited low concern for aquatic life. The occupational exposure limits for Opteon™ Suprion carrier fluid is 500 ppm. Results of extensive toxicity testing studies are available in the Safety Data Sheet.

Environmental Properties

Property	Opteon™ Suprion Carrier Fluid
Ozone Depletion Potential (ODP)	0
Global Warming Potential (GWP) 100-yr ITH	2.5
Atmospheric Lifetime	<10 days
Volatile Organic Compound	Not yet determined

Physical Properties

Recommended operating range in heat transfer applications: -80 to 105 °C (-112 to 221 °F).

Property (at 25 °C [77 °F])	Units	Opteon™ Suprion Carrier 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.

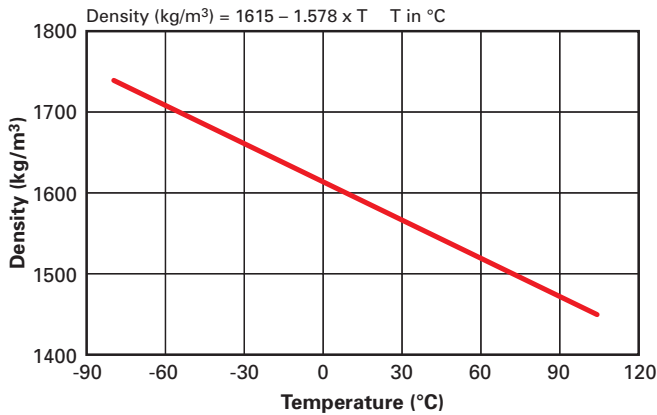
$$\text{Vapor Pressure (kPa)} = \exp(14.65 - 3280/[T + 216.4]) T \text{ in } ^\circ\text{C}$$

Storage and Handling

Opteon™ Suprion carrier 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 52 °C (125.6 °F). Package sizes for Opteon™ Suprion carrier 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™ Suprion carrier 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.

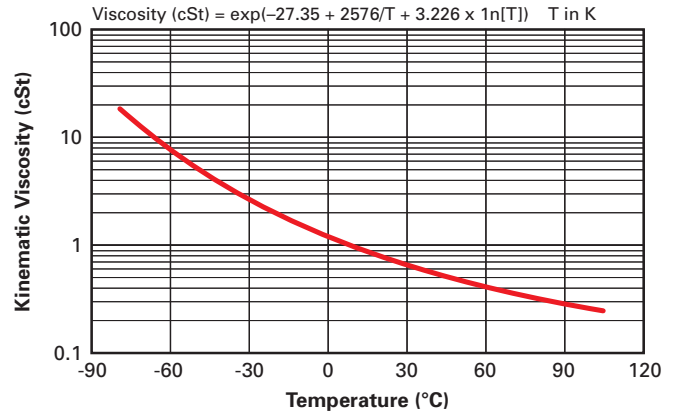
Liquid Density

The temperature dependence of liquid density for Opteon™ Suprion carrier fluid is shown below.



Liquid Viscosity

The temperature dependence of liquid viscosity for Opteon™ Suprion carrier fluid is shown below.



Critical Heat Flux

The critical heat flux of Opteon™ Suprion carrier fluid was estimated at 16 W/cm², but the actual value in use will depend on heater geometry and operating conditions. It is recommended that users consult with their local Opteon™ specialty fluids representative for applications requiring a heat flux greater than 12 W/cm².

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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