



Opteon™ SF30

Specialty Fluid

Technical Information

Introduction

Opteon™ SF30 specialty fluid is designed to meet the high solvency needs in the industrial cleaning market. Opteon™ SF30 is a safe, nonflammable, and environmentally friendly solvent with no ozone depletion potential (ODP) and a low global warming potential (GWP) (<2.5) and does not contain any fluorinated greenhouse gases (as listed in Annex 1 of the EU regulations 517/2014), which are all highly desirable in precision cleaning applications.

Opteon™ SF30 is a proprietary azeotrope of hydrofluoroolefin (HFO) specialty fluid and trans-1,2, dichloroethylene. It is ideally suited for use in oxygen cleaning, vapor degreasing and ultrasonic cleaning. Its enhanced solvency power makes it particularly effective for precision and specialty cleaning with difficult soils and contaminations. It can replace HCFC-225, HCFC-141b, CFC-113, methyl chloroform (1,1,1-TCA), methylene chloride, hydrofluoroethers (HFEs), perfluorocarbons (PFCs), chlorofluorocarbons (CFCs) and aqueous cleaners in many industrial applications.

Features and Benefits

- Superior cleaning performance with enhanced solvency power
- Fast drying with an optimum boiling point (29.1 °C [84.4 °F]), allows cleaned parts to be processed and used immediately
- High soil loading capacity boosts productivity by reducing equipment downtime associated with solvent change-outs
- Product maintains compositional stability during use (azeotrope)
- Maintenance free, no stabilizer maintenance required, easy to maintain and use

- No surfactants needed, removes extra washing steps to achieve residue-free cleaning
- Recyclable and reusable, reduces cost of ownership and environmental footprint
- Nonflammable
- Low odor and toxicity
- Excellent environmental profile: Low GWP (<2.5, EU 517/2014 compliant), zero ODP

Typical Applications

- Oil and grease removal
- Precision cleaning
- Oxygen cleaning
- Silicone removal
- Vapor degreasing
- Cold cleaning
- Aerosol solvent ⁽¹⁾
- Heat Transfer Fluids for Chillers, heat pipes and vapor chambers

⁽¹⁾ Not available for use in European Union, certain restrictions apply. Contact Chemours or your local technical representative for additional information.

Table 1. Physical Properties

Property	Units	Opteon™ SF30	Solstice® PF-C	SOLKANE® 365mfc
Boiling Point	°C	29.1	19	40.2
	°F	84.4	66.2	104.4
Liquid Density ⁽¹⁾	g/cm ³	1.33	1.26	1.27
	lb/gal	11.1	10.5	10.6
Saturated Vapor Density ⁽¹⁾	kg/m ³	5.09	N.D.	6.98 ⁽²⁾
	lb/ft ³	0.32	N.D.	0.44 ⁽²⁾
Surface Tension ⁽¹⁾	Dyn/cm	16.4	12.7	N.D.
Vapor Pressure ⁽¹⁾	kPa	86.3	126	53 ⁽²⁾
	psia	12.5	18.3	7.7 ⁽²⁾
Viscosity ⁽¹⁾	cP	0.33	N.D.	0.45 ⁽²⁾
Freezing point	°C	< -80	N.D.	-35
	°F	< -112	N.D.	-31
Molecular Weight	g/mole	139.6	130	148.1
Kb Value		20	25	13
Heat Capacity ⁽¹⁾	kJ/kg-k	1.19	N.D.	N.D.
Liquid Thermal Conductivity ⁽¹⁾	mW/m-K	84.2	N.D.	10.3

All data compiled was furnished from publicly available sources. ⁽¹⁾ Values reported are at 25 °C (77 °F), ⁽²⁾ values reported at 20 °C (68 °F), unless otherwise specified. N.D refers to no reference data available

Table 2. Density and Vapor Pressure Change with Temperature

Temperature (°C)	Vapor pressure (KPa)	Density (g/cm ³)
0	30.30	1.38
10	47.44	1.36
20	71.57	1.33
30	104.56	1.31
40	148.47	1.28
50	205.59	1.26
60	278.42	1.23

Cleaning Process

Opteon™ SF30 has a broad range cleaning capabilities. It is ideally suited for use in oxygen cleaning, vapor degreasing and ultrasonic cleaning. Table 3. lists some typical soils that can be cleaned with Opteon™ SF30.

Table 3. Soils Cleaned with Opteon™ SF30

Cutting Oils	Hydraulic Oils
Mineral Oils	Waxes
Gear Oils	Vacuum oils
Heavy Greases	Stamping oils
Fluorinated oils	Refrigerant oils
Silicone oils	Silicone greases

Contact Chemours to initiate a cleaning trial in one of our regional cleaning laboratories or obtain a sample for on-site testing.

Materials Compatibility

Opteon™ SF30 is characterized by good compatibility with a wide selection of metals; for example, stainless steel, copper, brass, and aluminum. Opteon™ SF30 is compatible with these plastics and elastomers: Teflon™ (PTFE), FEP, PFA, polyethylene, polypropylene, Nylon, Kynar, Ryton, Halar, and Kalrez®. Examples of incompatible plastics include PMMA, ABS, polycarbonate, and polystyrene. Most elastomers, including Viton™, Natural rubber, EPDM, silicone, and Hypalon®, show reversible swelling when exposed to Opteon™ SF30. Teflon™ or Teflon™ encapsulated gaskets and O-ring seals are recommended for diaphragm pumps. Individual plastic and elastomeric formulations can vary with the manufacturer; therefore, the best assurance of material compatibility can be recommended after testing under conditions expected during normal operation. Contact your local technical representative for specific material compatibility concerns.

Table 4. Plastics/Elastomers Compatibility

Plastics		Elastomers	
Compatible	Incompatible	Compatible	Incompatible
Polyethylene	Polystyrene	Teflon™	Silicone
Polypropylene	Polycarbonate	Kalrez®	Hypalon®
Teflon™	ABS	Ryton	EPDM Rubber
Polyester	Polyacrylate	PTFE w/EPDM	Viton™
Nylon	Acrylic (PMMA)	PTFE w/Neoprene	Buna N
FEP/PFA	Polysulfone	Parafluor	Fluorosilicone
Halar			
Kynar			

Material composition varies depending upon compounding agents, plasticizers, processing, etc. Specific materials should be tested for compatibility with solvent prior to use.

Oxygen Cleaning

Oxygen cleaning requires solvents that have good degreasing properties and high cleaning effectiveness factor (i.e., KB value ≥ 20). These solvents must be easy to remove from cleaned parts, i.e., boiling point $> 25^{\circ}\text{C}$ and $< 65^{\circ}\text{C}$ ($> 77^{\circ}\text{F}$ and $< 149^{\circ}\text{F}$), non-corrosive, compatible with commonly used metallic and nonmetallic materials, compatible with oxygen (i.e., low particle count), have low non-volatile residue (NVR) and nonflammable (i.e., no flash point and no flammability limits). Opteon™ SF30 meets these oxygen cleaning requirements as shown in Table 5.

Table 5. Oxygen Cleaning Requirement and Opteon™ SF30

Parameter	Oxygen Cleaning Requirements	Opteon™ SF30
KB Value	≥ 20	20
Boiling Point	$> 25^{\circ}\text{C}$ and $< 65^{\circ}\text{C}$	29.1 C
Flash Point	None	None
Flammability Limits	None	None
Oxygen Compatibility	Low particle count and non-volatile residue	See specifications table
Material Compatibility	Commonly uses metals and non-metallic materials	See material compatibility section

Safety, Toxicity, and Environmental

Opteon™ SF30 exhibits no closed, open cup flash point or vapor flammability limits. Opteon™ SF30 is classified as a nonflammable liquid by NFPA or U.S.DOT. Safety, toxicity and environmental data are shown in Table 5.

Table 5. Safety, Toxicity, and Environmental Properties

Property	Units	Opteon™ SF30
Flash Point (Open Cup) ⁽¹⁾	°C	None
Flash Point (Closed Cup) ⁽²⁾	°C	None
Vapor Flammability in Air		
Lower Limit	vol%	None
Upper Limit	vol%	None
Ozone Depletion Potential	-	Zero
Global Warming Potential	-	<2.5
Volatile Organic Compounds (VOC)	g/L	335
Occupational Exposure Limit, 8-hr TWA	ppm	425

⁽¹⁾ ASTM D1310, ⁽²⁾ ASTM D56

Storage and Handling

Opteon™ SF30 is thermally stable and does not fractionate, oxidize or degrade during storage. It is recommended to store containers in a clean and dry area, and protect them from freezing and excessive temperatures of 48°C (118°F). When stored properly, an unopened package has an indefinite shelf life. Package sizes for Opteon™ SF30 are 55 gallon (208 Liter) drums and 5 gallon (19 Liter) pails. Laminate film gloves are recommended when handling Opteon™ SF30.

Specifications

Property	Opteon™ SF30
Moisture	≤ 30 ppm
Non-Volatile Residue*	≤ 10 ppm
Appearance	Clear, Colorless
Total Purity	≥ 99.90 Wt%
Acidity as Hydrochloric Acid	≤ 1.0 ppm
Chloride Ion	≤ 1.0 ppm
Particulate Matter	≤ 2.00 mg/L

* ≤ 50 ppm in 5 gallon pails

DRAFT

For additional information on Opteon™ SF30 or other specialty fluids products by Chemours, please visit vertrel.com or call 800-969-4758.

The information set forth herein is furnished free of charge and based on technical data that Chemours believes to be reliable. It is intended for use by persons having technical skill, at their own risk. Because conditions of use are outside our control, Chemours makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under, or a recommendation to infringe, any patents or patent applications.

© 2018 The Chemours Company FC, LLC. Opteon™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company.

C-XXXXXX (12/18)