



Opteon™ SF01

Specialty Fluid

Removes Particulate and Ionic Soils

Technical Information

Introduction

Opteon™ SF01 is a proprietary azeotrope of Opteon™ hydrofluoroolefin (HFO) with ethanol. It is ideally suited for use in vapor degreasing equipment. It offers improved solvency for polar soils, while maintaining excellent compatibility with most plastic, ceramic, and metal components. Typical applications include precision and specialty cleaning and rinsing for removal of particulate, fingerprints, and light soils from metal, plastic, and glass substrates. Opteon™ SF01 is a safe, nonflammable, and environmentally friendly solvent with low global warming potential (GWP) (<10) and does not contain any fluorinated greenhouse gases (as listed in Annex 1 of the EU regulations 517/2014). Opteon™ SF01 is intended to replace high global warming hydrofluorocarbon (HFC)- and hydrofluoroether (HFE)-based cleaning solvents, as well as high ozone depletion potential (ODP) CFC-113, HCFC-141b, HCFC-225, and 1,1,1-trichloroethane solvents in many industrial applications.

Features and Benefits

- Nonflammable
- Enhanced cleaning performance for polar soils and particulate removal
- Fast drying with an optimum boiling point (32 °C [89.6 °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

- Recyclable and reusable: Reduces cost of ownership and environmental footprint
- No surfactants needed: Removes extra washing steps to achieve residue-free cleaning
- Low odor and toxicity
- Excellent environmental profile: Low GWP (<10), EU 517/2014 compliant

Typical Applications

- Complementary metal-oxide-semiconductor (CMOS) particle removal
- Light oil and grease removal
- Precision cleaning
- Vapor degreasing
- Cold cleaning
- Co-solvent rinsing agent
- Aerosol solvent
- Drying agent
- Heat transfer fluid

Table 1. Physical Properties*

Molecular Weight	152
Boiling Point, °C (°F)	32 (89.6)
Liquid Density, g/mL	1.34
Vapor Pressure, kPa	76
Surface Tension, mN/m	13.8
Freezing Point, °C (°F)	<-80 (<-112)
Latent Heat, J/g	188
Heat Capacity, kJ/kg °C	1.34
Viscosity, MPa·sec	0.43
Flash Point	
Closed Cup ⁽¹⁾	None
Open Cup ⁽²⁾	None

*Values reported are at 25 °C (77 °F), unless otherwise specified.

⁽¹⁾ASTM D56 ⁽²⁾ASTM D1310



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Plastic and Elastomer Compatibility

Most plastics and elastomers can be safely cleaned in Opteon™ SF01. **Tables 2** and **3** summarize test results on short-term exposure of unstressed plastics and elastomers, simulating a typical cleaning cycle.

Table 2. Plastic Compatibility Immersion: 15 Min at Room Temperature*

Compatible	
Polyethylene	ABS
Polypropylene	Acetal
Polystyrene	Acrylic
Polyester, PET, PBT	Epoxy
Polyphenylene Oxide (PPO)	Ionomer
Polyimide, PI, PEI, PAI	Liquid Crystal Polymer
Polyetherketone (PEK)	Phenolic
Polyaryletherketone (PEEK)	PVC, CPVC
Polysulfone	PTFE, ETFE
Polyarylsulfone	Cellulosic
Polyphenylene Sulfide (PPS)	
Incompatible	
None Tested	

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

Table 3. Elastomer Compatibility Immersion: 15 Min at Room Temperature*

Compatible	
Buna N, NBR, Nitrile	Buna S, SBR, GRS
Butyl Rubber, IIR	Chlorosulfonated PE
EPM, EPDM, Nordel	Polysulfide
Natural Rubber, Isoprene	Neoprene
Urethane	Viton™ B
Silicone	
Incompatible	
None Tested	

*Elastomer material composition varies depending upon compounding agents, plasticizers, processing, etc. Specific materials should be tested for compatibility with solvent. Elastomer swelling and shrinking will, in most cases, revert to within a few percent of original size after air drying. Swell, shrinkage, and extractables are strongly affected by the compounding agents, plasticizers, and curing used in the manufacture of plastics and elastomers. Therefore, prior in-use testing is particularly important.

Metals and Other Compatibility

Opteon™ SF01 was found compatible with zinc, stainless steel, aluminum, and copper. Large amounts of water may extract alcohol and affect cleaning performance. Therefore, to reduce alcohol loss, use desiccant dryers rather than water separators in the condensate return line. Contact with highly basic process materials, pH 10 or above, is not recommended.

Safety, Toxicity, and Environmental

Opteon™ SF01 exhibits no closed or open cup flash point and is classified as a nonflammable liquid by NFPA and DOT.

Table 4. Safety, Toxicity, and Environmental Properties

Property	Units	Opteon™ SF01
Flash Point, CC, ASTM D56	°C (°F)	None
Flash Point, OC, ASTM D1310	°C (°F)	None
Ozone Depletion Potential	-	0
Global Warming Potential	-	<10
Occupational Exposure Limit	ppm	526
Volatile Organic Compounds (VOCs)	g/L	40

Storage and Handling

Opteon™ SF01 is thermally stable and does not 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 46 °C (115 °F). When stored properly, an unopened package has an indefinite shelf life. Package sizes for Opteon™ SF01 are 19 L (5 gal) pails and 208 L (55 gal) drums.

For additional information on Opteon™ SF01 or other specialty fluids products by Chemours, please visit opteon.com or call 800-969-4758.

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