



MicroCare™ PF100

High Purity Particulate Displacement & Carrier Fluid

Introduction

MicroCare PF100 High-Purity Particulate Displacement & Carrier Fluid is a pure fluorinated molecule designed to displace sub-micron particles in critical applications and as a high-purity carrier agent. It can also be used for displacement drying as low surface tension fluid to displace moisture from tight crevices or blind holes. This hydrofluoroether is a nonflammable fluid that has excellent material compatibility across a wide spectrum of substrates. Its fluorinated properties also make it hostile to pathogens, and does not contribute to bioburden, which is critical in aerospace or medical applications.

MicroCare PF100 fluid is hydrolytically stable and therefore does not require chemical stabilizers or scavengers to prevent it from breaking down in the presence of excess water or mild acid-based activators. While *MicroCare* PF100 was designed for efficient use in closed-looped vapor degreasing systems, it is also functional as a line flush fluid, or for solvent extraction applications.

This technical bulletin summarizes product properties, applications and use, safety, health, environmental, and regulatory information. Users should also consult the appropriate Data Sheet (SDS) for additional details.

Applications and Benefits

MicroCare PF100 Fluid is designed to replace HFCs, PFCs and other fluorinated fluids used for particle displacement, as a flushing agent or as a carrier fluid with a variety of materials, including fluorinated, chlorinated, silicones and conventional hydrocarbon mixtures onto a variety of substrates, including metals, polymers as well as printed circuit boards. Some of the potential applications include:

Applications

- Particle displacement
- Carrier solvent for fluorinated polymers, oils, and greases
- Carrier solvent for silicone oils and greases
- Precision cleaning of metals, alloys, composites, and plastics
- Drying agent after cleaning with hydrocarbons or alcohols
- Replacement for HFCs, Chemours™ Vertrel®, Solvay Solvokane™ & 3M™ Novec™ solvents.

Benefits

- Stable
- Non-flammable
- Non-corrosive
- Good global warming potential (GWP)
- Zero ozone depletion potential (ODP)
- Fast drying
- Excellent thermal, chemical, and hydrolytic stability
- Low surface tension, low viscosity, high liquid density
- Excellent permeability
- Recoverable by simple distillation
- Cleaning can be enhanced with ultrasonics

Recovery

MicroCare PF100 is easily recoverable by simple distillation, either by utilizing a vapor degreaser or simple still apparatus. Recovery should be closely monitored to ensure that the operating levels are maintained. Spent ingredients and still bottoms need to be disposed of according to Federal, State, and local regulations.

Specifications

All components are listed in the TSCA inventory.

Material Composition	
Components	MicroCare PF100
1,1,2,2-tetrafluoroethyl-2,2,2-trifluoroethyl ether	100%

Table 1. Physical Properties

Boiling Point	56°C (132.8°F)
Melting Point	-94°C (-137.2°F)
Density (g/cm ³ , 25C)	1.47
Viscosity (cST, 25C)	0.44
Surface Tension (dyne/cm/ 25C)	16.4
Latent Heat of Vaporization (KJ/kg, 39C)	163
Relative Evaporation Rate (Ether=100)	67
Flash Point (Open/Closed cup)	None
Vapor Pressure (kg/cm ² , 25C)	0.32

Use Procedures

It is recommended that *MicroCare* fluids be used in a vapor degreaser or closed looped system to optimize cleaning efficiency, economy, and emission control. Cleaning procedures for *MicroCare* PF100 are quite similar to those of conventional vapor degreasing products. The procedures consist of immersing a workload into the boiling solvent or coating bath, immersing and rinsing in the ambient solvent, rinsing or spraying with cool solvent and then drying in solvent vapor.

Materials Compatibility

MicroCare PF100 has a broad range of compatibilities. Plastics and elastomers compatibility may be dependent on exposure time and temperature. *Microcare* recommends always testing compatibility on scrap or surplus parts prior to introducing a new fluid to the production process.

Table 2. The effects of *MicroCare* PF100 on Unstressed Plastics and Elastomers at Boiling Point.

	At boiling for 3 days	
	Weight Change (%)	Linear Swell (%)
Polypropylene	< 2.5	< 1.0
Polystyrene	< 0.1	< 0.1
Polymethyl methacrylate	Affected	Affected
ABS	< 0.1	< 0.1
PTFE	< 2.5	< 0.1
Fluoroelastomer	> 86	> 24
Silicon Rubber	< 12.5	< 2.5
EPDM	< 0.1	< 0.1

Environmental Health and Safety

Properties	
Ozone Depletion Potential (ODP) ¹	None
Global Warming Potential (GWP) ²	540
Flash Point	None

¹ CFC-11 = 1.0

² CO₂ = 1.0, 100yr ITH

Storage and Handling

MicroCare PF100 is thermally and hydrolytically stable and does not oxidize or degrade during storage under normal conditions. It is recommended to store containers inside in a clean, dry area and out of direct sunlight.

The recommended storage temperature should not exceed 30°C.

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