

# Tergo™ XCF1

## Cleaning Agent, Carrier Fluid and Particle Displacer

- Removes greases, silicone fluids, and light organic contaminants.
- Ideal replacement for Solstice™ PF, Novec™ 71DE, Novec™ 72DE, Vertrel® MCA and many more.



**Tergo™** Performance Fluids

### The MicroCare™ Signature Line of Precision Products

Cutting-edge cleaning fluids meticulously crafted for diverse industrial applications. Each Tergo™ product boasts a distinctive formula and unparalleled operational attributes, all united by a common mission: to deliver efficient and sustainable performance.



## Introduction

Tergo XCF1 is a pure, monosolvent designed to clean a broad range of soils using either an open-top or vacuum vapor degreaser. It can also be used for displacing sub-micron particles in critical applications and carrying coatings and lubricants. This hydrochlorofluoroolefin is a nonflammable fluid that has excellent material compatibility across a wide spectrum of substrates. Its chemical properties also make it hostile to pathogens, and do not contribute to bioburden, which is critical in aerospace and medical applications.

Tergo XCF1 is hydrolytically stable and therefore does not require chemical stabilizers or boosters to prevent it from breaking down in the presence of excess water or mild acid-base activators. While Tergo XCF1 was designed for efficient use in closed-loop 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 Safety Data Sheet (SDS) for additional details.

## Applications and Benefits

Tergo XCF1 is designed to replace HFCs, PFCs, HFES and other fluorinated fluids used for cleaning, particle displacement, flushing or in carrier applications using fluorinated, chlorinated, silicones and hydrocarbon mixtures.

Tergo XCF1 can be used on a variety of substrates including metals, polymers and printed circuit board components. Some of the potential applications include:

### Applications

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

### Benefits

- Stable
- Non-flammable
- Non-corrosive
- Extremely low Global Warming Potential (GWP)
- Zero Ozone Depletion Potential (ODP)
- Fast drying
- Low surface tension, low viscosity, high liquid density
- Excellent permeability
- Recoverable by simple distillation
- Can be used with ultrasonics

## Recovery

*Tergo* XCF1 is easily recoverable by simple distillation, either by utilizing a vapor degreaser or a 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

**Table 1. Physical Properties**

Boiling Point °C (°F)	54°C (129°F)
Specific Gravity (g/mL)	1.39
Viscosity (25°C, cP)	0.57
Surface Tension (dyne/cm)	22
Evaporation Rate (Ether=1)	<1
KB value	44
Heat of vaporization (kJ/kg)	213
Flash Point (Open/Closed cup)	None

**Table 2. Product Comparison Chart**

Property	Novec™ 71DE	Novec™ 72DE	Novec™ 73DE	Vertrel™ MCA	Tergo™ GCF	Tergo™ CCA	Tergo™ XCF1	Tergo™ XCF2
BP (C)	41	43	48	39	42	38	54	47
KB value	27	52	83	25	38	32	44	118
Specific Gravity	1.37	1.28	1.31	1.41	1.35	1.36	1.39	1.28
Surface Tension (dyne/cm)	16.6	19	19.9	15.2	18	18	21.7	22
GWP	160	43	47	806	274	270	<1	<1
Plastic Compatibility	Fair	Poor	Poor	Fair	Fair	Fair	Fair	Poor

## Use Procedures

It is recommended that *Tergo* Performance fluids be used in a vapor degreaser or closed-looped system to optimize cleaning efficiency, economy and emission control. Cleaning procedures for *Tergo* XCF1 are similar to those of conventional vapor degreasing products. The procedures consist of immersing a workload into the vapor, boiling solvent and rinsing solvent followed by drying in the solvent vapor. Coating can be accomplished by mixing the coating material with *Tergo* XCF1 and dipping a workload into the coating bath followed by air drying.

## Materials Compatibility

*Tergo XCF1* has a broad range of compatibilities. Plastic and elastomer 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 3. The effects of Tergo XCF1 on Unstressed Plastics and Elastomers at Boiling Point.**

PLASTICS		At boiling for 3 days	
Material	Weight Change (%)	Linear Swell (%)	Extractables (%)
Polyvinyl chloride (rigid)	37.8	7.2	3.2
Polyvinyl chloride (plasticized)	-2.3	-6.3	31.6
Polyethylene (HD)	3.5	0.9	<0.1
Polyethylene (LD)	6.3	1.6	0.1
Polypropylene	7.7	1.7	0.2
Polystyrene	Dissolved	Dissolved	Dissolved
Acrylic	Dissolved	Dissolved	Dissolved
Polycarbonate	Dissolved	Dissolved	Dissolved
ABS	Dissolved	Dissolved	Dissolved
PTFE	0.3	0.3	<0.1
Epoxy (FR)	0.2	0.2	<0.1
Nylon6	-0.2	-0.2	<0.1
Nylon66	0.3	0.3	<0.1
Polyethylene terephthalate	2.3	2.3	<0.1
Polyphenylene Sulfide	<0.1	<0.1	<0.1

ELASTOMERS		At boiling for 3 days	
Material	Weight Change (%)	Linear Swell (%)	Extractables (%)
Natural rubber	13.9	2.4	10.8
Urethane rubber	197.4	36.1	0.3
Isobutylene isoprene rubber	2.8	-1.1	13.2
Polychloroprene	33.4	7.2	11.9
Fluoroelastomer	113.1	31.3	3.2
Chlorosulfonated polyethylene	29.0	5.7	12.0
Silicone rubber	132.3	25.4	2.4
EPDM	14.3	1.8	12.2

## Environmental Health and Safety

Properties	
Ozone Depletion Potential (ODP) <sup>1</sup>	None
Global Warming Potential (GWP) <sup>2</sup>	<1
Flash Point	None
AEL, 8h-TWA (ppm)	250

<sup>1</sup> CFC-11 = 1.0

<sup>2</sup> CO<sub>2</sub> = 1.0, 100yr ITH

## Storage and Handling

*Tergo* XCF1 is thermally and hydrolytically stable and does not oxidize or degrade during storage under normal conditions. It is recommended to store containers inside a clean, dry area and out of direct sunlight. The recommended storage temperature should not exceed 30°C.