Tergo™ XCF2

Specialty Cleaning Fluid, Flux Remover and Degreaser

- Removes heavy greases, silicone fluids, and difficult organic contaminants.
- Ideal replacement for Novec™ 72DE, Novec™ 73DE, Vertrel® SDG and 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 XCF2 is a specialty solvent blend designed to clean difficult soils using either an open-top or vacuum vapor degreaser. It is a high-KB fluid suited for metal cleaning and circuit board applications. *Tergo* XCF2 can also be used for displacing sub-micron particles in critical applications and carrying coatings and lubricants. This hydrochlorofluoroolefin-based azeotropic blend is a nonflammable fluid that has excellent material compatibility across a wide spectrum of metal alloys and high density polymer 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 XCF2 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* XCF2 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 XCF2 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 XCF2 can be used on chemically resilient substrates including metals, high density polymers as well as printed circuit boards. Some of the potential applications include:

Applications

- Precision cleaning of metals, alloys, composites and some plastics
- Heavy degreasing and/or flux removal
- 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

- Thermally and hydrolytically stable
- Non-flammable
- Non-corrosive
- High KB cleaning power
- 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 XCF2 is an azeotropic blend and 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)	47°C (133°F)
Specific Gravity (g/mL)	1.28
Surface Tension (dyne/cm)	22
Evaporation Rate (Ether=1)	<1
KB value	118
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-loop system to optimize cleaning efficiency, economy and emission control. Cleaning procedures for *Tergo* XCF2 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* XCF2 and dipping a workload into the coating bath followed by air drying.

Materials Compatibility

Tergo XCF2 has a moderate 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 XCF2 on Unstressed Plastics and Elastomers at Boiling Point.

PLASTICS	At boiling for 3 days		
Material	**Weight Change (%)**	**Linear Swell (%)**	**Extractables (%)**
Polyvinyl chloride (rigid)	99.9	19.0	6.6
Polyvinyl chloride (plasticized)	31.7	2.8	33.3
Polyethylene (HD)	11.2	3.0	0.2
Polyethylene (LD)	33.6	8.2	0.9
Polypropylene	19.4	4.4	0.7
Polystyrene	Dissolved	Dissolved	Dissolved
Acrylic	Dissolved	Dissolved	Dissolved
Polycarbonate	Dissolved	Dissolved	Dissolved
ABS	Dissolved	Dissolved	Dissolved
PTFE	1.4	10.3	<0.1
Epoxy (FR)	9.6	<0.1	<0.1
Nylon6	0.2	<0.1	<0.1
Nylon66	0.3	0.1	<0.1
Polyethylene terephthalate	16.6	4.1	0.1
Polyphenylene Sulfide	1.0	<0.1	<0.1

ELASTOMERS	At boiling for 3 days		
Material	**Weight Change (%)**	**Linear Swell (%)**	**Extractables (%)**
Natural rubber	97.8	25.3	12.5
Urethane rubber	196.0	37.5	0.6
Isobutylene isoprene rubber	99.5	19.6	13.9
Polychloroprene	131.4	28.1	10.6
Fluoroelastomer	42.2	14.8	3.3
Chlorosulfonated polyethylene	125.3	26.6	13.3
Silicone rubber	205.2	20.2	2.3
EPDM	144.5	27.5	12.3

Environmental Health and Safety

Properties	
Ozone Depletion Potential (ODP)[1]	None
Global Warming Potential (GWP)[2]	<1
Flash Point	None
AEL, 8h-TWA (ppm)	200

[1] *CFC-11 = 1.0*
[2] *CO2 = 1.0, 100yr ITH*

Storage and Handling

Tergo XCF2 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.