Tergo™ SFR

Flux and Ionics Cleaning Fluid

- Removes ionic residues and tenacious, high-temperature fluxes in lead-free and no-clean solder pastes.
- Ideal replacement for Novec™ 71DA, Novec™ 72DA, Vertrel® SFR, Vertrel® SMT 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 SFR is an azeotrope-like mixture of trans 1,2-dichloroethylene, alcohol and advanced fluorinated fluids. It is ideally suited for use in vapor degreasing and vacuum degreasing equipment. *Tergo* SFR offers improved solvency for polar soils, organic resins and inorganic salts found in no-clean fluxes. The low surface tension, high density and non-flammable properties of *Tergo* SFR make it an ideal vapor degreasing solvent for tight circuitry.

Tergo SFR has “zero” ozone depletion potential and low Global Warming Potential (GWP). It is hydrolytically stable and therefore does not require chemical stabilizers or booster to prevent it from breaking down in the presence of excess water or mild acid-base activators.

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 SFR is designed to replace conventional vapor degreasing solvents such as TCE, nPB, HCFCs, and HFCs. While it was specially designed for removing flux residues and displacing ionic particulate, *Tergo* SFR can also be used for cleaning oils and greases, flushing or as a carrier fluid for fluorinated, chlorinated, silicon and hydrocarbon mixtures.

Tergo SFR can be used on chemically resilient substrates including printed circuit boards, metals and high density polymers. Some of the potential benefits and applications include:

Applications

- Difficult flux removal
- Precision cleaning of metals, alloys and composites
- 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
- High KB cleaning power
- Low Global Warming Potential (GWP)
- Zero Ozone Depletion Potential (ODP)
- Fast drying
- Low surface tension, high liquid density
- Excellent permeability
- Recoverable by simple distillation
- Can be used with ultrasonics

Recovery

Tergo SFR is a constant boiling 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 (117)
Liquid Density, g/ml	1.23
Surface Tension (dyne/cm)	20
Evaporation Rate (Ether=1)	<1
KB value	128
Flash Point (Open/Closed cup)	None
Flash Point (Open/Closed cup)	None

Table 2. Product Comparison Chart

Property	n-PB	TCE	Novec™ 71DA	Novec™ 72DA	Vertrel™ SFR	Vertrel™ SMT	Tergo™ GCF	Tergo™ SFR
BP (C)	71	87	40	44	41	37	42	47
KB value	125	129	33	58	101	38	38	128
Specific Gravity	1.35	1.46	1.33	1.27	1.28	1.37	1.35	1.23
Surface Tension (dyne/cm)	25.9	29.3	16.4	18	19.9	15.5	18	20
GWP	16	630	157	42	264	689	274	32
Plastic Compatibility	Poor	Poor	Poor	Poor	Poor	Poor	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* SFR 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* SFR and dipping a workload into the coating bath followed by air drying.

Environmental Health and Safety

Properties	
Ozone Depletion Potential (ODP)[1]	None
Global Warming Potential (GWP)[2]	32
Flash Point [3]	None
AEL, 8h-TWA (ppm)	200

[1] *CFC-11 = 1.0*
[2] *CO2 = 1.0, 100yr ITH*
[3] *Tag Closed Cup, ASTM D56*

Materials Compatibility

Tergo SFR 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. Plastic Compatibility
Immersion: 5 Minutes at Boil Point

Compatible	
HDPE	PTFE/Teflon™
LDPE	FEP
PP	Liquid Crystal Polymer
Polyester	PFA
PET	PVDF
Halar	Ryton
Kynar	Nylon

Incompatible	
PMMA	ABS
Polycarbonate	Polystyrene

Table 4. Elastomer Compatibility
Immersion: 5 Minutes at Boil Point

Compatible	
Parafluor	Teflon™ encapsulated gaskets
Ryton	Kalrez

Incompatible	
Silicone	Hypalon
Viton™	Buna N

Storage and Handling

Tergo SFR 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.