Tergo™ PF105

High Purity Ionic & Static Remover

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 PF105 Ionic & Static Remover is an azeotrope of a modern HFE with ethanol. It is ideally suited for use in vapor degreasing equipment or bench-top applications. It offers improved solvency for polar soils, compared to neat fluorocarbons, while maintaining excellent compatibility with most plastic, ceramic, and metal components. Typical applications include precision and specialty cleaning of optics or circuity, solvent drying, and rinsing for removal of particulate, fingerprints, and light soils from metal, plastic, and glass parts.

Tergo PF105 can replace hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) in Medical and Aerospace applications where critical cleaning is paramount and there is a focus towards bioburden or dendrites. *Tergo* PF105 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.

Its unique properties (**Table 1**) include a high density, low viscosity, and low surface tension for effective particle and soil removal.

This techincal 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

Tergo PF105 is designed to replace HFCs, PFCs and other fluorinated fluids used to mitigate situations where static or ionic charges are an issue. *Tergo* PF105 can also be used for critical cleaning where the added polarity of ethanol aids in cleaning inorganic soils. *Tergo* PF105 has also been found to be effective as a solvent drying agent for absorbing trace amounts of moisture from optics, circuity or substrates with tight stand-offs.

Some of the potential applications include:

- Control of Ionic charges
- Solvent drying /moisture absorption
- Precision cleaning of optics and circuitry.
- Replacement for HFCs, Chemours™ Vertrel®, Solvay Solvokane™ & 3M™ Novec™ solvents.

Recovery

This product is easily recoverable by off-line or in-line distillation equipment such as a vapor degreaser or still. The presence of soil, however, may alter the characteristics of the material during the recovery operation. Recovery should be closely monitored to ensure operating levels are maintained. Contact your MicroCare salesperson for assistance.

Cleaning Process

Vapor degreasing should be used for optimum cleaning effectiveness and economy. Modern vapor containment technology is recommended for both batch and in-line equipment. These systems have higher freeboard and a secondary set of low temperature (–29°C [–20°F]) condenser coils to greatly reduce vapor losses.

Specifications

All components are listed in the TSCA inventory.

Table 1. Physical Properties

Boiling Point	54°C (129°F)
Liquid Density, g/cc	1.40
Vapor Pressure, kg/cm2 25C	0.28
Surface Tension, dyn/cm	16.1
Freezing Point, °C	- 90
Heat of Vaporization (at boiling point), Kj/ k	187
Viscosity, cPs 25°C	67
Flash Point (Open/Closed cup)	None
Vapor Flammability in Air, vol% (Lower/Upper)	None

Safety / Flammability

Tergo PF105 exhibits no closed cup or open cup flash point and is not classified as a flammable liquid by NFPA or DOT.

Storage / Handling

Tergo PF105 is thermally stable and does not oxidize or degrade during storage. Store in a clean, dry area. Protect from freezing temperatures. If solvent is stored below –10°C (14°F), mix by agitation prior to use. Do not allow stored product to exceed 44°C (111°F) to prevent leakage or potential rupture of container from pressure and expansion.

Consideration should be given to retrofit of existing, or purchase of new, vapor degreasing equipment to provide vapor containment technology that enables safe and economical use of *Tergo* PF105.

Drum pumps are recommended to dispense *Tergo* PF105 from its container. Refer to the Safety Data Sheet for specific handling precautions and instructions.

Metals and Other Compatibility

Tergo PF105 is compatible with common metals and most alloys. Initial compatibility testing on non-production parts is always recommended when using a new cleaning fluid.

Contact with highly basic process materials, pH 10 or above, is not recommended.

Plastic and Elastomer Compatibility

Most plastics and elastomers can be safely cleaned in *Tergo* PF105. **Tables 2** and **Table 3** summarize test results on short-term exposures of unstressed plastics and elastomers simulating a typical cleaning cycle.

Table 2. Unstressed Plastic Compatibility

Immersion: 5 Minutes at Boil Point

Compatible
Polyethylene
Polypropylene
Polystyrene
Epoxy (FR)
Polycarbonate
ABS
Nylon 6
PTFE
PVC
Epoxy
Polyacetate
Polyphenylene Sulfide
Incompatible*
Polymethyl methacrylate (acrylic)

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

Table 3. Elastomer Compatibility

Immersion: 5 Minutes at Boil Point

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.

Compatible
Natural Rubber
Butyl Rubber, IIR
EPM, EPDM, Nordel®
EPDM
Chlorosulfonated PE
Polysulfide
Nitrile
Incompatible*
None

**Material composition varies depending upon compounding agents, plasticizers, processing, etc. Specific materials should be tested for compatibility with solvent. Compatibility is given for results of less than 1% deviation.*

Safety / Exposure Limits

Data from acute toxicity studies has demonstrated that Tergo PF105 has low toxicity. The listing below (**Table 4**) shows the applicable exposure limits for the component materials of Tergo PF105.

The AEL and TLV limits are Time Weighted Average (TWA) concentrations for a normal 8 or 12-hour workday and a 40-hour work week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. Please read and understand the Safety Data Sheet (SDS) for this product for additional details.

Table 4. Exposure Limits

Component	Limit, ppm	Type
Tergo PF100	AEL[a] 50	8- and 12-hr TWA
	PEL[b] 75	8- and 12-hr TWA
Ethanol	AEL 1,000	8- and 12-hr
TWA TLV[c] 1,000		8-hr TWA

[a] *AEL is a limit set by the manufacturer and is an airborne inhalation exposure limit that specifies time-weighted average concentrations to which nearly all workers may be repeatedly exposed without adverse effects.*

[b] *PEL is a limit set by the EPA and is and airborne inhalation exposure limit that specifies time-weighted average concentrations to which nearly all workers may be repeatedly exposed without adverse effects.*

[c] *TLV (Threshold Limit Value) is an air-borne inhalation exposure limit established by the American Conference of Government and Industrial Hygienists (ACGIH) that specifies time-weighted average concentrations to which nearly all workers may be repeatedly exposed without adverse effects.*