



## Chlorine-Free Cleaning Fluid

- Use in Existing Vapor Degreasers
- Fast, Effective, Safe
- Cleans Solder Flux, Greases, Buffing Compounds and Particulate

*Tergo* Chlorine-Free Cleaning Fluid is an extremely strong, non-flammable, non-chlorinated solvent for use in vapor degreasers. It has excellent materials compatibility and is designed to work at normal vapor degreasing temperatures. This Technical Information Sheet summarizes product properties, applications, safety, health, environmental and regulatory information. Users should also consult the Safety Data Sheet (SDS) for additional information.

### Introduction

*Tergo* Chlorine-Free Cleaning Fluid (CFCF) is an environmentally advanced vapor degreasing solvent. This diverse fluid has a boiling point consistent with historical vapor degreasing solvents, and can clean a wide variety of soils, while maintaining excellent material compatibility. *Tergo* CFCF demonstrates low surface tension and high liquid density, which maximizes cleaning efficiency. It has been designed to work in commonly designed two sump vapor degreasers, allowing for broad acceptance and minimizing new equipment requirements.

This new technology can remove no-clean lead-free and RMA fluxes off of delicate substrates such as flexible circuitry or remove stubborn buffing compounds that are impregnated into bearing raceways. It is also very effective at displacing and removing fine particulates. *Tergo* CFCF has very high soil loading capability, which translates into lower solvent costs through long fluid bath life. This fluid has a high vapor density which further extends solvent conservation as the vapors are easily condensed and precipitate back into the machine instead of being dragged out with the parts being cleaned.

The vapor degreasing process with *Tergo* CFCF allows for maximum cleaning flexibility and broad compatibility with plastics and elastomers. This innovative fluid eliminates the dependence on chlorinated solvent additives, which are traditionally used to enhance the aggression of milder fluorinated fluids.

### Application

The *Tergo* Chlorine Free Cleaning Fluid process requires the use of vapor degreasing equipment for optimum cleaning effectiveness and economy. While this technology will perform in traditional 2-sump degreasers, newer systems may offer increased efficiencies, such as refrigerated primary and secondary condensation coils, automated transport systems, and ultrasonics.

Typical application include removal of the following soils:

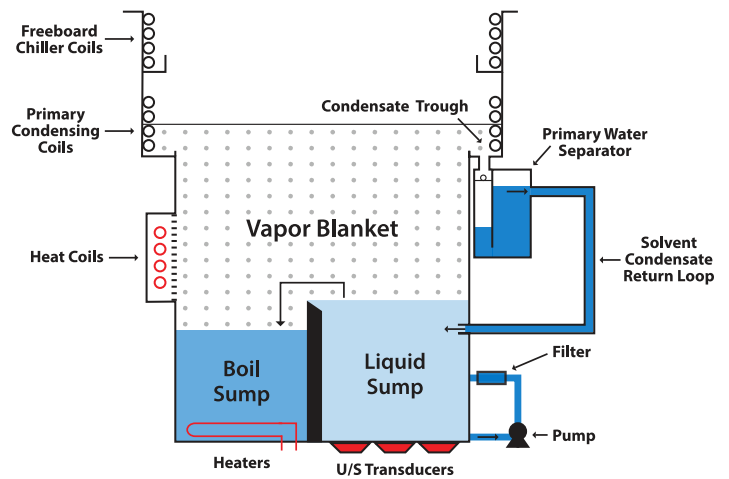
- Oil and Grease
- Particulates
- Flux Removal
- Inks
- Buffing Compounds
- Ionic Contamination
- Wax
- Finger Prints
- Anti-Rust Agents

Substrates:

- Common Alloys
- PWAs
- Plastics
- Optics
- Ceramics
- Acrylics

## Vapor Degreasing Equipment

Modern, Low Emission Design

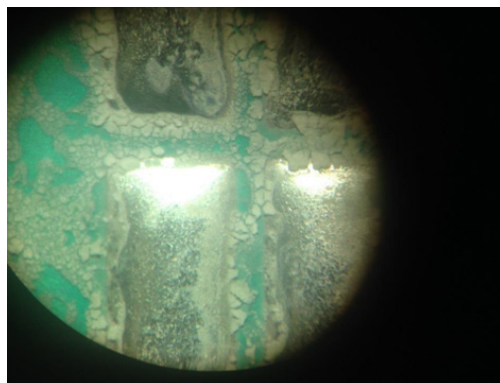


### Targeted Soils:

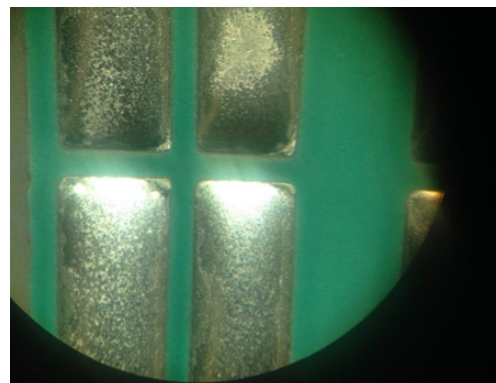
**Tergo Chlorine-Free Cleaning Fluid** formulated to remove a wide variety of production contaminants, ranging from heavy greases and fluxes to water soluble soils. It has been engineered to target both organic and inorganic soils, so it effectively cleans parts that may have multiple challenges, such as circuit boards.

Example: No-Clean Flux:

Before



After



### Vapor Degreasing Process:

A historical vapor degreasing process entailed placing a basket of parts into a vapor degreaser, where the heat of the solvent aided in the cleaning of the parts. Regulations have eliminated or restricted many of the traditional, higher boiling point solvents (1,1,1 TCA, TCE, PCE, nPB, etc.), that had sufficient temperature to remove stubborn soils, such as wax, pitch, and heavy greases. The newer, safer solvents boil at, or below 120 degrees F., which may not introduce enough thermal energy to remove these stubborn temperature sensitive soils. If these fluids are solely enhanced with Trans 1,2 Dichloroethylene, they may be too aggressive towards certain substrates. *Tergo* Chlorine Free Cleaning Fluid has been formulated to allow for a higher operating temperature, which can help dissolve materials like wax and heavy hydrocarbons.

**Table 1 Physical Properties**

	<i>Tergo Chlorine-Free Cleaning Fluid</i>
Boiling Point, °F (°C)	165 (74)
Vapor Pressure, kg/cm <sup>2</sup> (25 °C)	0.28
Liquid Density, gm/cc (lb/gal) (25 °C)	1.44 (11.96)
Surface Tension, dyn/cm	16.1
Freezing Point, °F (°C)	-86°C (-122.8 °F)
Heat of Vaporization (51 °C) KJ/kg	187
Heat Capacity, cal/g°C	0.27
Viscosity, (cST 25 °C)	0.43
Flash point <sup>a</sup>	None
Flash point <sup>b</sup>	None
Vapor Flammability in Air, Vol%	
Lower Limit	None
Upper Limit	None

Flash point <sup>a</sup> Setaflash Closed Cup Tester (ASTM D 3278)

Flash point <sup>b</sup> Tag Open Cup Tester (ASTM D D1301)

## Equipment Process Setup and Sequence

Vapor Degreaser set points shall be adjusted to the selected boil point.

High Temperature Controller (HTC)	Boiling Point + 10°F (+6°C)
Safety Vapor Control (SVC)	Boiling Point - 10°F (°C)
Primary Refrigeration Coils	~40°F (2-5°C)
Freeboard Chiller Coils if Available	+35°F to -30°F (2°C to -15°C)

**Table 2: Process Sequence**

Step 1	After a vapor blanket has been established, immerse the parts in the Boil Sump
Step 2	Remove parts from Boil Sump and allow the solvent mixture to drain back into the Boil Sump
Step 3	Immerse parts in the Rinse Sump
Step 4	Remove parts from Rinse Sump and hold in the vapor until vapor condensation ceases
Step 5	Remove cleaned parts from the vapor degreaser

## Environmental





The ingredients of this formula are listed as “Acceptable” by the U.S. Environmental Protection Agency (EPA) under the Significant New Alternatives Policy (SNAP) program as a substitute for ozone depleting substances. Further, the components are REACH registered and meet FGas regulations. It has an Ozone Depletion Potential (ODP) of zero, and has a VOC (Volatile Organic Compound) as defined by the EPA of 70 grams/liter. It is an effective alternative to hydrofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), n-Propyl Bromide (nPB), and perfluorocarbons (PFCs) in many mission critical, drying, carrier fluid and similar high-value specialty uses where reliability is essential.

All of the ingredients of *Tergo* CFCF Fluid are listed in the USA TSCA. None of the ingredients in this formula are classified as Hazardous Air Pollutants (HAP) and thus not subject to NESHAP regulation. It is also not included in SARA Title III Section 313 list of toxic chemicals, and is not subject to SARA Title III (EPCRA) reporting requirements.

## Safety and Flammability

The MicroCare *Tergo* CFCF Fluid exhibits no flash point per Tag Closed Cup (TCC, ASTM-D 56) and Pensky-Martins Closed Cup (ASTM-D 93). It is not classified as a flammable liquid by NFPA or DOT.

## Packaging and Availability

Part Number	Package		Weight	Size
MCC-TCFCF01EUP (Boil)	Steel Pail		45 Lb (20.41 kg)	5 Gal (18.93 L)
MCC-TCFCFR1EUP (Rinse)	Steel Pail		55 Lb (24.95 kg)	5 Gal (18.93 L)
MCC-TCFCF01EUD (Boil)	Steel Drum		500 Lb (226.8 kg)	55 Gal (208.2 L)
MCC-TCFCFR1EUD (Rinse)	Steel Drum		550 Lb (249.48)	55 Gal (208.2 L)

Note: Products sold by weight, not volume.



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