

Tergo™ Performance Fluids

Metal Cleaning Fluid

- High Solvency Degreaser and Flux Remover
- Cleans Solder Flux, Heavy Grease, Silicone fluid, and Resilient Contaminants
- Ideal Replacement for TCE and nPB

Introduction

Tergo™ Metal Cleaning Fluid (MCF) is a patent-pending solvent designed to clean heavy hydrocarbons, greases, caramelized flux residues, waxes and silicone soils. It has a broad range of material compatibility, making it an excellent choice for cleaning substrates with multiple materials of construction. Tergo Metal Cleaning Fluid is a non-flammable, thermally and hydrolytically stable cleaner that is a true azeotrope. Further, this fluid does not require chemical stabilizers or scavengers to prevent it from breaking down in the presence of excess water or flux activators. While Tergo MCF was designed for efficient use in a vapor degreaser, it is also ideally suited as a line flush fluid, or for solvent extraction applications.

This product 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.

Application

Tergo Metal Cleaning Fluid is designed to replace nPB, TCE, PFCs and HFE solvents used to remove stubborn soils from a variety of substrates, including metals and metal alloys as well as Printed Circuit Boards. This formula can be used to clean parts in the aerospace, automotive, medical, oil exploration and industrial sectors. Some of the potential applications include:

- Precision Cleaning
- Flux Removal
- Hydrocarbon Extraction
- Binder Displacement
- Flushing Agent
- Silicone Deposition or Removal
- Metal Cleaning

Vapor Degreaser Equipment Modern Low Emission Design

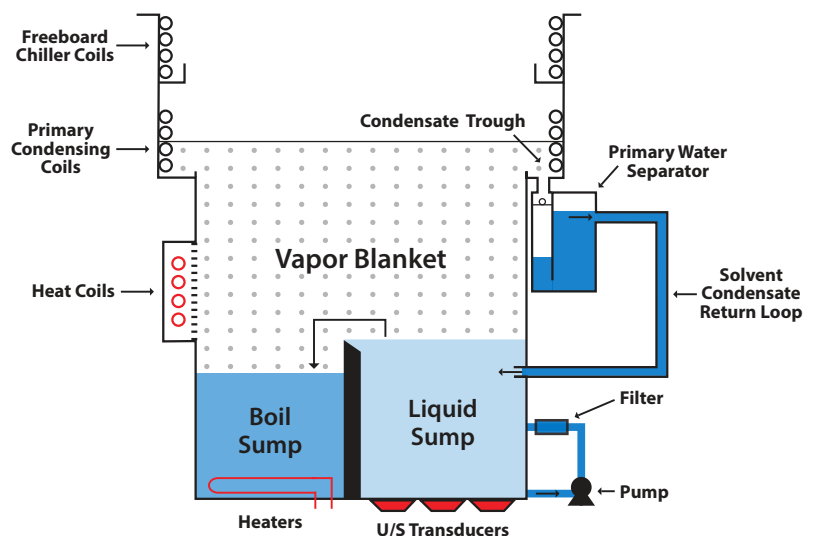


Table 1: Physical Properties

Property	Tergo MCF
Appearance	Colorless to light
Boiling Point	47 °C / 117 °F
Solubility in Water	Slight
Kb value	>100
% Volatile by weight	100%
Surface Tension	21 dyn/cm
Flash Point, °C / °F	None

Recovery

The azeotropic nature of this formula allows this material to be easily recoverable by simple distillation, either by utilizing the vapor degreaser itself or a still. 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 local regulations.

Specifications

All components are listed in the TSCA inventory.

Appearance Clear, colorless

Moisture, ppm wt.: 200 max.

Nonvolatile Residue, ppm wt.: 25 max.

Ozone Depletion Potential: Zero

Global Warming Potential (GWP): <10

Property	Tergo MCF	n-Propyl Bromide nPB	Trichloro-ethylene TCE	Competitor A	Competitor B	Competitor C	AK-225ATE HCFC-225 / DCE
Boiling Point (°C/°F)	47 / 117	71 / 160	87 / 189	41 / 106	43 / 109	19 / 66	45 / 112
Specific Gravity	1.28	1.35	1.46	1.37	1.28	1.26	1.32
Pounds / Gallon	10.7	11.3	12.2	11.4	10.7	10.5	11
Surface Tension (dyn/cm)	21	25.9	29.3	16.6	19	12.7	20.2
Viscosity (25°C, cP)	0.42	0.49	0.58	0.45	0.45	0.50	0.44
Kb Value	>100	125	129	27	52	25	115
Flash Point	None	None	None	None	None	None	None
OEL (PPM)	200	25 / 10 / 0.1	5	200	200	800	160
GWP (100 year)	<10	16	630	160	43	1	370
ODP	0	0	0	0	0	0.03	0.03
HAP	No	Yes	Yes	No	No	No	No

Tergo MCF is compatible with common metals and most plastics, along with materials used in electronic assemblies. Plastics and elastomers compatibility may be dependent on exposure time and temperature. *MicroCare* recommends always testing compatibility on scrap or surplus parts prior to introducing a new cleaning fluid to the production process.

Table 3: Plastic Compatibility

Compatible with:	
HDPE	PTFE / Teflon
LDPE	FEP
PP	Liquid Crystal Polymer
Polyester	PFA
PET	PVDF
PBT	PEEK
Acetal	Phenolic
Nylon	

Table 4: Elastomer Compatibility

Compatible with:	
High Density NBR	Butyl Rubber
Neoprene	Polyurethane
Kalrez	Viton®

Safety, Toxicity, and Environmental

Tergo Metal Cleaning Fluid exhibits no closed or open cup flash point and is classified as a nonflammable liquid by NFPA or DOT. This product is volatile; vapor may become flammable when mixed with air in the concentrations shown below. Flash point data and vapor flammability limits in the air are shown in **Table 5**.

Table 5: Safety, Toxicity, and Environmental Properties

Property	Tergo MCF
Flash Point, Closed Cup, ASTM D56 (°C/°F)	None
Flash Point, Open Cup, ASTM D1310 (°C/°F)	None
Vapor Flammability Limits - LEL	7.0% vol.
Vapor Flammability Limits - UEL	15.6% vol.
Global Warming Potential	<10
Volatile Organic Compound Content	1178 g/L
Exposure Limit	200 ppm

Material Compatibility Testing






- ARP 1755B Effect on Aircraft Engine Materials
- ASTM F1110 Sandwich Corrosion
- ASTM F519 Hydrogen Embrittlement
- ASTM F945-06 Stress Corrosion Ti Alloys

Storage and Handling

Tergo Metal Cleaning Fluid is thermally and hydrolytically stable and does not oxidize or degrade during storage under normal conditions. It is recommended to store containers inside in a clean, dry area and out of direct sunlight. The recommended storage temperature should not exceed 30°C / 86°F. When stored properly, an unopened package of *Tergo* MCF has an unlimited shelf life.

Packaging and Availability

Note: Products sold by weight, not volume.

Part Number	Package Type		Package Size	Weight	Volume
MCC-TMCFEUGL	Glass Liter		1 Liter	2.5 lb (1.13 kg)	0.88 L
MCC-TMCFEUG	Steel Gallon		1 Gal (3.79 L)	10 lb (4.54 kg)	3.55 L
MCC-TMCFEUGG	Glass Gallon		1 Gal (3.79 L)	10 lb (4.54 kg)	3.55 L
MCC-TMCFEUP	Steel Pail		5 Gal (18.93 L)	45 lb (20.41 kg)	15.95 L
MCC-TMCFEUD	Steel Drum		55 Gal (208.2 L)	500 lb (226.8 kg)	177.19 L



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