



Tergo™ 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 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 with azeotrope-like properties. 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 vapour 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
- Cleaning Down-Hole Components

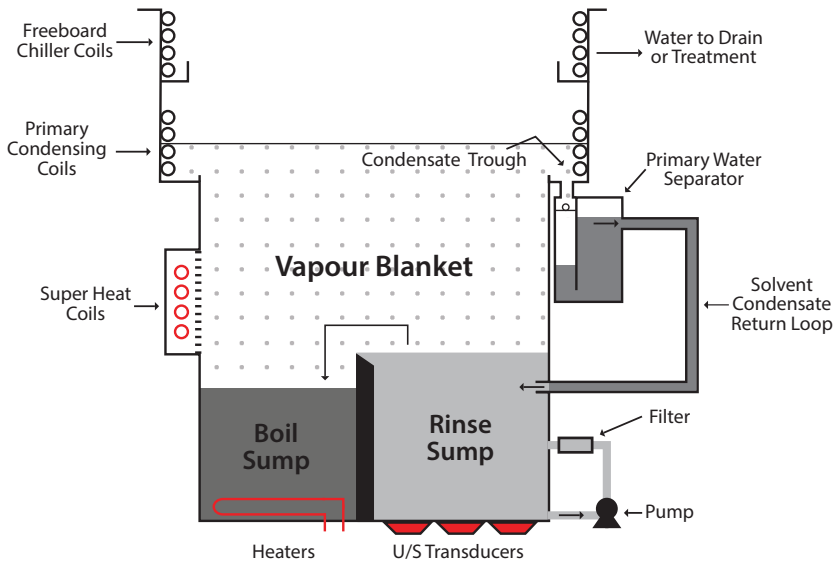


Table 1

Physical Properties

Property ^a	MCF
Appearance	Colorless to light
Boiling Point, °C (°F)	47 (117)
Solubility in Water:	Slight
Kb value:	>100
% Volatile by weight:	100%
Surface Tension:	21 Dynes
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 vapour 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, colourless
- 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	Trichloroethylene TCE	Novec 71DE HFE	Novec 72DE HFE	Solstice PF HFO	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 (dyne / 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 4. Plastics/Elastomers Compatibility

The following materials are compatible with *Tergo* Metal Cleaning Fluid

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

Elastomers:

- 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 air are shown in Table 5.

Table 5. Safety, Toxicity, and Environmental Properties

Property	Units	Tergo MCF
Flash Point, Open Cup, ASTM56	°C	None
Flash Point, Closed Cup, ASTM D1310	°C	None
Vapor Flammability Limits - LEL	%vol.	7.0
Vapor Flammability Limits - UEL	%vol.	15.6
Global Warming Potential		<10
Volatile Organic Compound Content	g/L	1178
Exposure Limit	ppm	200

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. When stored properly, an unopened package of Tergo MCF has a 2 year shelf life.

Packaging

Tergo Metal Cleaning Fluid is packaged in 500 Lb/226.8 kg (55 Gal/208.2 L) steel drums and 45 Lb/20.4 kg (5 Gal/18.93 L) pails.

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