



MicroCare® CFIPA Particle Rinse

For Cleaning Precision Mechanical Assemblies

Introduction

The MicroCare® CFIPA Particle Rinse is an azeotropic mixture of HFC-43-10 (2,3-dihydrodecafluoropentane), HFC-365mfc (1,1,1,3,3-pentafluorobutane) and isopropyl alcohol. It has “zero” ozone depletion potential and low global warming potential, making it an ideal replacement for HCFCs, hydrocarbons and perfluorocarbons (PFCs) in many applications.

This product bulletin summarizes product property, application and use, safety, health, environmental, and regulatory information. Users should also consult the Material Safety Data Sheet (MSDS) for additional information.

Applications

This product is ideally suited for use in both vapor degreasing equipment and in “cold cleaning” applications such as wiping delicate parts. It has very mild solvency for hydrocarbon oils, making it particularly effective in many precision cleaning applications where materials compatibility issues may be a concern.

Vapor degreasing should be used for optimum cleaning effectiveness and economy. Modern vapor containment technology is recommended for batch and in-line equipment. These systems have higher freeboard and a secondary set of low temperature (-29°C / -20°F) condenser coils to reduce vapor losses. For more information about cleaning equipment, contact MicroCare.

The MicroCare CFIPA Rinse has a fairly narrow range of cleaning capabilities. The cleaner will remove light oils and particulate from precision metal parts. Because the solvent has good polarity, it can release the static bonds that bind particulate to surfaces, which enhances cleaning. But this cleaning power does not come at the expense of materials compatibility, so this Rinse can be used on virtually any common material of construction.

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. It has an Ozone Depletion Potential (ODP) of zero and relatively low global warming impact. It is an effective alternative to some hydrocarbon cleaners, plus hydrofluorocarbons (HCFCs) and perfluorocarbons (PFCs) in mission-critical cleaning, drying and similar specialty uses where reliability is essential.

All of the ingredients of the MicroCare CFIPA Rinse are listed in the USA TSCA, and EU ELINICS. 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.

Physical and Chemical Properties

Table 1 Physical and Chemical Properties ^a	
Boiling Point, °C / °F	45° / 112°
Liquid Density, g/cc / lb/gal	1.34 / 11.2
Vapor Pressure, psia	6.9
K _b Value	10
Surface Tension, dyn/cm	16.0
Freezing Point, °C / °F	-21° / -6°
Heat of Vaporization at Boiling Point, cal/g	36°
Heat Capacity, Btu/lb°F	0.3
Viscosity, cPs	0.63
Flash Point, °C / °F	
Closed Cup ^b	None
Vapor Flammability in Air, vol%	
Lower Limit	7
Upper Limit	9

Notes:
 a All at 25°C (77°F), except where indicated.
 b Pensky Martens Closed Cup Tester (ASTM D 93)

Plastic and Elastomer Compatibility

The MicroCare CFIPA Rinse is compatible with the polymeric materials commonly encountered in precision parts. However, acrylic, especially if under stress, may show slight cracking or crazing and should be tested for compatibility. EPDM, butyl rubber, Buna-S and neoprene are recommended materials.

Table 2 Plastic Compatibility (15 Min. Immersion)	
<u>COMPATIBLE</u>	
Polyethylene	Acetal
Polypropylene	Epoxy
Polyester, PET, PBT	Liquid Crystal Polymer
Polyimide, PI, PEI, PAI	Phenolic
Polyetherketone, PEK	PTFE, ETFE
Polyaryletherketone, PEEK	Polyvinylchloride
Polyarylsulfone, PAS	Ionomer
Polyphenylene Sulfide, PPS	Chlorinated PVC
Polysulfone, PSO	Polyphenylene Oxide, PPO
Polystyrene	ABS
Cellulosic	
<u>INCOMPATIBLE</u>	
Acrylic	
Polyphenylene Oxide, PPO	Cellulosic

Metals and Other Compatibility

The MicroCare CFIPA Rinse is compatible with aluminum, copper, iron, with and without oil present. Contact with highly basic process materials, pH 10 or greater, is not recommended.

Safety/Exposure Limits

Data from acute toxicity studies has demonstrated that the MicroCare CFIPA Rinse has low toxicity. It is a slight skin and eye irritant and has low inhalation toxicity. The listing below details the applicable exposure limits for the component materials of the MicroCare CFIPA Rinse.

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 Material Safety Data Sheet (MSDS) for this product for additional details.

Ingredient	Limit, PPM	Type
HFC-43-10 (2,3-dihydro-decafluoropentane)	200 400	8 & 12 hour TWA AEL(a) Ceiling(b)
HFC-365mfc (pentafluorobutane)	200	AEL(a) 8 hour TWA
Isopropyl Alcohol	400	8 hour TWA TLV(c)

NOTES:

(a) An AEL (Acceptable Exposure Limit) is an airborne inhalation exposure limit established by DuPont that specifies time weighted average concentrations to which nearly all workers may be repeatedly exposed without adverse effects.

(b) A ceiling limit is the concentration that should not be exceeded during any part of the working day. The ceiling for individual components applies to the blend product as well.

(c) A TLV (Threshold Limit Value) is an airborne 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.

Safety/Flammability

The MicroCare CFIPA Rinse 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.

Recovery

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

Storage/Handling

The MicroCare CFIPA Rinse is thermally stable and does not oxidize or degrade during storage. Store in a clean, dry area, out of direct sunlight and other sources of heat. 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 52°C (125°F) to prevent leakage or potential rupture of container from pressure and expansion.

Drum pumps are recommended to dispense this solvent from its container. Refer to the Material Safety Data Sheet for specific handling precautions and instructions. Contact MicroCare for additional assistance.

Specifications

Composition and specifications are detailed below:

Ingredient	Content, % wt
HFC-43-10	60-100% +/- 1.0
HFC-365mfc	30-60% +/- 1.0
Isopropyl Alcohol	1-5% +/- 1.0
Nonvolatile Reside, by wt	100 ppm max
Moisture, by wt	200 ppm max

All ingredients are listed in the TSCA Inventory.

Ordering Information

MCC-CFIPAD 540# (200L / 55 gallon) Drum
MCC-CFIPAP 50# (19L / 5 gallon) Steel Pail
MCC-CFIPAL (sample only) 2# (1 liter) Metal Can



Precision Cleaners

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