

MicroCare®

Technical Information

HSFR Ultra Ionics and Hydrocarbon Remover

For Cleaning High Temperature Flux From Printed Circuit Assemblies

Introduction

The *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover is a nonflammable cleaning fluid consisting of hydrofluorocarbons, trans-1,2-dichloroethylene and methanol. It is formulated to replace n-propyl bromide and trichloroethylene and perform in applications where maximum cleaning performance is needed. It also can be used to replace HCFC-225, HCFC-141b, HFEs, PFCs, and CFC based solvents, and water based solvents when safety and environmental concerns and/or floor space and cleanliness are at a premium. This Technical Information Sheet summarizes product properties, applications and uses, safety, health, environmental and regulatory information. Users should also consult the product Safety Data Sheet (SDS) for additional information.

Applications

This cleaning fluid is ideally suited for use in both vapor degreasing equipment and in "cold cleaning" applications for the removal of high temperature fluxes used in lead-free and "no clean" solders. It has enhanced cleaning power for a wide range of contamination including ionic soils. Vapor degreasing with ultrasonics 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 loss.

The *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover has a broad range of cleaning capabilities. See below for a list of typical soils readily removed from parts in a normal vapor degreasing cycle:

Lead-Free Flux	No-Clean Flux
Heavy Greases	High Temperature Fluxes
Stamping Oils	Silicone Oils & Grease
Wax	Mineral Oils

Safety/Flammability

The *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover exhibits no flash point. It is not classified as a flammable liquid by NFPA or DOT:

Closed Cup Flash Point (ASTM-D93)	None
Open Cup Flash Point (ASTM-D1310)	None
Lower Explosion Limit	7.0 (% by volume)
Upper Explosion Limit	14.0 (% by volume)

Flash point data and limits of flammability in air provide the user with additional information that should be used as elements of a fire risk assessment and to define guidelines for the safe handling of volatile chemicals. Users should assure compliance with NFPA standards and local fire codes.

יועוץ ומכירות
שמנים, גרזים וכימיקלים לתעשייה

רח' יהודה 10 רמת-גן 52504
e-mail: yairerez@zahav.net.il
www.yairerez.co.il

יאיר ארז
B.Sc

נייד: 052-2318472
טלפקס: 09-7466688

Material Compatibility

The *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover is compatible with most materials and components used in the manufacture of printed circuit assemblies. Contact with highly basic materials, pH 10 and above, is not recommended.

Plastics that may show signs of softening, swelling or other changes include acrylics, ABS and polycarbonate. Elastomers, if affected, will generally revert to within a few percent of original size after air-drying. Prior-to-use, testing of plastics and elastomers should be performed under conditions expected during normal operation (e.g., time in contact with *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover, temperature, etc.).

Recovery

This product has 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. Also, the introduction of large amounts of water may extract the methanol and reduce cleaning performance. To reduce methanol loss, the use of desiccant dryers rather than water separators is recommended. Recovery should be closely monitored to ensure operating levels are maintained. Contact your *MicroCare* salesperson for assistance.

Environmental

The ingredients of this formula are listed as "Acceptable" by the U.S. Environmental Protection Agency under the Significant New Alternatives Policy (SNAP) program as a substitute for ozone depleting substances in the solvent category.

Environmental Properties

Ozone-Depletion Potential (ODP)	0
Global Warming Potential (GWP/100 yr. ITH)*	264
Volatile Organic Compounds (VOC, g/liter)	1063

* Based on IPCC Second Assessment Report values.

All components are listed in the TSCA inventory. Refer to the SDS for additional regulatory information.

Safety/Exposure Limits

Data from acute toxicity studies has demonstrated that the *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover has low toxicity. It has a calculated AEL (Acceptable Exposure Limit) of 187 ppm based on its individual components. AEL is a manufacturer assigned airborne inhalation exposure limit that specifies time-weighted average concentrations to which nearly all workers may be repeatedly exposed without adverse effects. The calculated AEL is in accordance with ACGIH formulas for TLVs for mixtures. The *MicroCare* HSFR Ultra Ionics and Hydrocarbon Remover is a slight skin and eye irritant and has low acute inhalation toxicity.

Please refer to the product SDS for additional information on exposure limits and toxicity-related data.

Physical Properties Comparison Chart

Property	HSFR	HCFC-225	HFE-72DE	TCE	nPB
Boiling Point:	41° C / 106° F	54° C / 129° F	43° C / 109° F	87° C / 160° F	71° C / 160° F
Surface Tension:					
N/m	0.0199	0.0162	0.019	0.032	0.0259
dyn/cm	19.9	16.2	19.0	32.3	25.9
Liquid Density, kg/liter (lb/gal):	1.28 /10.7	1.55 /12.9	1.28 /10.7	1.46 /12.15	1.35 /11.26
Vapor Pressure at 25° C (77° F):					
kPa	57.9	38.5	46.6	9.9	20.3
atm	0.57	0.38	0.46	0.099	0.20
psia	8.4	5.6	6.8	1.4	2.9
Freezing Point:					
°C	-50° C	-131° C	-	-86° C	-76° C
°F	-58° F	-204° F	-	123° F	-105° F
Heat of Vaporization at Boiling Point:					
kJ/kg	285	146	219	237.9	248.0
cal/g	68	35	52	56	58.8
Heat Capacity:					
kJ/kg °C	1.16	1.2	-	0.87	-
BTU/lb°F	0.28	0.20	-	0.21	-
Viscosity at 25° C (77° F), cPs:	0.58	0.59	0.45	0.54	0.49
KB Value:	101	31	52	129	125

Storage/Handling

MicroCare HSFR Ultra Ionics and Hydrocarbon Remover 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 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 Safety Data Sheet for specific handling precautions and instructions. Contact your MicroCare salesperson for additional assistance.

Specifications

Composition and specifications are detailed below:

Hydrofluorocarbon mixture	28-32 wt%
1,2-trans-Dichloroethylene	60 - 70 wt%
Methanol	< 3 wt%
Water	< 200 ppm
Appearance	Clear, colorless
Non-volatile residue	< 10 ppm (drum s) or < 50 ppm (pails)

All ingredients are listed in the TSCA Inventory.

Ordering Information

# MCC-HSFRD	500# (55 gallon) Drum
# MCC-HSFRP	45# (5 gallon) Steel Pail

MicroCare Corporation

595 John Downey Drive
New Britain, CT 06051
Telephone: (860) 827-0626
Toll Free: (800) 638-0125
Email: techsupport@microcare.com

MicroCare Europe BVBA

Havendoklaan 19
Cargovil Vilvoorde, B-1804 Belgium
Telephone: +32-2-251-95-05

MicroCare Asia Pte. Ltd.

102E Pasir Panjang Road
Singapore 118528
Telephone: (65) 6271-0182

www.MicroCare.com

MicroCare is an ISO 9001-2008 Registered Company

MicroCare® and the MicroCare logo are registered trademarks of MicroCare Corporation.