MICRO CARE CORPORATION
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New Britain, Connecticut 06051 USA
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MATERIAL SAFETY DATA SHEET

1. Chemical Product and Company Identification

Product Name: Dura II A/C Flush Solvent
Chemical Family: Azeotropic hydrofluorocarbon (HFC) blend.
Packaged By: Micro Care Corp., 595 John Downey Drive, new Britain, CT, 06051, USA CAGE/FSCM: OATV9
Emergency Telephone: CHEMTREC (800) 424-9300

2. Composition/Information on Ingredients

Chemical Name	Wt.%Range	TLV Units
1,1,1,2,3,4,4,5,5,5-decafluoropentane CAS # 138495-42-8	5.0-25.0	See Section 8
Trans,1,2-dichloroethylene CAS #156-60-5	40.0-60.0	See Section 8
1,1,1,3,3,Pentafluorobutane CAS # 406-58-6	10.0-30.0	See Section 8
Ethyl Alcohol CAS #64-17-5	05.0-20.0	See Section 8
1,1,1,3,3,Pentafluoropropane CAS # 460-73-1	00.0-30.0	See Section 8

All components of this material are listed on the TSCA inventory.

3. Hazard Identification

Emergency Overview: Colorless liquid with a slight ethereal odor. This product is nonflammable. Liquid will irritate eyes and skin under repeated or prolonged exposure. Product vapors displace air and can cause asphyxiation especially in confined spaces.
Potential Health Effects:
Eyes: Moderate irritation. Persons wearing contact lenses should wear chemical protective safety glasses when exposed to this product.
Skin: For repeated contact: dry/chapped skin, risk of chronic dermatitis.
Ingestion: Harmful if swallowed. Irritates the mouth, throat and stomach.
Inhalation: Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning.
Medical Conditions Aggravated by Exposure: Preexisting disease of the heart, lungs, skin and eyes.

4. First Aid Measures

Eyes: Immediately flush with water. Remove any contact lenses and continue flushing for 15 minutes, lifting eyelids occasionally until no evidence of the chemical remains. If irritation develops or persists call a physician.
Skin: Wash promptly with soap and water. Remove contaminated clothing and shoes and replace with clean clothing.
Ingestion: DO NOT induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.
Inhalation: Remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

5. Firefighting Measures

Flash Point: Not flammable per Tag Closed Cup (ASTM D 56) and Pensky-Martins Closed Cup (ASTM D 93).
Flammable Limits in Air: LEL/UEL: 4.3 - 13.5 (% by volume)
Extinguishing Media: CO_2, dry chemical, water spray, water fog
Special Firefighting Procedures: Evacuate personnel. Wear self contained breathing apparatus (SCBA) and full protective equipment. Containers generate pressure when heated causing violent bursting and dangerous propelling of container. May form toxic decomposition products above 480º F/ 250º C.
Spill or Leak: Evacuate area, absorb spilled liquid with commercial, nonflammable absorbent i.e. sand, vermiculite. Remove unprotected personnel. Protected personnel should remove ignition sources and shut off fire sources. Provide ventilation. Shovel (spark proof) absorbent material into drums and close. Do not flush to sewer.

7. Handling and Storage

Avoid breathing vapors or mist. Use only with adequate ventilation. Avoid repeated or prolonged contact with eyes, skin or clothing. Wash thoroughly after handling. Do not store in direct sunlight. Store in cool dry place, away from heat, sparks or flames which may generate toxic decomposition products. Vapors are heavy and may concentrate in low poorly ventilated areas. Keep away from children.

8. Exposure Controls/Personal Protection

Respiratory Protection: Use only with adequate ventilation. Keep container tightly closed. Use approved NIOSH self-contained or supplied air respirators for emergencies and in situations where air may be displaced by vapors.
Eye Protection: Use chemical protective safety glasses.
Protective Clothing: Where there is potential for skin contact, use appropriate impervious gloves, apron, pants and jacket.
Exposure Guidelines: Applicable Exposure Limits.

1,1,1,2,3,4,4,5,5,5-decafluoropentane:

PEL (OSHA)	None Established
AEL (DuPont)	200 ppm, 8 & 12 hr. TLV 400 ppm ceiling
TLV (ACGIH)	None Established

Trans,1,2-dichloroethylene:

PEL (OSHA)	200 ppm, 790 mg/m3, 8 hour TWA
TLV (ACGIH)	200 ppm STEL, 8 hour TWA
AEL (DuPont)	200 ppm, 8 & 12 hour TWA

1,1,1,3,3,Pentafluorobutane:

PEL (OSHA)	None Established
TLV (ACGIH)	None Established

Ethanol:

PEL (OSHA)	1,000 ppm
TLV (ACGIH)	1,000 ppm

1,1,1,3,3,Pentafluoropropane:

PEL (OSHA)	None Established
PEL (Honeywell)	300 ppm TWA
TLV (ACGIH)	None Established

NFPA, NPCA-HIMIS RATING:

Health	1
Flammability	0
Reactivity	1

Personal Protection rating to be supplied by user depending on use conditions.

9. Physical and Chemical Properties

Physical Form: Clear colorless liquid
Odor: Slight Ethereal
Boiling Point: 41º C / 106º F estimated
Solubility in Water: 0.4%
% Volatile by Weight: 100
Vapor Pressure: >5.5 psia at 20º C /77º F
Vapor Density (air=1): estimated 3.4
Evaporation Rate (Ether = 1): >1

10. Reactivity

Chemical Stability: Material is stable.
Hazardous Polymerization: Will not occur.
Incompatibilities: Alkali or alkaline earth metals powdered Al, Zn, Be, Na, Mg, etc. Incompatible w/strong bases such as NaOH, KOH, etc.
Decomposition Products: Decomposes with heat. High temperatures (open flame, glowing metal surfaces, etc.) can decompose forming hydrofluoric acid and possibly carbonyl fluoride. This material is incompatible with strong bases and can react to form salts of hydrofluoric acid and unsaturated compounds of unknown toxicity.

11. Toxicological Information

Toxicity information for the individual components of this product are listed below.

This material is currently undergoing chronic toxicity testing.

1,1,1,2,3,4,4,5,5,5-decafluoropentane: Oral LD50>5,000 mg/kg in rats. Dermal ALD > 5,000 mg/kg in rabbits. Inhalation, 4 hour LC50: 11,100 ppm in rats. Animal testing indicates that 1,1,1,2,3,4,4,5,5,5-decafluoropentane is a slight skin irritant and a mild eye irritant, but is not a skin sensitizer. Single exposure to 5,000 ppm by inhalation caused tremors. No cardiac sensitization was observed. A different single exposure study by inhalation in rats caused incoordination, hyperactivity and prostration; pathological examination of rats from this study revealed kidney and lung changes and external hair loss. Repeated exposures to 1,900-3,500 ppm caused tremors or convulsions, behavioral effects, and altered clinical chemistry. These effects were temporary. In a different repeated exposure test the No Observed Adverse Effect Level (NOAEL) for convulsions was 1,000 ppm. Results indicate convulsions is an acute effect of 1,1,1,2,3,4,4,-5,5,5-decafluoropentane. The 90 day NOAEL is 500 ppm. In animal testing this material produced developmental effects only at exposure levels producing other toxic effect in the adult animal. No animal data are available to define the carcinogenic or reproductive hazards of this material. Tests have shown that 1,1,1,2,3,4,4,5,5,5-decafluoropentane does not cause genetic damage in bacterial mammalian cell cultures. It has not produced genetic damage in tests on animals.

Trans,1,2-dichloroethylene (t-DCE): A severe eye irritant and a moderate to severe skin irritant. Single and repeated exposure by ingestion caused increased kidney weight, histopathological changes of the lungs, liver effects, decreased motor activity, pulmonary edema, cardiovascular system changes, and mortality. Single and repeated exposure to t-DCE by inhalation caused pathological changes of the liver and lungs, inactivity/anaesthesia, altered white blood cell count, cardiovascular system changes and weak cardiac sensitization, a potentially fatal disturbance of the heart rhythm caused by heightened sensitivity to the action of epinephrine. Long term exposure caused altered liverand lung function. A Dec. 1998 inhalation study conducted with 99.45 pure t-DCE produced no adverse, compound related effects. The NOEL was 4,000ppm. Exposure of pregnant rats shows maternal toxicity at 2,000, 6,000 & 12,000ppm. Developmental toxicity was seen only at 12,000 ppm. Tests have shown that T-DCE does not cause genetic damage in bacterial or mammalian cell cultures. No animal data are available to define the carcinogenic or reproductive hazards of t-DCE.

1,1,1,3,3,Pentafluorobutane: No Federal OSHA PEL (29 CFR 1919.1000) or ACGIH TLV values are established for this chemical. The manufacturer of this material (Solvay) has established an AEL as an 8 hour & 12 hour TWA of 500 ppm. Where governmentally imposed occupational exposure limits which are lower than the above AEL are in effect, such limits shall take precedence.

1,1,1,3,3,Pentafluoropropane: No Federal OSHA PEL (29 CFR 1919.1000) or ACGIH TLV values are established for this chemical. The manufacturer of this material (Honeywell) has established a PEL as an 8 hour TWA of 300 ppm. Where governmentally imposed occupational exposure limits which are lower than the above PEL are in effect, such limits shall take precedence.

Carcinogenicity: None of the components present in this material are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

12. Ecological Information

Aquatic Toxicity:

1,1,1,2,3,4,4,5,5,5-decafluoropentane:

96 hour LC50 in fathead minnows:	27.2 mg/L
96 hr LC50 in rainbow trout:	13.9 mg/L
48 hour LC50 in Daphnia magna:	11.7 mg/L

1,1,1,3,3-Pentafluorobutane:

96 hour LC50 in Zebra fish :	>200 mg/L
48 hour NOEC in Daphnia magna:	>200 mg/L
72 hour NOEC in Algae:	113 mg/L

Trans,1,2-dichloroethylene:

96 hour LC 50 in bluegill sunfish:	1350 mg/L
48 hour LC50 in Daphnia magna:	220 mg/L

1,1,1,3,3-Pentafluoropropane:

48 hour NOEC in Daphnia magna:	>97.9 mg/L

13. Disposal Considerations

Waste Disposal: Reclaim by distillation or remove to a permitted waste disposal facility. Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations.

14. Transportation Information

Ground Transport: Not Hazardous, Not Regulated
Air Transport: Not Hazardous, Not Regulated

15. Regulatory Information

Section 313 Supplier Information: This material contains the following toxic chemicals subject to the emergency reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40 CFR 372:

CAS#	Chemical Name	% by Weight
	None	

This information must be included in all MSDSs that are copied and distributed for this material.

Title III Hazard Communications Sections 311, 312

Acute	Yes
Chronic	No
Fire	No
Reactivity	No
Pressure	No

Lists:

SARA Extremely Hazardous Substance	No
CERCLA Hazardous Substance	No
SARA Toxic Chemicals	No

16. Other Information

For additional information, contact Tech Support at Micro Care: Telephone (860) 827-0626 or email: techsupport@microcare.com