1. Chemical Product & Company Identification

**Product Name:** Fiber Connector Cleaner; Optical Quality Cleaning Fluid. Part #FCC2. NSN: 6850-01-535-6196.

**Formula:** CF3CHFCFCF3/CH3CF2CH2CF3/MeOH

**Chemical Family:** A ternary azeotrope-like blend of hydrofluoro-carbons (HFCs) and alcohol.

**Packaged By:** Micro Care Corp., 595 John Downey Dr., New Britain, CT, 06051, USA CAGE/FSCM: OAVT9

**Emergency Telephone:** CHEMTREC (800) 424-9300

2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Wt. % Range</th>
<th>TLV Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,3,3-Pentafluorobutane</td>
<td>48.0</td>
<td>See Section 8</td>
</tr>
<tr>
<td>CAS # 406-58-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,1,1,2,3,4,4,5,5-decafluoropentane</td>
<td>48.0</td>
<td>See Section 8</td>
</tr>
<tr>
<td>CAS # 138495-42-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>04.0</td>
<td>See Section 8</td>
</tr>
<tr>
<td>CAS # 67-56-1</td>
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<td></td>
</tr>
</tbody>
</table>

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 not flammable. 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 and chapped skin, risk of chronic dermatitis.
- **Ingestion:** Harmful if swallowed. Irritating to 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.

5. Firefighting Measures

**Flash Point:** None; TCC/TOC

**Flammable Limits in Air:** LEL/UEL: 7.5-9.0 (% by volume)

**Extinguishing Media:** CO2, dry chemical, water spray, water fog

**Special Firefighting Procedures:** Evacuate personnel. Wear self contained breathing apparatus (SCBA) and full protective equipment. Decomposition may occur. Drums may rupture under fire conditions.

6. Accidental Release Measures

**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.

- **1,1,1,3,3-Pentafluorobutane:**
  - AEL(Solvay): 500 ppm, 8 & 12 hr. TWA
  - PEL (OSHA): None Established
  - TLV (ACGIH): None Established

- **1,1,1,2,3,4,4,5,5-decafluoropentane:**
  - AEL(DuPont): 200 ppm, 8 & 12 hr. TLV 400 ppm, ceiling
  - PEL (OSHA): None Established
  - TLV (ACGIH): None Established

- **Methanol:**
  - AEL(OSHA): 200 ppm (260 mg/m3)
  - STEL (OSHA): 200 ppm (310 mg/m3)
  - TLV (ACGIH): 200 ppm TWA
MicroCare MSDS: Fiber Connector Cleaner; Optical Quality Cleaning Fluid (MCC-FCC2, MCC-FCC03M)

NFPA, NPCA-HMIS RATING:

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

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: 45°C / 113°F

Freezing Point: -50°C / -58°F

pH: Neutral

Solubility in Water: Slightly Soluble

Specific Gravity: 1.34

% Volatile by Weight: 100

Vapor Pressure: 310 mmHg @ 20°C/77°C

Vapor Density (air=1): 4

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 with 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

1,1,1,2,3,4,4,5,5,5-decafluoropentane: 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 (Acceptable Exposure Limit) as an 8 hour and 12 hour Time Weighted Average (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.

Oral LD50>5,000 mg/kg in rats. Dermal ALD > 2,000 mg/kg in rats. Inhalation, 4 hour LC50, rat: 301 mg/liter. Animal testing indicates that 1,1,1,2,3,4,4,5,5,5-decafluoropentane is not a skin irritant for rabbits. It is not an eye irritant for rabbits or rabbits. It is not an irritant of the respiratory tract for rabbits. No sensitization was observed in Guinea Pigs.

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:

- Methanol: 67-56-1

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

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 in fish (B. rerio): >200 mg/L
48 hour NOEC in Daphnia magna: >200 mg/L
72 hour NOEC in Algae: 113 mg/L

13. Disposal Considerations

Waste Disposal: Reclay 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

Not Regulated as hazardous material by DOT, IMO, or IATA.

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:

- Methanol: 67-56-1

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

VOC Content: 43 grams per liter. For additional information, contact Tech Support at Micro Care: Telephone (860) 827-0626 or email: techsupport@microcare.com