



## 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

**Name:** MS-772  
Vertrel MCA Plus  
Heavy Duty Solvent & Flux Remover

**Product Use:** Cleaning Solvent & Flux Remover  
for electronic assemblies.

### **MANUFACTURER/DISTRIBUTOR:**

Miller-Stephenson Chemical  
55 Backus Ave  
Danbury, Conn. 06810 USA  
(203) 743-4447

**Emergency Phone Number:**  
(800) 424-9300

## 2. HAZARDS IDENTIFICATION

### **Hazard classification**

Serious Eye Damage/Irritation: Category 2B.  
Specific Target Organ Toxicity (single exposure): Category 3.

### **Label elements:**

#### **Signal word**

Warning

#### **Pictogram**



### **Hazard Statements**

Causes eye irritation.  
May cause drowsiness or dizziness.

### **Prevention Statements**

Avoid breathing dust/fume/gas/mist/vapors/spray.  
Wash skin thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Call a POISON CENTER or doctor/ physician if you feel unwell  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/ attention.  
Store in a well-ventilated place. Keep container tightly closed.  
Dispose of contents/ container to an approved waste disposal plant.

#### **Other Hazards**

In use, may form flammable/explosive vapor-air mixture. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the product may cause frostbite. Misuse or intentional inhalation abuse may lead to death without warning symptoms, due to cardiac effects.

### **3. INGREDIENTS**

<b><u>Material (s)</u></b>	<b><u>CAS No.</u></b>	<b><u>Approximate %</u></b>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	40 - 55
Trans,1,2-Dichloroethylene	156-60-5	30 - 50
Cyclopentane	287-92-3	1 - 5
n-Pentane	109-66-0	< 1

### **4. FIRST AID MEASURES**

**Inhalation:** If inhaled, remove to fresh air. Get medical attention if symptoms occur.

**Eye:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

**Skin:** Flush skin with plenty of water after contact. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Get medical attention.

**Oral:** If swallowed, do not induce vomiting. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Get medical attention.

**Most important symptoms/effects, acute and delayed:** May cause cardiac arrhythmia.

Skin contact may provoke the following symptoms: Dermatitis, Discomfort, Pain, Redness, Rash, Itching, Swelling of tissue, Eye damage

Eye contact may provoke the following symptoms: Irritation, Pain, Tearing, Swelling of tissue, Redness, Impairment of vision, Discomfort

Inhalation may provoke the following symptoms: Eye damage

Effects of breathing high concentrations of vapor may include: Tiredness, Drowsiness, Central nervous system effects, Convulsions

Adverse effects from repeated inhalation may include central nervous system effects

Ingestion may provoke the following symptoms: Lack of coordination, Narcosis, Eye damage

Aspiration may cause pulmonary edema and pneumonitis.

Causes eye irritation.

May cause drowsiness or dizziness.

**Notes to Physician:** Treat symptomatically and supportively.

## 5. FIRE FIGHTING MEASURES

**Flammability:** This product is not flammable. Does not flash. Method: ASTM D 93

**Suitable Extinguishing Media:** Water spray, Alcohol-resistant foam, Dry chemical, Carbon dioxide (CO<sub>2</sub>)

**Unsuitable extinguishing media:** None known.

**Special hazards:** Vapors may form explosive mixture with air. Exposure to combustion products may be hazardous to health.  
Hazardous combustion products: Hydrogen fluoride, Carbonyl fluoride, Carbon oxides, Chlorine compounds.

**Special Fire Fighting Instruction:** In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

**Further information:** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate personnel to safe areas. Cool containers with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

## 6. ACCIDENTAL RELEASE MEASURES

**Safeguards (Personnel):** Evacuate personnel to safe area. Ventilate area, especially low or enclosed places where heavy vapors might collect. In case of insufficient ventilation, wear suitable respiratory equipment.

**Environmental precautions:** Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

**Spill Cleanup:** Contain spillage, and then collect with inert absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

## 7. HANDLING AND STORAGE

**Handling:** Use in a well-ventilated area to avoid breathing vapors. Vapors are heavier than air and accumulate in low areas. Use only with adequate ventilation. Where ventilation is inadequate, use appropriate respiratory protection. Avoid contact with skin eyes, or clothing. Wash thoroughly after handling.

**Storage Conditions:** Store in a well-ventilated place and keep container tightly closed. Do not allow stored product to exceed 52°C (125°F) to prevent leakage or potential rupture of container from pressure and expansion. Avoid storage with strong oxidizing agents.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Exposure Limits:</u>	<u>TLV (ACGIH)</u>	<u>PEL (OSHA)</u>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	Not Established	Not Established
Trans,1,2-Dichloroethylene	200 ppm, TWA	200 ppm, 8 Hr. TWA
Cyclopentane	600 ppm, TWA	600 ppm, 8 Hr. TWA
n-Pentane	1000 ppm, TWA	1000 ppm, TWA

**Respiratory Protection:** Avoid breathing vapors, mists or spray. Use with mechanical ventilation in enclosed or low places. Local exhaust should be used when a large amount is released. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Where concentrations are above the recommended limits or are unknown, appropriate respiratory protection should be worn. Use NIOSH/MSHA approved respirator.

**Eye Protection:** Avoid eye contact. Use chemical goggles or safety glasses with side shields.

**Skin Protection:** Avoid contact with skin. Use gloves impervious should be used when handling liquid.

**Hygiene measures:** Do not eat, drink or smoke when using this product. Do not breathe vapors or spray mist. Avoid contact with skin, eyes, or clothing. Wash exposed areas thoroughly with soap and water.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Boiling Point:** 100°F/38°C

**Percent Volatile by Volume:** 100

**Density:** 1.33 g/cc @ 77°F/25°C

**Vapor Pressure:** 460 mmHg @ 77°F/25°C

**Vapor Density (Air=1):** 4.7

**Solubility in H<sub>2</sub>O:** Slightly soluble

**pH Information:** Neutral

**Evaporation Rate (CC14=1):** N.A.

**Form:** Liquid

**Appearance:** Clear & Colorless

**Color:** Colorless

**Odor:** Ether-like

## 10. STABILITY AND REACTIVITY

**Reactivity:** Not classified as a reactivity hazard.

**Chemical stability:** Stable under normal conditions.

**Possibility of hazardous reactions:** Vapors may form explosive mixture with air. Can react with strong oxidizing agents. In use may form flammable /explosive vapor-air mixture.

**Material and Conditions to Avoid:** Strong oxidizing agents.

**Decomposition:** No hazardous decomposition products are known.

## 11. TOXICOLOGICAL INFORMATION

### 1,1,1,2,2,3,4,5,5,5-Decafluoropentane

**Information on likely routes of exposure:** Inhalation, Skin contact, Ingestion, Eye contact

**Acute Toxicity:** Not classified based on available information.

**Skin Corrosion/Irritation:** Not classified based on available information.

**Serious Eye Irritation/ Eye Irritation:** Not classified based on available information.

**Skin Sensitization:** Not classified based on available information.

**Respiratory Sensitization:** Not classified based on available information

**Germ Cell Mutagenicity:** Not classified based on available information.

**Carcinogenicity:** Not classified based on available information.

**Reproductive toxicity:** Not classified based on available information.

**STOT-single exposure:** Not classified based on available information.

**STOT-repeated exposure:** Not classified based on available information.

**Aspiration toxicity:** Not classified based on available information.

### Trans-1,2-Dichloroethylene

**Acute Oral:** LD50: 7902 mg/kg in rats

**Acute Dermal:** LD50: > 5,000 mg/kg in rabbits

**Acute Inhalation:** 4 hour LC50: 95.4 mg/l in rats. Test atmosphere: vapor. Method: OECD Test Guideline 403

**Skin Corrosion/Irritation:** Mild skin irritation in rabbits

**Serious Eye Irritation/ Eye Irritation:** Mild eye irritation in rabbits. Reversing within 7 days.

**Skin Sensitization:** No data available

**Respiratory Sensitization:** No data available

**Germ Cell Mutagenicity:** Evidence does not support classification of a germ cell mutagen.

**Carcinogenicity:** Not classified based on available information.

**Reproductive toxicity:** Not classified based on available information.

**STOT-single exposure:** May cause drowsiness and dizziness.

**STOT-repeated exposure:** No significant health effects observed in animals at concentrations of 250 ppmV/6h/d or less.

**Aspiration toxicity:** Not classified based on available information.

### Cyclopentane

**Acute Oral:** LD50: > 5,000mg/kg, Rat

**Acute Inhalation:** 4 hour LC50: 25.3 mg/l, Rat

**Skin Corrosion/Irritation:** No skin irritation in rabbits. Repeated exposure may cause skin dryness or cracking.

**Serious Eye Irritation/ Eye Irritation:** No eye irritation in rabbits.

**Skin sensitization:** Does not cause skin sensitization., Guinea pig

**Respiratory Sensitization:** Not classified based on available information.

**Germ Cell Mutagenicity:** Not classified based on available information.

**Carcinogenicity:** Not classified based on available information.

**Reproductive toxicity:** Not classified based on available information.

**STOT-single exposure:** May cause drowsiness or dizziness.

**STOT-repeated exposure:** Not classified based on available information.

**Aspiration toxicity:** Not classified based on available information.

## 12. ECOLOGICAL INFORMATION

### **1,1,1,2,2,3,4,5,5-Decafluoropentane:**

**Ecotoxicity:** No data available

**Persistence and degradability:** No data available

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**Other adverse effects**

**Results of PBT and vPvB assessment:** This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

### **Trans-1,2-Dichloroethylene**

96 hour LC50 in *Lepomis macrochirus* (Bluegill sunfish): 135 mg/l

48 hour EC50 in *Daphnia magna* (Water flea): 220 mg/l

72 hour EC50 in *Pseudokirchneriella subcapitata* (Green algae): 36.36 mg/l

**Biodegradability:** Not readily biodegradable. Method: OECD Test Guideline 301D

### **Cyclopentane:**

48 hour EC50 in *Daphnia magna* (Water flea): 51.15 mg/l

96 hour LC50 in *Oncorhynchus mykiss* (rainbow trout): 29.3 mg/l

72 hour EC50 in *Scenedesmus capricornutum* (fresh water algae): 10.7 mg/l

## 13. DISPOSAL CONSIDERATIONS

If recycling is not practicable, dispose of in compliance with local regulations. Remove to a permitted waste disposal facility.

## 14. TRANSPORT INFORMATION

### **U.S. DOT**

Not Regulated

### **IATA**

Not Regulated

### **IMDG**

Not Regulated

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations**

**TSCA:** All ingredients are listed in TSCA inventory.

1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE (CAS# 138495-42-8) is controlled by TSCA Section 5, Significant New Use Rule (SNUR; 40 CFR 721.5645) The approved uses are: precision and general cleaning, carrier fluid, displacement drying, printed circuit board cleaning, particulate removal, film cleaning, process medium, heat transfer fluid (dielectric and non-dielectric), and test fluid. Processors and users of this substance must also comply with the applicable general SNUR requirements set forth in 40 CFR 721 subpart A, including export notification requirements if applicable (40 CFR 721.20), and the applicable record keeping requirements set forth at 40 CFR 721.125.

## **16. OTHER INFORMATION**

### **NPCA-HMIS Ratings:**

Health	- 1
Flammability	- 0
Reactivity	- 0

Personal Protective rating to be supplied by user depending on the conditions.

### **FOR INDUSTRIAL USE ONLY**

### **REVISION DATE: MARCH 2018**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user.