



## 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

**Name:** MS-797  
Vertrel XMS Plus  
Heavy Duty Solvent & Flux Remover  
DPMS V0201B

**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 2  
Specific Target Organ Toxicity (single exposure): Category 3

### Label elements:

#### Signal word

Warning

### Pictograms



### Hazard Statements

Causes eye irritation.  
May cause drowsiness or dizziness.  
May cause damage to organs (Central nervous system, Eyes)

### Precautionary Statements

Do not breathe dust/fume/gas/mist/vapors/spray.  
Wash skin thoroughly after handling.

Do not eat, drink, or smoke when using this product.

Use only outdoors or in a well-ventilated area.

IF INHALED: Remove victim to fresh air and keep comfortable for breathing. Call POISON CENTER/doctor 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 exposed or concerned: Call a POISON CENTER or doctor/ physician.

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**

Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Misuse or intentional inhalation abuse may lead to death without warning, due to cardiac effects. Rapid evaporation of the product may cause frostbite.

### **3. INGREDIENTS**

<u>Material (s)</u>	<u>CAS No.</u>	<u>Approximate %</u>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	49 - 52
Trans,1,2-Dichloroethylene	156-60-5	42 - 44
Methanol	67-56-1	3 - 5
Cyclopentane	287-92-3	1 - 3

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

**Inhalation:** Remove patient to fresh air. Get medical attention.

**Eye:** Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Continue to rinse. Get medical attention.

**Skin:** Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before use. Thoroughly clean shoes before reuse. Get medical attention.

**Oral:** DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.

**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. May cause damage to organs.

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

## 5. FIRE FIGHTING MEASURES

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

**Upper Explosion limit, % by Vol.:** 15.0% (ASTM E681)      **Lower Explosion limit, % by Vol.:** 4.0% (ASTM E681)

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

**Unsuitable extinguishing media:** None known.

**Specific hazards during fire-fighting:** 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.

**Specific extinguishing methods:** 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. Evacuate area.

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

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures:** Evacuate personnel to safe area. Ventilate area. Follow safe handling advice and use personal protective equipment recommendations.

**Environmental precautions:** If containers rupture, prevent material from entering sewers, waterways, or low areas. Should not be released into the environment. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillage 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. Use only in an area with explosion-proof exhaust ventilation if advised by assessment of local exposure potential. Take precautionary measures against static discharges. When using do not eat, drink, or smoke. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling.

**Storage Conditions:** Store tightly sealed in a clean, cool, well-ventilated place. Keep away from heat of ignition sources. Do not store in temperatures that exceed 125°F/52°C, because the containers could leak or rupture from pressure and expansion.

## 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
Methanol	200 ppm, TWA	200 ppm, 8 Hr. TWA
Cyclopentane	600 ppm, TWA	600 ppm, 8 Hr. TWA

**Respiratory Protection:** General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

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

**Skin Protection:** Avoid contact with skin. Use gloves impervious to this material when prolonged or frequently repeated contact occurs. For special applications, we recommend clarifying the resistance to chemicals to the protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change gloves often.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Boiling Point:** 100°F/38°C

**Percent Volatile by Volume:** 100

**Density:** 1.34 g/cc @ 77°F/25°C

**Vapor Pressure:** 477 mmHg @ 77°F/25°C

**Vapor Density (Air=1):** 4.3

**Solubility in H<sub>2</sub>O:** 15 g/l

**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 in the air.

**Material and Conditions to Avoid:** None known.

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

## 11. TOXICOLOGICAL 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:** Not classified based on available information.  
**Respiratory Sensitization:** Not classified based on available information.  
**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.

## **Methanol**

**Inhalation Acute toxicity:** 3mg/l, 4 hours, (estimated in unspecified animal species)  
**Dermal Acute toxicity:** 300 mg/kg, (estimated in humans)  
**Oral Acute Toxicity:** 300 mg/kg, (estimated in humans)  
**Skin Corrosion/Irritation:** No irritation, Rabbit  
**Serious Eye Irritation/ Eye Irritation:** No irritation, Rabbit  
**Skin sensitization:** Not classified based on available information.  
**Respiratory Sensitization:** Not classified based on available information.  
**Germ Cell Mutagenicity:** Genotoxicity in vivo and vitro tests were negative.  
**Carcinogenicity:** Not classified based on available information.  
**Reproductive Toxicity:** Not classified based on available information.  
**STOT-single exposure:** May cause damage to organs (Eyes, Central Nervous System)  
**STOT-repeated exposure:** NOEL (90 days, Inhalation) in rats: 1.06 mg/l  
**Aspiration toxicity:** Not classified based on available information.

## **Cyclopentane**

**Oral Acute Toxicity:** LD50: >5,000mg/kg, rat  
**Inhalation Acute toxicity:** 4 hour LC50: 25.3 mg/l in rats. Test atmosphere: vapor. Method: OECD Test Guideline 403  
**Skin Corrosion/Irritation:** No irritation, Rabbit  
**Serious Eye Irritation/ Eye Irritation:** No irritation, Rabbit  
**Skin sensitization:** Not classified based on available information (Skin contact, Guinea pig, negative)  
**Respiratory Sensitization:** Not classified based on available information.  
**Germ Cell Mutagenicity:** Genotoxicity in vivo and vitro tests were negative.  
**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:** Substance or mixture is known to cause human aspiration toxicity hazards.

## **12. ECOLOGICAL INFORMATION**

### **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

**Bioaccumulative potential:** Partition coefficient: n-octanol/water: log Pow: 2.06

### **Methanol**

96 hour LC50 in *Lepomis macrochirus* (Bluegill sunfish): 15,400 mg/l

48 hour EC50 in *Daphnia magna* (Water flea): >10,000 mg/l

96 hour EC50 in *Pseudokirchneriella subcapitata* (Green algae): 22,000 mg/l

200 hour NOEC in *Oryzias latipes* (Orange-red killfish): 15,800 mg/l

**Biodegradability:** Readily biodegradable. 95% biodegradable in 20 days

**Bioaccumulative potential:** Partition coefficient: n-octanol/water: log Pow: -0.77

### **Cyclopentane**

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

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

72 hour EC50 in *Scenedesmus capricornutum* (fresh water algae): 10.7 mg/l (Based on data from similar materials)

72hour NOEC in *Scenedesmus capricornutum* (fresh water algae): 7.51 mg/l (Based on data from similar materials)

**Biodegradability:** Not readily biodegradable. 0% biodegradable in 28 days Method: OECD Test Guideline 301F

## **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) - The United States Environmental Protection Agency has established a Significant New Use Rule (SNUR; 40 CFR 721.5645) for this product. Also, this product requires an export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D.

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity:** This material does not contain any components with a section 302 EHS TPQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity:** This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards:** Serious eye damage or eye irritation. Specific target organ toxicity (single or repeated exposure).

**SARA 313 Regulated Chemicals:** Methanol

#### **State Regulations (U.S.)**

**California Proposition 65:** This product can expose you to chemicals known to the State of California to cause cancer and/or birth defects or other reproductive harm. (Nitromethane is known to the State of California to cause cancer, and Methanol is known to the State of California to cause birth defects or other reproductive harm).

## **16. OTHER INFORMATION**

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

Health - 3  
Flammability - 0  
Reactivity - 0

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

### **FOR INDUSTRIAL USE ONLY**

### **REVISION DATE: APRIL 2019**

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.