

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 (Eye, Central nervous system): 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

In use, may form flammable/explosive vapor-air mixture. 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	50 - 70
Trans,1,2-Dichloroethylene	156-60-5	30 - 50
Methanol	67-56-1	3 - 5
Cyclopentane	287-92-3	1 - 5

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: Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

5. FIRE FIGHTING MEASURES

Flammability: This product is not flammable. Does not flash. Method: 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, Alcohol-resistant foam, Dry chemical, Carbon dioxide (CO2)

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. Remove undamaged containers from fire area if it is safe to do so.

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. Keep away from heat and sources of ignition. 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. Do not store in temperatures that exceed 115°F/46°C, because the containers could leak or rupture from pressure and expansion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

1,1,1,2,2,3,4,5,5,5-Decafluoropentane
Trans,1,2-Dichloroethylene
Methanol
Cyclopentane

TLV (ACGIH)

Not Established
200 ppm, TWA
200 ppm, TWA
600 ppm, TWA

PEL (OSHA)

Not Established
200 ppm, TWA
200 ppm, TWA
600 ppm, 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 (eg. Viton) when prolonged or frequently repeated contact occurs. For special applications, we recommend clarifying the resistance to chemicals of 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 H₂O: 15 g/l

pH Information: No data available

Evaporation Rate (CC14=1): No data available.

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

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

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

Acute Oral: LD50: > 5000 mg/kg in rats. Method: OECD Test Guideline 401

Acute Inhalation (vapor): 4 hour LC50: 114.428 mg/l in rats. Method: OECD Test Guideline 403

Acute Dermal: LD50: > 5000 mg/kg in rabbits. Method: OECD Test Guideline 402

Skin Corrosion/Irritation: No skin irritation in rabbits. Method: OECD Test Guideline 404

Serious Eye Irritation/ Eye Irritation: No eye irritation in rabbits. Method: OECD Test Guideline 405

Skin Sensitization: No skin sensitization in Guinea pigs. Buehler Test. Method: OECD Test Guideline 406
Respiratory Sensitization: Not classified based on available information.
Germ Cell Mutagenicity: Weight of evidence does not support classification as a germ cell mutagen.
Carcinogenicity: Not classified based on available information.
Reproductive toxicity: Weight of evidence does not support classification for reproductive toxicity.
STOT-single exposure: Inhalation (vapor): No significant health effects observed in animals at concentrations of 20mg/l/4h or less.
STOT-repeated exposure: Inhalation (vapor): No significant health effects observed in animals at concentrations of 1mg/l/6h/d or less.
Aspiration toxicity: No aspiration toxicity classification.

Trans-1,2-Dichloroethylene

Acute Oral: LD50: 7902 mg/kg in rats. Method: OECD Test Guideline 420
Acute Dermal: LD50: > 5,000 mg/kg in rabbits. Method: OECD Test Guideline 402
Acute Inhalation: 4 hour LC50: 95.5 mg/l in rats. Test atmosphere: vapor. Method: OECD Test Guideline 403
Skin Corrosion/Irritation: Mild skin irritation in rabbits. Method: OECD Test Guideline 404
Serious Eye Irritation/Eye Irritation: Eye irritation in rabbits. Reversing within 7 days. Method: OECD Test Guideline 405
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: Test Type: Embryo-fetal development. Inhalation in rats. Negative. Method: OECD Test Guideline 414
STOT-single exposure: May cause drowsiness and dizziness.
STOT-repeated exposure: Inhalation: 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

Acute Inhalation toxicity: 3mg/l, 4 hours. Test atmosphere: vapor. Method: Expert judgment. Remarks: Based on national and regional regulations.
Acute Dermal toxicity: 300 mg/kg, (estimated in humans). Method: Expert judgment
Acute Oral Toxicity: 300 mg/kg, (estimated in humans). Method: Expert judgment
Skin Corrosion/Irritation: No irritation in rabbits.
Serious Eye Irritation/ Eye Irritation: No irritation in rabbits.
Skin sensitization: Test Type: Maximization Test. No skin sensitization in Guinea pigs. Based on data similar materials.
Respiratory Sensitization: Not classified based on available information.
Germ Cell Mutagenicity: Genotoxicity in vivo and vitro tests were negative.
Carcinogenicity: Negative in mice by inhalation for 18 months.
Reproductive Toxicity: Test Type: Embryo-fetal development. Positive in mice by ingestion. Remarks: The effects were seen only at maternally toxic doses.
STOT-single exposure: May cause damage to organs (Eyes, Central Nervous System)
STOT-repeated exposure: Not classified based on available information.
Aspiration toxicity: Not classified based on available information.

Cyclopentane

Acute Oral Toxicity: LD50: >5,000mg/kg, rat, Method: OECD Test Guideline 423
Acute Inhalation toxicity: 4 hour LC50: > 25.3 mg/l in rats. Test atmosphere: vapor. Method: OECD Test Guideline 403
Skin Corrosion/Irritation: No irritation in rabbits. Based on data from similar materials. Repeated exposure may cause skin dryness or cracking.

Serious Eye Irritation/ Eye Irritation: No irritation in rabbits. Method: OECD Test Guideline 405. Based on data from similar materials.

Skin sensitization: Test Type: Maximization Test. Negative in Guinea pigs. Based on data similar materials.

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: Test Type: Two-generation reproduction toxicity study. Negative in rats by inhalation. Remarks: Based on data from similar materials.

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 or must be regarded as if it causes a human aspiration toxicity hazard.

12. ECOLOGICAL INFORMATION

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

96 hour LC50 in Danio rerio (zebra fish): 13 mg/l. Method: OECD Test Guideline 203

48 hour EC50 in Daphnia magna (Water flea): 10.6 mg/l. Method: OECD Test Guideline 202

72 hour EC50 in Selenastrum capricornutum (Green algae): >120 mg/l. Method: OECD Test Guideline 201

21 days NOEC in Daphnia magna (Water flea): 1.72 mg/l. Method: OECD Test Guideline 211

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

Bioaccumulative potential: Bioaccumulation is unlikely. Partition coefficient: noctanol/water: log Pow: 2.4 (75 °F / 24 °C)

Mobility in soil: No data available

Trans-1,2-Dichloroethylene

96 hour LC50 in Lepomis marochirus (Bluegill sunfish): 135 mg/l. Based on data similar materials

48 hour EC50 in Daphnia magna (Water flea): 220 mg/l. Method: EPA-660/3-75-009

48 hour EbC50 in Pseudokirchneriella subcapitata (Green algae): 36.36 mg/l. Method: OECD Test Guideline 201

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

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

Mobility in soil: No data available

Methanol

96 hour LC50 in Lepomis marochirus (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. Method: OECD Test Guideline 201

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

Biodegradability: Readily biodegradable. 95% biodegradable in 20 days

Bioaccumulative potential: Species: Leuciscus idus (Golden orfe) BCF <10. Partition coefficient: n-octanol/water: log Pow: -0.77

Mobility in soil: No data available

Cyclopentane

96 hour LC50 in Oncorhynchus kisutch (coho salmon): > 100 mg/l

48 hour EL50 in Daphnia magna (Water flea): 10.5 mg/l

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

Bioaccumulative potential: Partition coefficient: n-octanol/water: log Pow: 3

Mobility in soil: No data available

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). For more information go to www.P65Warnings.ca.gov.

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: NOVEMBER 2022

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.