1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: MS-795
MS-795M
Vertrel XMS Plus
Heavy Duty Solvent & Flux Remover
DPMS V0201A

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 (Eye, Central nervous system)
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 pierce or burn, even after use.
Do not breathe 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 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 exposed or concerned: Call a POISON CENTER or doctor/ physician.
If eye irritation persists: Get medical advice/ attention.
Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
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. In use, may form flammable/explosive vapor-air mixture.

3. INGREDIENTS

Material (s)	CAS No.	Approximate %
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	40 - 58
Trans,1,2-Dichloroethylene	156-60-5	24 - 40
Methanol	67-56-1	2 - 4
Cyclopentane	287-92-3	0.5 - 4
1,1,1,2-Tetrafluoroethane	811-97-2	18 - 22

4. FIRST AID MEASURES

Inhalation: If inhaled, remove to fresh air. Get medical attention.

Eye: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.

Skin: Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Clean contaminated clothing and shoes 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.
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. **Test Method:** Ignition distance test and Enclosed space ignition test

Upper Explosion limit, % by Vol.: 15.0% **Lower Explosion limit, % by Vol.:** 4.0%

Suitable Extinguishing Media: Water spray, Alcohol-resistant foam, Dry chemical, Carbon dioxide (CO2)

Unsuitable extinguishing media: None known.

Specific 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 protective equipment for fire-fighters: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: 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. Use personal protective 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: Vapors are heavier than air and accumulate in low areas. Use only with adequate ventilation. Use only in an area equipped with explosion-proof exhaust ventilation, if advised by assessment of the local exposure potential. Take precautionary measures against static discharges. Keep away from heat and sources of ignition. Do not eat, drink, or smoke. Do not swallow. Avoid contact with skin, eyes, or clothing. Wash thoroughly after handling.

Storage Conditions: Store in a clean, dry, well-ventilated place. Do not store near sources of ignition, heat, in direct sunlight or where temperatures exceed 50°C/122°F. Take care to prevent spills, waste and minimize release to the environment.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:	TLV (ACGIH)	PEL (OSHA)
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	Not Established	Not Established
Trans,1,2-Dichloroethylene	200 ppm, TWA	200 ppm, TWA
Cylcopentane	1000 ppm, TWA	600 ppm, TWA
Methanol	200 ppm, TWA	200 ppm, TWA
1,1,1,2-Tetrafluoroethane	Not Established	Not Established

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.

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: N.A.

Density: 1.34 g/cc @ 77°F/25^{O}C

Vapor Density (Air=1): 4.3

pH Information: N.A.

Form: Aerosol

Color: Colorless

Percent Volatile by Volume: 100

Vapor Pressure: 477 mmHg @ 77°F/25^{O}C

Solubility in H_2O: 15 g/l

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

Appearance: Clear & 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. In use may form flammable /explosive vapor-air mixture.

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: LD50: > 5,000mg/kg, Rat. Method: OECD Test Guideline 423
Acute Inhalation: 4 hour LC50: > 25.3 mg/l, Rat**.** Test atmosphere: vapor. Method: OECD Test Guideline 403.
Skin Corrosion/Irritation: No skin irritation in rabbits. Repeated exposure may cause skin dryness or cracking. Based on data from similar materials.
Serious Eye Irritation/ Eye Irritation: No eye irritation in rabbits. Method: OECD Test Guideline 405. Based on data from similar materials.
Skin sensitization: Does not cause skin sensitization in Guinea pig. Test Type: Maximization Test. Based on data from similar materials.
Respiratory Sensitization: Not classified based on available information.
Germ Cell Mutagenicity: In vitro and In vivo – Not Mutagenic
Carcinogenicity: Not classified based on available information.
Reproductive toxicity: Effects on fertility: Negative in rats by inhalation. Test Type: Two-generation reproduction toxicity study. Based on data from similar materials. Effects on fetal development: Negative in rats by ingestion. Test Type: Embryo-fetal development. Method: OECD Test Guideline 414. Based on data from similar materials
STOT-single exposure: May cause drowsiness or dizziness.
Repeated Dose Toxicity: NOAEL: 30 mg/l, Rat, inhalation (vapor), 90 days. Method: OECD Test Guideline 413.
Aspiration toxicity: The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

12. ECOLOGICAL INFORMATION

1,1,1,2,2,3,4,5,5,5-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 form 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: OECF 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 EC50 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
Limited Quantity

IATA
Proper Shipping Name: Aerosols, Non-Flammable
Hazard Class: 2.2
Identification No. UN1950
Packing Group: None

IMDG
Proper Shipping Name: Aerosols, Non-Flammable
Hazard Class: 2.2
Identification No. UN1950
Packing Group: None

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.

CERCLA Reportable Quantity: Methanol, 67-56-1: Component RQ is 5000 lbs. Trans-Dichloroethylene, 156-60-5: Component RQ is 1000 lbs.

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

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

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

SARA 313: The following components are subject to reporting levels established by SARA Title III, Section 313: Methanol.

California Proposition 65: This product can expose you to chemicals which are known to the State of California to cause cancer and/or birth defects or other reproductive harm. For more information go to www.P65Warmings.ca.gov.

16. OTHER INFORMATION

FOR INDUSTRIAL USE ONLY

REVISION DATE: DECEMBER 14, 2023

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.