

## 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

**Name:** MS-560  
DPMS F0622A  
Heavy Duty Solvent & No Clean Flux Remover

**Product Use:** Cleaning Solvent & No Clean 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

Eye 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.

Causes damage to organs (Eye, Central Nervous System)

### **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.

Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

Dispose of contents/ container in accordance with local, regional, national, and international regulations.

### **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 symptoms, due to cardiac effects.

### **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	22 - 28
Trans,1,2-Dichloroethylene	156-60-5	42 - 48
Methanol	67-56-1	8 - 12
1,1,1,2-Tetrafluoroethane	811-97-2	18 - 22

### **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.                      **Test Method:** Ignition distance test and Enclosed space ignition test

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

**Unsuitable extinguishing media:** No applicable data available.

**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. 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.

**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 non-combustible 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 appropriate respiratory protection when ventilation is inadequate. When using do not eat, drink, or smoke. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling.

**Storage Conditions:** Store in a clean, dry area. Do not store sources of heat, in direct sunlight or where temperatures exceed 120F/49C.

## 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, 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 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.

**Prevention of Swallowing:** Do not eat or drink when using this product. Wash exposed areas thoroughly with soap and water.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Boiling Point:** N.A.

**Percent Volatile by Volume:** 100

**Density:** 1.25 g/cc @ 77°F/25°C

**Vapor Pressure:** N.A.

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

**Solubility in H<sub>2</sub>O:** N.A.

**pH Information:** Neutral

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

**Form:** Aerosol

**Appearance:** Clear

**Color:** Colorless

**Odor:** Ethereal

## 10. STABILITY AND REACTIVITY

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

**Chemical stability:** Stable at normal ambient conditions.

**Possibility of hazardous reactions:** Vapors may form flammable mixture in 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

**Acute Inhalation (vapor):** 4 hour LC50: 114 mg/l in rats

**Acute Dermal:** LD50: > 5000 mg/kg in rats

**Skin Corrosion/Irritation:** No skin irritation in rabbits.  
**Serious Eye Irritation/ Eye Irritation:** No eye irritation in rabbits.  
**Skin Sensitization:** No skin sensitization in Guinea pigs.  
**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 as a germ cell mutagen.  
**STOT-single exposure:** Not classified based on available information.  
**STOT-repeated exposure:** No significant health effects observed in animals at concentrations of 1mg/l/6h/d or less.  
**Aspiration toxicity:** Not classified based on available information.

### **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:** In vitro and In vivo – Not Mutagenic. Weight of evidence does not support classification as a germ cell mutagen.  
**Carcinogenicity:** Not classified based on available information.  
**Reproductive toxicity:** Embryo-fetal development: Negative in rat by inhalation. Method: OECD Test Guideline 414  
**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 by inhalation.  
**Aspiration toxicity:** Not classified based on available information.

### **Methanol**

**Inhalation Acute toxicity:** 3mg/l estimated, 4 hours (vapor). Method: Expert judgement. (Based on harmonized classification in EU regulation 1272/2008, Annex VI)  
**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:** Negative in Guinea pig (Maximization Test)  
**Respiratory Sensitization:** Not classified based on available information.  
**Germ Cell Mutagenicity:** Genotoxicity in vivo and vitro tests were negative.  
**Carcinogenicity:** Negative in Mouse, 18 months (inhalation-vapor).  
**Reproductive Toxicity:** Fertility/early embryonic development - Negative in Mouse (ingestion)  
Embryo-fetal development - Positive in Mouse (ingestion). The effects were seen only at maternally toxic doses.  
**STOT-single exposure:** May cause damage to organs (Eyes, Central Nervous System)  
**STOT-repeated exposure:** NOEL: 1.06 mg/l (90 days, Inhalation) in rats  
**Aspiration toxicity:** Not classified based on available information.

## 12. ECOLOGICAL INFORMATION

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

96 hour LC50 in Oncorhynchus mykiss (rainbow trout): 13.9 mg/l  
96 hour LC50 in Pimephales promelas (fathead minnow): 27.2 mg/l  
96 hour LC50 in Danio rerio (zebra fish): 13 mg/l  
48 hour LC50 in Daphnia magna (Water flea): 11.7 mg/l  
72 hour EC50 in Pseudokirchneriella subcapitata (Green algae): >120 mg/l  
21 days NOEC in Daphnia magna (Water flea): 1.72 mg/l

**Biodegradability:** Not readily biodegradable.

**Bioaccumulative potential:** Bioaccumulation is unlikely.

**Mobility in soil:** No data available

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

96 hour LC50 in Lepomis marochirus (Bluegill sunfish): 135 mg/l. Based on data from similar materials.  
48 hour EC50 in Daphnia magna (Water flea): 220 mg/l. Method: EPA-660/3-75-009  
72 hour EC50 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

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

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

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

## 13. DISPOSAL CONSIDERATIONS

Comply with federal, state and 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. This product contains one or more substances which requires export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D.

**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 RQ.

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

**SARA 313:** This material contains the following component that is subject to reporting levels established by SARA Title III, Section 313: Methanol, 67-56-1.

**California Proposition 65:** This product contains Methanol known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**16. OTHER INFORMATION**

**NPCA-HMIS Ratings:**

Health - 2

Flammability - 0

Reactivity - 0

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

**FOR INDUSTRIAL USE ONLY**

**REVISION DATE: MARCH 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.