



**1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION**

**Name: MS-143E-2.5**  
DPMS-C0906B-2.5  
PTFE Release Agent/Dry Lubricant

**Product Use:** Release Agent or Dry Lubricant

**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**

Harmful if inhaled (Inhaled dust or mist): Category 4  
Harmful to aquatic life with long lasting effects: Category 3.

**Label elements:**

**Signal word**  
Warning

**Pictograms**



**Hazard Statements**

Harmful if inhaled.  
Harmful to aquatic life with long lasting effects.

**Precautionary Statements**

Avoid breathing mist/vapors/spray.  
Use in a well-ventilated area or outdoors.  
Avoid release into the environment.

**Inhalation:** Remove person to fresh air and keep comfortable for breathing.  
Call a POISON CENTER or doctor/physician if you feel unwell.

### **Other Hazards**

The thermal decomposition vapors of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco. Repeated episodes of polymer fume fever may result in persistent lung effects. This material may make the heart more susceptible to arrhythmias. Catecholamines such as adrenaline and other compounds having similar effects, should be reserved for emergencies. Effects of breathing high concentrations of vapor may include: Tiredness or drowsiness. Convulsions. May cause cardiac arrhythmia. Prolonged skin contact may defat the skin and produce dermatitis.

### **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 (HFC-43-10mee)	138495-42-8	23 – 27
1,1,1,3,3-Pentafluorobutane (HFC-365mfc)	406-58-6	30 – 36
Trans,1.2-Dichloroethylene	156-60-5	30 – 34
Isopropyl Alcohol	67-63-0	7 – 9
Poly-TFE, Alpha-Hydro-Omega-(Methylcyclohexyl)	65530-85-0	1 – 2
Polytetrafluoroethylene	9002-84-0	< 1.0

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

**Inhalation:** Remove patient to fresh air. If not breathing, give artificial respiration. Give oxygen as necessary, if qualified personnel is available. Get medical attention if necessary.

**Eye:** Flush with large amounts of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if necessary.

**Skin:** Wash with water for at least 15 minutes. Remove contaminated clothing. Wash contaminated clothing before reuse. Get medical attention if necessary.

**Oral:** If swallowed, DO NOT induce vomiting unless directed to do so by a physician, because the hazard of aspirating the material into the lungs is considered greater than swallowing it. Never give anything to an unconscious person. Get medical attention.

### **5. FIRE FIGHTING MEASURES**

**Fire Hazard:** Not considered flammable but may burn at high temperatures.

**Fire and Explosion:** Containers may rupture under fire conditions. Decomposition may occur.

**Extinguishing Media:** Dry chemical powder, alcohol-resistant foam, carbon dioxide. Do not use a heavy stream of water may spread fire.

**Special Fire Fighting Instruction:** Use water spray to cool containers. Do not allow run-off from firefighting to enter drains and water sources. Do not breathe fumes or vapors from fire. Self-contained breathing apparatus (SCBA) maybe required if a large amount of material is spilled under fire conditions. Fight fire from a distance, heat may rupture containers.

## 6. ACCIDENTAL RELEASE MEASURES

Evacuate personnel, ventilate area with fresh air, if a large amount is accidental released, use self-contained breathing apparatus. Dike spill. Prevent material from entering sewers, waterways or low areas. Soak up with sand, oil dry or other noncombustible absorbent materials.

## 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. Use appropriate respiratory protection, when ventilation is inadequate. Avoid contact with skin or eyes. Wash thoroughly after handling. Poly-Tetrafluoroethylene should not be handled around tobacco products. The inhalation of vapors in the presence of tobacco products will cause polymer fume fever.

**Storage Conditions:** Store in a well-ventilated place and keep container tightly closed. Keep away from heat, sparks and flames. Do not allow stored product to exceed 52°C (125°F) to prevent leakage or potential rupture of container from pressure and expansion. Protect from freezing temperatures. If solvent is stored below -10°C (14°F), mix prior to use.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Exposure Limits:</u>	<u>TLV (ACGIH)</u>	<u>PEL (OSHA)</u>	<u>AEL (DuPont)</u>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	Not Established	Not Established	200 ppm, 8 & 12 Hr. TWA 400 ppm, Ceiling
1,1,1,3,3-Pentafluorobutane			1000 ppm, 8 & 12 Hr. TWA
Trans,1,2-Dichloroethylene	200 ppm, 8 Hr. TWA	200 ppm, 8 Hr. TWA	200 ppm, 8 & 12 Hr. TWA
Isopropyl Alcohol	400 ppm, TWA	400 ppm, 8 Hr. TWA	

\*Acceptable Exposure Limit per the manufacturer of the chemical. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

**Respiratory Protection:** Avoid breathing vapors, mists or spray. Use with sufficient ventilation especially for enclosed or low places. Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection. If necessary to keep exposure limits below permissible limits, use NIOSH approved respirators, such as an air-purifying respirator with organic cartridges. In poorly ventilated areas, use an approved self-contained breathing apparatus.

**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.

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

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

**Boiling Point:** 97°F/36°C

**Percent Volatile by Volume:** 97.5%

**Density:** 1.3 g/cc at 77°F/25°C

**Vapor Pressure:** 497 mm Hg at 77°F/25°C

**Vapor Density (Air=1):** N.A.

**Solubility in H<sub>2</sub>O :** Insoluble

**pH Information:** Neutral

**Evaporation Rate (CC14=1):** >1

**Form:** Liquid

**Appearance:** Milky

**Color:** White

**Odor:** Faint Ethereal Odor

## **10. STABILITY AND REACTIVITY**

**Stability:** Stable at normal temperatures and storage conditions.

**Material and Conditions to Avoid:** Strong alkali or alkaline earth metals. Finely powdered metals, powdered metal salts, Nitrogen oxides, acids, bases and strong oxidizing agents. Open flame.

**Decomposition:** This product can be decomposed by high temperatures (flame, glowing metal surfaces, etc.) forming Fluorinated hydrocarbons, Hydrogen fluoride, Carbon dioxide, Carbon monoxide, Hydrogen chloride gas, can other toxic fumes.

**Polymerization:** Will not occur.

## **11. TOXICOLOGICAL INFORMATION**

**Carcinogenicity:** None of the components in this product are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee)**

**Inhalation:** 4 hour LC50: 114mg/l in rats, Central nervous system effects, Convulsions

**Oral:** LD50: > 5,000 mg/kg in rats

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

**Skin Irritation:** No skin irritation, rabbit

**Eye Irritation:** No eye irritation, rabbit

**Skin Sensitization:** Did not cause sensitization on laboratory animals., guinea pig

**Repeated dose toxicity:** Inhalation, rat

No toxicologically significant effects were found.

**Reproductive toxicity:** Animal testing showed no reproductive toxicity.

**Teratogenicity:** Animal testing showed no developmental toxicity

#### **HFC-365mfc:**

**Inhalation:** 4 hour LC50: > 100,000 ppm in rats

**Oral:** LD50: > 2000 mg/kg in rats

**Skin irritation:** No irritation in rabbits

**Eye irritation:** No irritation in rabbits

**Sensitization:** Did not cause sensitization on laboratory animals, guinea pig

**Chronic toxicity:** Inhalation, after a single exposure, dog, NOEL: 75,100 ppm, cardiac sensitization following adrenergic stimulation.

**Reproductive toxicity:** Effects on fertility, 29,971 ppm, NOAEC; Developmental Toxicity, 29,971 ppm NOAEC

**Remarks:** Health injuries are not known or expected under normal use. In vitro tests did not show mutagenic effects.

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

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

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

**Inhalation:** 4 hour LC50: 96.4 mg/l in rats

**Target Organs:** Central nervous system, narcosis

**Inhalation Low Observed:** 250000 ppm in rats

**Adverse Effect Concentration:** Cardiac sensitization

**Skin irritation:** Skin irritation in rabbits

**Eye irritation:** Mild eye irritation in rabbits

**Repeated dose toxicity:** Inhalation, 90 days in rats: No toxicologically significant effects were found.

Oral, 90 days in rats: No toxicologically significant effects were found.

**Mutagenicity:** Did not cause genetic damage in animals.

Test on bacterial or mammalian cell cultures did not show mutagenic effects.

**Reproductive toxicity:** Animal testing showed no reproductive toxicity.

**Teratogenicity:** Animal testing showed no developmental toxicity

#### **Isopropyl Alcohol**

##### **Acute Toxicity**

**Ingestion:** LD50, Rat 4,700 - 5,800 mg/kg. Approximate. Lethal Dose, Human 100 ml

##### **Skin Absorption**

LD50, Rabbit 13,000 mg/kg

##### **Inhalation**

LC50, 8 h, Vapor, Rat, female 19,000 ppm

##### **Sensitization Skin**

Did not demonstrate the potential for contact allergy in mice.

##### **Repeated Dose Toxicity**

In animals, effects have been reported on the following organs: Liver. Kidney. Kidney effects have been observed in male rats. These effects are believed to be species specific and unlikely to occur in humans. Observations in animals include: Lethargy.

##### **Chronic Toxicity and Carcinogenicity Inhalation:**

Did not cause cancer in laboratory animals.

##### **Developmental Toxicity**

Isopropanol has been toxic to the fetus in laboratory animals at doses toxic to the mother.

### **Reproductive Toxicity**

In animal studies, did not interfere with reproduction.

### **Genetic Toxicology**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

### **Poly-TFE, Omega-Hydro-Alpha-(Methylcyclohexyl)-**

**Oral:** ADL/rat: >17,000 mg/kg

**Skin irritation:** No skin irritation, guinea pig

**Eye irritation:** No eye irritation, rabbit

**Skin sensitization:** Did not cause sensitization on laboratory animals., guinea pig

### **Poly-Tetrafluoroethylene**

**Oral:** LD50/rat: >11,280 mg/kg

**Skin irritation:** No skin irritation, guinea pig

**Eye irritation:** No eye irritation, rabbit

**Skin sensitization:** Did not cause sensitization on laboratory animals., guinea pig

**Repeated dose toxicity:** Oral, rat

No toxicologically significant effects were found.

## **12. ECOLOGICAL INFORMATION**

### **Aquatic Toxicity:**

#### **1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee):**

96 hour LC50 in fathead minnows: 27.2 mg/L

96 hour LC50 in rainbow trout: 13.9 mg/L

48 hour LC50 in Daphnia magna: 11.7 mg/L

72 hour EC50 in green algae: > 120mg/L

#### **HFC-365mfc:**

96 hour LC50 in Fish (B. rerio): >200 mg/L

48 hour EC50 in Daphnia magna: >200 mg/L

72 hour NOEC in Algae (S. capricornutum): 13.2 mg/L

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

96 hour LC50 in bluegill sunfish: 74 mg/l

48 hour LC50 in Daphnia magna: 79mg/l

96 hour EC50 in green algae: 798mg/l

### **Isopropyl Alcohol**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

#### **Fish Acute & Prolonged Toxicity**

LC50, fathead minnow (*Pimephales promelas*), flow-through, 96 h: 9,640 - 10,400 mg/l

#### **Aquatic Invertebrate Acute Toxicity**

EC50, water flea *Daphnia magna*, 48 h, immobilization: 7,550 - 13,299 mg/l

#### **Aquatic Plant Toxicity**

EC50, alga *Scenedesmus* sp., Growth rate inhibition, 72 h: > 1,000 mg/l

#### **Toxicity to Micro-organisms**

EC50; activated sludge, respiration inhibition: > 1,000 mg/l

### **13. DISPOSAL CONSIDERATIONS**

Comply with federal, state and 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.

#### **SARA/TITLE III HAZARD CATEGORIES:**

##### **Product Hazard Categories:**

Acute Health	- Yes
Chronic Health	- No
Fire Hazard	- No
Reactivity Hazard	- No
Pressure Hazard	- No

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 and 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 - 1  
Reactivity - 1

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

### **FOR INDUSTRIAL USE ONLY**

### **REVISION DATE: APRIL 2015**

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.