1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: MS-143E-10
DPMS-C0906B-10
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

Material (s)	CAS No.	Approximate %
1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee)	138495-42-8	14 – 18
1,1,1,3,3-Pentafluorobutane (HFC-365mfc)	406-58-6	20 – 24
Trans,1.2-Dichloroethylene	156-60-5	20 – 24
Isopropyl Alcohol	67-63-0	28 – 32
Poly-TFE, Alpha-Hydro-Omega-(Methylcyclohexyl)	65530-85-0	6 – 8
Polytetrafluoroethylene	9002-84-0	2 – 4

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

Exposure Limits:	TLV (ACGIH)	PEL (OSHA)	AEL (DuPont)
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: 96-98°F/35-37°C

Percent Volatile by Volume: 90%

Density: 1.1 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_2O : 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: JULY 2015