miller-stephenson

Material Safety Data Sheet

1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: MS-122XD
DPMS-Z0612A
PTFE Release Agent/Dry Lubricant

Product Use: Release Agent or Dry Lubricant

MANUFACTURER/DISTRIBUTOR:

Miller-Stephenson Chemical
George Washington Highway
Danbury, Conn. 06810 USA
(203) 743-4447

Date Revised: October 2011

Emergency Phone Number:
(800) 424-9300

2. INGREDIENTS

Material (s)	CAS No.	Approximate %
1,1,1,2-Tetrafluoroethane	811-97-2	80 - 90
2,3 Dihydroperfluoropentane (HFC-43-10mee)	138495-42-8	9 - 15
Poly-TFE, Omega-Hydro-Alpha-(Methylcyclohexyl)-	65530-85-0	1 - 2
Poly-Tetrafluoroethylene	9002-84-0	< 1

3. HAZARDS IDENTIFICATION

Milky, white, liquid with a faint ethereal odor, packaged in an aerosol container.

Potential Health Effects

1,1,1,2-Tetrafluoroethane

INHALATION: Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects. Other symptoms may include, anaethetic effects, light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting and weakness. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

SKIN: Contact with liquid or refrigerated gas can cause cold burns and frostbite. May cause skin irritation with discomfort, itching, redness or swelling.

EYE: Contact with liquid or refrigerated gas can cause cold burns and frostbite. May cause eye irritation with tearing, redness and discomfort.

2,3 Dihydroperfluoropentane (HFC-43-10mee)

INHALATION: Gross overexposure by inhalation may cause suffocation if air is displaced by vapors and central nervous system stimulation with increased activity or sleeplessness, tremors or convulsions. These effects may be followed by central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Based on data from other fluorocarbons, gross overexposure to HFC-43-10mee may cause irregular heart beat or heart rhythm, which may produce heart palpitation, dizziness, weakness, sometimes progressing to loss of consciousness and death. It is unlikely that concentrations sufficient to produce irregular heartbeat or heart rhythm would be achieved from HFC-43-10mee without first producing other signs of toxicity.

SKIN: Immediate effects of overexposure by skin contact may include slight irritation with itching, redness or swelling. Repeated and/or prolonged exposure may cause defatting of the skin with itching, redness or rash. Based on animal data, significant skin permeation, and systemic toxicity after skin contact, appears unlikely.

EYE: Immediate effects of overexposure by eye contact may include eye irritation with tearing, pain or blurred vision.

INGESTION: The major ingestion hazard is aspiration (liquid entering the lungs during ingestion or vomiting) which may result in "chemical pneumonia." Symptoms include coughing, gasping, choking, shortness of breath, bluish discoloration of the skin, rapid breathing and heart rate, and fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after exposure, depending on how much of the chemical entered the lungs. Increased susceptibility to the effects may be observed in persons with pre-existing disease of the central nervous system or the cardiovascular system.

Poly-Tetrafluoroethylene

Inhalation of PTFE dust may cause generalized irritation of the nose, throat, and lungs with cough, difficulty in breathing or shortness of breath. Inhalation of fluorine compounds released as decomposition products above 290°C (554°F) may cause lung irritation and pulmonary edema, which require medical treatment. Inhalation of fumes or smoke from overheated or burning Poly-TFE may cause polymer fume fever, a temporary flu-like illness accompanied by fever, chills, and sometimes cough, of approximately 24 hour in duration. Repeated episodes of polymer fume fever may cause lung damage.

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, lifting eyelids until no evidence of the chemical remains. Get medical attention if necessary.

Skin: Wash skin with water after contact. Wash contaminated clothing before use. Get medical attention if necessary.

Oral: If swallowed, do not induce vomiting, because the hazard of aspirating the material into the lungs is considered greater than swallowing it. Immediately give 2 glasses of water. Never give anything to an unconscious person. Call a physician.

If vomiting occurs naturally, have a victim lean forward to reduce the risk of aspiration.

Notes to Physician:

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 and then used only with special caution.

Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional toxic substances. Activated charcoal maybe given but should be used with caution since it may induce vomiting.

Activated charcoal mixture may be beneficial. Suspend 50 g activated charcoal in 400 mL water and mix well. Administer 5 mL/kg, or 350 mL for an average adult.

5. FIRE FIGHTING MEASURES

Flash Point: Non-flammable as described in 16CFR 1500.45.

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

Extinguishing Media: As appropriate for surrounding area.

Special Fire Fighting Instruction: Use water spray to cool containers. Self-contained breathing apparatus (SCBA) maybe required if a large amount of aerosols rupture under fire conditions. Fight fire from a distance, heat may rupture containers.

6. ACCIDENTAL RELEASE MEASURES

Ventilate area with fresh air, if a large amount is accidental released, use self-contained breathing apparatus. No need for additional release information, since it is an aerosol.

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. Where ventilation is inadequate, use appropriate respiratory protection. Avoid contact with skin or eyes. Wash thoroughly after handling. Polytetrafluoroethylene should not be handled around tobacco products because, smoking contaminated tobacco products may cause polymer fume fever.

Storage Conditions: Do not store near sources of heat, in direct sunlight or where temperatures exceed 120°F/49°C. Rotate stock to shelf life of one year.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:	TLV (ACGIH)	PEL (OSHA)	AEL*(DuPont)
1,1,1,2-Tetrafluoroethane	Not Established	Not Established	1000 ppm
2,3-Dihydrodecafluoropentane	Not Established	Not Established	200 ppm, 8 & 12 Hr. TWA 400 ppm, Ceiling
Poly-Tetrafluoroethylene	Not Established	Not Established	10 mg/m3, 8 Hr. TWA, total dust 5 mg/m3, 8 Hr. TWA, respirable dust

*AEL is DuPont's Acceptable Exposure Limit. 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 mechanical ventilation especially for enclosed or low places. Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. If necessary to keep exposure limits below permissible limits, use NIOSH approved respirators. 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: Not Applicable

Density: 1.2 g/cc at 77°F/25°C

Vapor Density (Air=1): >1

pH Information: Neutral

Form: Aerosol

Color: White

Percent Volatile by Volume: 99%

Vapor Pressure: 80 psig at 77°F/25°C

Solubility in H_2O : Insoluble

Evaporation Rate (CC14=1): >1

Appearance: Milky

Odor: Faint Ethereal Odor

10. STABILITY AND REACTIVITY

Stability: Stable at normal and storage conditions.

Material and Conditions to Avoid: Strong alkali or alkaline earth metals. Finely powdered metals such as Al, Be, Mg, Zn, Na, Mg, etc. Strong bases such as NaOH, KOH, etc.

Decomposition: This product can be decomposed by high temperatures (flame, glowing metal surfaces, etc.) forming hydrofluoric acid, possibly carbonyl fluoride, hazardous gases including carbon monoxide and carbon dioxide. Incompatible with strong bases and can react to form salts of hydrofluoric acid and unsaturated compounds of unknown toxicity.

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-Tetrafluoroethane

Animal Data:

Eye: A short duration spray of vapor produced very slight eye irritation.

Skin: Animal testing indicates this material is a slight skin irritant, but not a skin sensitizer.

Inhalation: 4 hour, LC50, rat: >359,300ppm

Inhalation: Cardiac sensitization, dog
No-observed-effect level: 50,000ppm.
Lowest – Observed –Adverse –Effect –Level for cardiac sensitization: 75,000ppm.
Repeated dose toxicity: rat NOEL – 40,000ppm
Carcinogenicity: Overall weight of evidence indicates that the substance is not carcinogenic. An increase incidence of benign tumors was observed in laboratory animals.
Mutagenicity: Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Reproductive toxicity: Animal testing showed no reproductive toxicity.
Teratogenicity: Animal testing show effects on embryo-fetal development at levels equal to or above those causing maternal toxictiy.

Further information: Cardiac sensitization threshold limit: 312,975 mg/m3. Anaesthetic effects threshold limit: 834,600 mg/m3 Did not show carcinogenic or teratogenic effects in animal experiments. Concentrations substantially above the TLV value may cause narcotic effects. Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema). Rapid evaporation of liquid may cause frostbite.

2,3-Dihydrodecafluoropentane (HFC-43-10mee)

Inhalation:
4 hour LC50: 11,100 ppm in rats
Oral:
LD50: > 5,000 mg/kg in rats
Dermal:
ALD: > 5,000 mg/kg in rabbits

Animal testing indicates that HFC-43-10mee is a slight skin irritant and a mild eye irritant, but is not a skin sensitizer. Single exposure to 5,000 ppm HFC-43-10mee by inhalation caused tremors. A different single exposure study by inhalation in rats caused incoordination, hyperactivity and prostration; pathological examination of rats from this study revealed kidney and lung changes, and external hair loss. Repeated exposures to 1,900 - 3,500 ppm caused tremors or convulsions, behavioral effects, and altered clinical chemistry. These effects were temporary. In a different repeated exposure test the No-Observed-Adverse-Effect-Level (NOAEL) for convulsions was 1000 ppm. Results indicate convulsions are an acute effect of HFC-43-10mee. The 90-day No-Observed-Adverse-Effect-Level (NOAEL) is 500 ppm. In animal testing HFC-43-10mee produced developmental effects only at exposure levels producing other toxic effects in the adult animal. No animal data are available to define the carcinogenic or reproductive hazards of HFC-43-10mee. Tests have shown that HFC-43-10mee does not cause genetic damage in bacterial or mammalian cell cultures. It has not produced genetic damage in tests on animals.

Poly-Tetrafluoroethylene

Animal testing indicates that PTFE is not a skin irritant. Repeated exposure to PTFE by ingestion caused no significant toxicological effects. Possible effects on white blood cell counts were found in rats fed 25% PTFE in the diet for 90 days, however any changes were within normal variability and were considered to be of no toxicological significance. In rats, single exposure to dusts of undegraded PTFE by inhalation caused irritation of the lungs. Exposure to thermal decomposition products of PTFE caused lung injury whose severity depends upon the temperature and exposure conditions. Birds appear to be especially susceptible to the toxic effects of fluoropolymer decomposition products. In rats, exposure to freshly formed low molecular weight polymer fragments (fume) produced by continuous heating of the polymer above 400°C may produce acute pulmonary inflammation. When the concentration of fluoropolymer fragment fumes increases, death may occur from pulmonary edema and hemorrhage. Exposure to fume aged for several minutes, markedly reduces the toxicity. At higher temperatures involving gross thermal decomposition of the polymer, deaths occurred due to pulmonary edema from lethal concentrations of fluoropolymer fume and/or fluorinated gas decomposition products.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:

2,3-Dihydrodecafluoropentane(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 (Water flea): 11.7 mg/L

1,1,1,2-Tetrafluoroethane:

48 hour EC50 – Daphnia magna (Water flea): 980 mg/L
96 hour LC50 – Rainbow trout: 450 mg/L

13. DISPOSAL CONSIDERATIONS

Comply with federal, state and local regulations. Remove to a permitted waste disposal facility. Do not puncture or incinerate cans. Empty aerosol cans before disposal.

14. TRANSPORT INFORMATION

U.S. DOT
Proper Shipping Name: Consumer Commodity
Hazard Class: ORM-D
Identification No. None
Packing Group: None

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

IMDG
Proper Shipping Name: Aerosol, 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.

SARA/TITLE III HAZARD CATEGORIES:
Product Hazard Categories:

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

2,3-Dihydrodecafluoropentane (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	- 0
Reactivity	- 0

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

FOR INDUSTRIAL USE ONLY