



1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: MS-110X
Includes; MS-1100, MS-1101, MS-1102, MS-1103,
MS-1104, MS-1105, MS-1106, MS-1107

Product Use: 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

Label elements:

Hazard Symbol: None

Signal word: None

Hazard Statements: May displace oxygen and cause rapid suffocation.

Precautionary Statements

Wear protective gloves/eye protection/face protection.

IF ON SKIN: Take off contaminated clothing. Rinse skin with water/shower.

Pressurized container: Do not pierce or burn, even after use.

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 which do not result in classification or are not covered by GHS

Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Inhalation of decomposition products from overheating may cause lung irritation or shortness of breath.

High concentrations of vapors may include cardiac arrhythmia.

Prolonged skin contact may defat the skin and produce dermatitis.

3. INGREDIENTS

<u>Material (s)</u>	<u>CAS No.</u>	<u>Approximate %</u>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mcc)	138495-42-8	30 - 34
1,1,1,3,3-Pentafluorobutane (HFC-365mfc)	406-58-6	45 - 50
1,1,1,2-Tetrafluoroethane	811-97-2	18 - 22
Perfluoroalkylether	60164-51-4	1 - 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, 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: Do not give adrenaline or similar drugs.

5. FIRE FIGHTING MEASURES

Flammability: This product is not flammable.

Test Method: Ignition distance test and Enclosed space ignition test

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

Extinguishing Media: As appropriate for surrounding area.

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

6. ACCIDENTAL RELEASE MEASURES

Ventilate area with fresh air, if a large amount is accidental released and wear 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.

Storage Conditions: Store in a clean, dry area. Do not store sources of heat, in direct sunlight or where temperatures exceed 120°F/49°C. Protect from freezing temperatures. If solvent is stored below 14°F/-10°C, shake 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
1,1,1,2-Tetrafluoroethane	Not Established	Not Established	1000 ppm

*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. 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: N.A.

Percent Volatile by Volume: 98%

Density: 1.39 g/cc at 77°F/25°C

Vapor Pressure: 285 mm Hg at 77°F/25°C

Vapor Density (Air=1): >1

Solubility in H₂O : Insoluble

pH Information: Neutral

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

Form: Aerosol

Appearance: Clear

Color: Colorless

Odor: Ethereal

10. STABILITY AND REACTIVITY

Stability: Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials: Incompatible with alkali or alkaline earth metals, powered metal salts. Acid, bases, and strong oxidizing agents.

Decomposition: Decomposes with heat. Decompose at temperatures of 662°F/350°C forming hazardous fluorinated compounds. Also high temperatures (open flames, glowing metal surfaces, etc.) can decompose 1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee) forming hydrofluoric acids and possibly carbonyl halides. HFC-43-10mee is 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.

Animal Data

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.

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

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: 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.

SARA/TITLE III HAZARD CATEGORIES:

Product Hazard Categories:

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

1,1,1,2,2,3,4,5,5-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, 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 - 1

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

FOR INDUSTRIAL USE ONLY

REVISION DATE: APRIL 2016

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.