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Part #: V1004

1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: MS-782
Vertrel XF

Product Use: Cleaning Solvent

MANUFACTURER/DISTRIBUTOR:

Miller-Stephenson Chemical
55 Backus Ave.
Danbury, Conn. 06810 USA
(203) 743-4447

Emergency Phone Number:
(800) 424-9300

2. HAZARDS IDENTIFICATION

GHS Hazard classification

Not a dangerous substance or mixture according to GHS.

GHS Label elements:

Pictogram: not required

Signal word: not required

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.

Prolonged skin contact may defat the skin and produce dermatitis.

Effects of breathing high concentrations of vapor may include: May cause cardiac arrhythmia

Misuse of intentional inhalation abuse may lead to death without warning.

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-43-10mee)	138495-42-8	100%

4. FIRST AID MEASURES

Inhalation: If inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Eye: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: Flush skin with water after contact. Wash contaminated clothing before reuse.

Oral: If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. If vomiting occurs, have them lean forward to reduce the risk of aspiration. Call a physician.

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.

5. FIRE FIGHTING MEASURES

Flash Point: Does not flash

Method: TCC

Fire and Explosion: Containers may rupture under fire conditions. Decomposition (see section 10) may occur.

Extinguishing Media: Water spray, Water mist, Dry Chemical, Carbon Dioxide (CO₂).

Special Fire Fighting Instruction: Use water spray to cool containers. Evacuate personnel to safe area. 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. Exposure to decomposition products may be a hazard to health

6. ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up. Evacuate personnel, thoroughly ventilate area. In case of insufficient ventilation use wear suitable respiratory equipment.

Initial Containment

Dike spill. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

If containers rupture or leak, evacuate the area and provide ventilation, especially in low places where heavy vapors might collect. Only personnel equipped with proper respiratory and skin/eye protection should be permitted in area of large spill. Soak up with earth, sand, vermiculite or other non-combustible absorbent material. Place in a 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 only with adequate ventilation. Where ventilation is inadequate, use appropriate respiratory protection. Avoid contact with skin, eyes, or clothing. Wash thoroughly after handling.

Storage Conditions: Store in a well-ventilated place and keep container tightly closed. 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

*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 in enclosed or low places. Local exhaust should be used when large amounts are released. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Eye Protection: Avoid eye contact. Use chemical goggles or safety glasses with side shields.

Skin Protection: Avoid contact with skin. Use gloves impervious should be used when handling liquid.

Hygiene measures: Do not eat, drink or smoke when using this product. Do not breathe vapors or spray mist. Avoid contact with skin, eyes, or clothing. Wash exposed areas thoroughly with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 131°F/55°C

Percent Volatile by Volume: 100

Density: 1.58 g/cc @ 77°F/25°C

Vapor Pressure: 235 mmHg @ 77°F/25°C

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

Solubility in H₂O: approx.140 ppm @ 68°F/20°C

pH Information: Neutral

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

Form: Liquid

Appearance: Clear & Colorless

Color: Colorless

Odor: Slight, ether-like

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. Strong bases.

Decomposition: This product can be decomposed by high temperatures (flame, glowing metal surfaces, etc.) forming Fluorinated hydrocarbons, Hydrogen fluoride, Carbon dioxide (CO₂), Carbon monoxide, Carbonyl fluoride.

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.

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

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.

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

FOR INDUSTRIAL USE ONLY

REVISION DATE: DECEMBER 2014

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.