



### 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

**Name:** MS-222N  
MS-222T  
MS-222F  
Aero-Duster

**Product Use:** Duster

**MANUFACTURER/DISTRIBUTOR:**

**Emergency Phone Number:**  
(800) 424-9300

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

**Date Revised:** October 2011

### 2. INGREDIENTS

<u>Material (s)</u>	<u>CAS No.</u>	<u>Approximate %</u>
1,1,1,2 Tetrafluoroethane	811-97-2	100

### 3. HAZARDS IDENTIFICATION

**Inhalation:** Gross overexposure may cause: CNS depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, weakness, sometimes progressing to loss of consciousness and death. Suffocation, if air is displaced by vapors.

**Skin:** Immediate effects of overexposure may include: Frostbite, if liquid or escaping vapor contacts the skin. May cause irritation, discomfort, itching, redness or swelling.

**Eye:** "Frostbite-like" effects may occur if liquid or escaping vapor contacts the eyes. May cause irritation, tearing, redness and discomfort.

**Additional Health Effects:** Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the: Central Nervous System, Cardiovascular System.

#### 4. FIRST AID MEASURES

**Inhalation:** If high concentrations are inhaled, immediately remove patient to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Get medical attention immediately.

**Eye:** Immediately flush with large amounts of water for at least 15 minutes, lifting eyelids until no evidence of the chemical remains. Get medical attention.

**Skin:** Flush promptly with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention if necessary. Treat for frostbite if necessary by gently warming affected area.

**Oral:** Is not considered a potential route of exposure.

**Notes to Physician:** Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine, should be used with special caution and only in situations of emergency life support.

#### 5. FIRE FIGHTING MEASURES

**Flash Point:** This product is considered to be non-flammable as described in 16CFR 1500.45.

**Method:** N.A.

**Autoignition Temperature:** >750°C/1382°F

**Flammable Limits in Air, % by Vol.:** UEL: None per ASTM E681  
LEL: None per ASTM E681

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

Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of the torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limit. Stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

1,1,1,2 Tetrafluoroethane is not flammable in air at temperatures up to 100°C/212°F at atmospheric pressure. However, mixtures of 1,1,1,2 Tetrafluoroethane with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. 1,1,1,2 Tetrafluoroethane can also become combustible in an oxygen enriched environment. In general, 1,1,1,2 Tetrafluoroethane should not be allowed to exist with air above atmospheric pressure or at high temperatures; or in an oxygen enriched environment. For example, 1,1,1,2 Tetrafluoroethane should NOT be mixed with air under pressure for leak testing or other purposes.

Experimental data have also been reported which indicate combustibility of 1,1,1,2 Tetrafluoroethane in the presence of certain concentrations of chlorine.

**Extinguishing Media:** Use the media appropriate for surrounding material.

**Special Fire Fighting Instruction:** Cool cans with water spray. Self-contained breathing apparatus (SCBA) may be required if contents are spilled under fire conditions.

Water runoff should be contained and neutralized prior to release.

## 6. ACCIDENTAL RELEASE MEASURES

Evacuate personnel. Ventilate area, especially low and enclosed places, where heavy vapors might collect. Remove all ignition sources. Wear personal protective equipment, if a large amount is accidentally released. No need for additional release information, since it is an aerosol.

## 7. HANDLING AND STORAGE

**Handling:** Avoid inhalation of vapors. Use in a well-ventilated area to keep employee exposure below recommended limits. Vapors are heavier than air and accumulate in low areas. Do not get in eyes or on skin.

1,1,1,2 Tetrafluoroethane should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure (See Flammable Properties section). Contact with Chlorine or other strong oxidizing agents should also be avoided.

**Storage Conditions:** Store in a clean, dry place, not near sources of heat, in direct sunlight or where temperatures exceed 126°F/52°C. Rotate stock to shelf life of one year.

## 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-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. Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection. Mechanical ventilation should be used in low or enclosed areas. In poorly ventilated areas, or if a large release occurs, use an approved self-contained breathing apparatus (SCBA).

**Eye Protection:** Avoid eye contact. Use chemical splash goggles.

**Skin Protection:** Avoid contact with skin (danger of frostbite). Use protective gloves when prolonged or frequently repeated contact occurs.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Boiling Point:** -15.7°F/-26.5°C

**Percent Volatile by Volume:** 100%

**Density:** 1.21 g/cc at 77°F/25°C

**Vapor Pressure:** 96 psia at 77°F/25°C

**Vapor Density (Air=1):** 3.6 at 77°F/25°C

**Solubility in H<sub>2</sub>O:** 0.15 wt% at 77°F/25°C at 14.7 psia

**pH Information:** Neutral

**Evaporation Rate (CCl<sub>4</sub>=1):** > 1

**Form:** Liquidified Gas

**Appearance:** Clear

**Color:** Colorless

**Odor:** Faint Ethereal

## 10. STABILITY AND REACTIVITY

**Stability:** Stable.

**Material and Conditions to Avoid:** Avoid open flames and high temperatures. Alkali metals, Alkaline earth metals, Powdered metals, Powdered metal salts.

**Decomposition:** Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc) forming hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Contact should be avoided.

**Polymerization:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

Cardiac sensitization threshold limit: 312,975 mg/m<sup>3</sup>

Anaesthetic effects threshold limit: 834,600 mg/m<sup>3</sup>

Did not show carcinogenic or teratogenic effects in animal experiments. Concentrations above the TLV value may cause narcotic effects. Inhalation of decomposition products in high concentration may cause shortness of breath. Rapid evaporation of liquid may cause frostbite.

### **Inhalation:**

4 hour, LC50 rat: >359,300ppm

Dog: Cardiac sensitization

### **Skin Irritation:**

Slight irritation, rabbit

No skin irritation, human

### **Eye Irritation:**

Slight irritation, rabbit

No eye irritation, human

**Skin Sensitization:**

Did not cause sensitization on laboratory animals., guinea pig

**Repeated dose toxicity:**

Inhalation, rat

No toxicologically significant effects were found.

**Carcinogenicity:**

Overall weight of evidence indicates that the substance is not carcinogenic.

An increased 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 showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

**12. ECOLOGICAL INFORMATION**

**AQUATIC TOXICITY**

48 hour EC50 – Water flea: 980 mg/L

96 hour LC50 – Rainbow trout: 450 mg/L

**13. DISPOSAL CONSIDERATIONS**

Contaminated HFC - 134a can be recovered by distillation or removed to a permitted waste disposal facility. Comply with federal, state and local regulations. 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:** 1,1,1,2 Tetrafluoroethane

**Hazard Class:** 2.2

**Identification No.** UN 3159

**Packing Group:** None

(Authorization DOT-SP 10232 for CFR only)

**IMDG**

**Proper Shipping Name:** 1,1,1,2 Tetrafluoroethane

**Hazard Class:** 2.2

**Identification No.** UN 3159

**Packing Group:** None

(Authorization DOT-SP 10232 for CFR only)

**15. REGULATORY INFORMATION**

**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

**CANADA:**

CEPA Status: All components of this product are on the Canadian DSL list.

**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**