MATERIAL SAFETY DATA SHEET
Complies with OSHA Hazard Communication
And WHIMS Standard 29 CFR 1910-1200

Print Date: 05/01/2010

Product Name: RS-45 (R434A) Product Number: RS-45

I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer: ComStar International Inc. **Tel:** 718-445-7900, 800-328-0142
Address: 20-45 128th Street, College Point, NY 11356 **Fax:** 718-353-5998

Chemical Name: Blended Formula
Synonym(s): None

II - COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENTS	OSHA PEL	ACGIH TLV	CAS NO.
1,1,1,2-Tetrafluoroethane	None est.	None est.	811-97-2
1,1,1-Trifluoroethane	500 ppm	500 ppm	420-46-2
Pentafluoroethane	500 ppm	500 ppm	354-33-6
Isobutane	500 ppm	500 ppm	75-28-5

All components are considered biodegradable and are on the TSCA inventory.

III - HAZARDS IDENTIFICATION

WARNING! CAUSES EYE IRRITATION. MAY FORM EXPLOSIVE PEROXIDES.
HMIS Hazard Ratings: Health – 1, Flammability – 0, Chemical Reactivity – 0
NFPA Hazard Ratings: Health – 1, Flammability – 0, Chemical Reactivity – 0
NOTE: HMIS and NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

IV - FIRST-AID MEASURES

Inhalation: Vapor inhalation is primary route of exposure. Remove to fresh air, keep warm and at rest. Give oxygen if breathing is difficult. Get medical attention. No long term effects are expected.
Eyes: Immediately flush with plenty of water for at least 15 minutes. Get medical attention.
Skin: Remove contaminated clothing, wash affected skin with soap and water. Treat for frostbite if necessary. Get medical attention if symptoms occur.
Ingestion: Not likely route of entry. Drink plenty of water. Get immediate medical attention.

V - FIRE FIGHTING MEASURES

Extinguishing Media: Water, CO2, Universal type foams, dry chemical
Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing.
Hazardous Combustion Products: See “Decomposition” in Section X (Stability).
Unusual Fire and Exposure Hazards: None known. Keep product cool.

VI - ACCIDENTAL RELEASE MEASURES

Review Fire Fighting Measures, Handling and Exposure Control sections before clean up. Use protective clothing during clean up. Ventilate area, especially where heavy vapors may collect.

Remove open flame. Use self-contained breathing apparatus if spill is large or a leak occurs.

VII - HANDLING AND STORAGE

Personal Precautionary Measures: Avoid contact with eyes and skin. Wash thoroughly after handling. Do not breathe vapors or fumes.
Prevention of Fire and Explosion: Avoid contact with chlorine, oxidizing materials, alkalis and acids. Do not mix product with air for leak testing. Store away from heat, sunlight and moisture.
Store cylinders upright. Store in area not to exceed 125 F and away from combustible material.

VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:
ACGIH Threshold Limit Value (TLV): see section II
OSHA (USA) Permissible Exposure Limit (PEL): see section II
Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances such as poorly ventilated spaces, evaporation from large surfaces, spraying, heating, etc.
Respiratory Protection: If engineering controls do not maintain airborne concentrations to an acceptable level, a NIOSH approved respirator must be worn.
Respirator Type: Organic vapor. If respirators are used, a program should be instituted to assure Compliance with OSHA Standard 29 CFR 1910.134.
Eye Protection: Wear safety glasses with side shields (or goggles) and a face shield.
Skin Protection: It is a good industrial hygiene practice to minimize skin contact.
Recommended Decontamination Facilities: Eye bath, washing facilities

IX - PHYSICAL AND CHEMICAL PROPERTIES

Color: Colorless
Odor: Slight ether
Odor Threshold: not available
Specific Gravity (H20 = 1): > 1.0 @ 77 F
Critical Pressure: 3893 kPa
Vapor Pressure : 1146 kPa @ 25 C
Liquid Density: 1159 Kg/m3 @ 25 C
Evaporation Rate (n-butyl acetate = 1): < 1
Critical Temperature: 79 C
Boiling Point: -43 C
Melting Point: N/A
Viscosity at 25° C (77° F): N/A

Solubility in Water: Soluble – Considered insoluble
Octanol/ Water Partition Coefficient: not available
Flash Point (° F): None
Lower Explosive Limit 135° C (275° F): N/A
Upper Explosive Limit 199° C (390° F): N/A
Auto ignition Temperature (ASTM D 2155): Not determined

X - STABILITY AND REACTIVITY

Stability: Product is considered stable.
Incompatibility: strong oxidizing agents, chlorine, alkalis and acids
Decomposition: At high temperatures (open flames) can form hydrogen fluoride and hydrolysis.

XI - TOXICOLOGICAL INFORMATION

Inhalation: Relatively non-toxic following acute exposure. Cardiovascular and respiratory are the primary systems that would be affected. Abuse (intentional inhalation) may cause death. Human exposure to high concentrations may cause confusion, respiratory irritation, tremors or coma but such effects should be short lived and reversible with no after effects when removed to fresh air.
Eyes & Skin: May cause irritation.
Ingestion: Not considered a potential route of exposure.
Acute Toxicity Data:
Inhalation LC-50 for rats: 500,000 to 800,000 ppm over 15 to two hours.

XII - ECOLOGICAL INFORMATION

Introduction: Leaks should be stopped. Spills should be contained and cleaned up immediately. The spill area should then be flushed with water followed by liberal covering of sodium bicarbonate. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement, e.g., dirt or sand, may be handled by removing the affected soils and placing in approved containers. Persons performing clean-up work should wear adequate personal protective equipment and clothing. .

Aquatic toxicity: 48 hour EC50 – Daphnia magna: 980 mg/l
96 hour LC50 – Rainbow Trout: 450 mg/l

XIII - DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Check with state and local officials before disposal.

XIV - TRANSPORT INFORMATION

DOT/IMO
Primary Shipping Name: Liquefied Gas, N.O.S.
Hazard Class: 2.2
UN No.: 3163
DOT/IMO Label: Non-flammable Gas

XV - REGULATORY INFORMATION

This document has been prepared in accordance with the MSDS requirements of the OSHA Hazard Communication Standard 29 CFR 910.1200.
OSHA hazardous chemical(s): trade secret (blended formula).
Material(s) known to the State of California to cause cancer: none
Material(s) known to the State of California to cause adverse reproductive effects: none
Massachusetts Substance List: none.
New Jersey Workplace Hazardous Substance List: none
Pennsylvania Hazardous Substance List: none

This document has been prepared in accordance with the MSDS requirements of the WHMIS Controlled Products Regulation.
WHMIS (Canada) Ingredient Disclosure List: trade secret (blended formula).
WHMIS (Canada) Status: not listed.
WHMIS (Canada) controlled material(s): not listed.
WHMIS (Canada) Hazard Classification: not classified.

Carcinogenicity Classification (components present at 0.1% or more): None

International Agency for Research on Cancer (IARC): Not listed
American Conference of Governmental Industrial Hygienist (ACGIH): Not listed
National Toxicology Program (NTP): not listed
Occupational Safety and Health Administration (OSHA): Not listed

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: None.

SARA (U.S.A.) Sections 311 and 312 hazard classification(s): Not listed.

NOTE: *The opinions expressed are those of qualified experts within ComStar International Inc. We believe that the information contained is current as of the date of the Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of ComStar International Inc., it is the user's obligation to determine the conditions of safe use of the product.*