Material Safety Data Sheet

This MSDS adheres to the standards and regulatory requirements of China and may not meet the regulatory requirements in other countries.

SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Pentafluoroethane and 1,1,1-Trifluoroethane Azeotropic Mixture

Synonyms: R-507

Formula: CHF_2CF_3, CH_3CF_3.

Supplier: Zhejiang Nof Chemical Co., Ltd

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SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Pentafluoroethane (HFC-125)	354-33-6	50
1,1,1-Trifluoroethane (HFC-143a)	420-46-2	50

SECTION III – HAZARDS IDENTIFICATION

Hazardous Classification: Class 2.2 Compressed Gas and Non-combustible Gas

Primary Routes of Entry: Inhalation, Skin Contact, Eyes

Emergency Overview: Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. Vapor reduces oxygen available for breathing and is heavier than air. Liquid contact can cause frostbite.

Potential Health Hazards:

Skin: Skin contact may cause frostbite from exposure to the liquid.

Eyes: Irritant. Liquid contact will irritate and may cause conjunctivitis.

Inhalation: Inhalation may include nonspecific discomfort, such as nausea, headache, or weakness; or temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination, and loss of consciousness.

Ingestion: Discomfort due to volatility would be expected.

SECTION IV – FIRST AID MEASURES

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

Skin: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

Inhalation: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine (adrenaline).

Ingestion: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.

Advice to Physician: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION V – FIRE FIGHTING MEASURES

Fire and Explosion Hazards: R-507 is not flammable at atmospheric pressure. However, mixtures of these products with high concentrations of air at elevated pressure and/or temperature can become combustible in the presence of an ignition source. These products can also become combustible in an oxygen enriched environment. Cylinders may rupture under fire conditions. Contact of welding or soldering torch flame with high concentrations of refrigerant can result in visible changes in the size and color of torch flames. This flame effect will only occur in concentrations of product well above the recommended exposure limit, therefore stop all work and ventilate to disperse refrigerant vapors from the work area before using any open flames.

Fire Fighting Instructions: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray. In the event of fire, wear self-contained breathing apparatus.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Immediately contact emergency personnel. Use suitable protective equipment. Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for Cleaning-up: Evaporates.

In Case of Spill or Other Release: (Always wear recommended personal protective equipment.) Evacuate unprotected personnel. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return until air has been tested and determined safe, including lowlying areas.

SECTION VII – HANDLING AND STORAGE

Handling: Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not

puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders. Follow standard safety precautions for handling and use of compressed gas cylinders. R-507 should not be mixed with air above atmospheric pressure for leak testing or any other purpose.
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52℃.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Authorized Limit Values:

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Pentafluoroethane	None	None	*1000 ppm, 4900 mg/m^3 TWA (8hr)
1,1,1-Trifluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)
CHINA MAC: No information available.
Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
Respiratory Protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hand Protection: Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
Skin Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling.

SECTION IX – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Gas at ambient temperatures
Odor/Odour: Slight, ether-like.
Boiling Point (1013 mbars): - 46.9 °C
Vapor Pressure: 184.9 psia (25°C)
Specific Gravity (water = 1.0): 1.079(25°C)
Application: Refrigerant.
Color/Colour: Colorless/colourless
Molecular Weight: 98.8 average
PH: Neutral
Vapor Density (air=1): 3.43 (25℃)
Solubility: Not determined

SECTION X – STABILITY AND REACTIVITY

Stability: The product is stable. Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield

toxic and/or corrosive decomposition products.

Incompatibility With Other Materials: Avoid contact with strong alkali or alkaline earth metals, finely powdered metals such as aluminum, magnesium or zinc and strong oxidizers since they may react with or accelerate decomposition of this material.

Hazardous Decomposition Products: 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.

Hazardous Polymerization: Will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION

Immediate (Acute) Effects:

*Pentafluoroethane (R-125): LC_{50}: 4 hr. (rat) - > 800,000 ppm

Cardiac Sensitization threshold (dog) >75,000 ppm

*Trifluoroethane (R-143a): LC_{50}: 4hr. (rat) -> 540,000 ppm

Cardiac Sensitization threshold (dog) > 250,000 ppm

Delayed (Subchronic and Chronic) Effects:

*Pentafluoroethane (R-125): Teratogenic NOEL (rat and rabbit) - 50,000 ppm

*Trifluoroethane (R-143a): Subchronic inhalation (rat) NOEL - ≥50,000 ppm

Chronic NOEL – 10,000 ppm

Teratogenic NOEL (rat) - 40,000 ppm

Subchronic inhalation (rat) NOEL - 40,000 ppm

Other Data:

*Pentafluoroethane (R-125): Not active in four genetic studies

*Trifluoroethane (R-143a): Not active in two genetic studies

Toxicity to reproduction: Did not show mutagenic or teratogenic effects in animal experiments.

SECTION XII – ECOLOGICAL INFORMATION

Aquatic Toxicity:

The compound is very low to slightly toxic.

*Trifluoroethane (R-143a): 96-hour LC_{50}, Rainbow trout: >40 mg/L

Degradability (BOD):

R-507 is a gas at room temperature; therefore, it is unlikely to remain in water.

Octanol Water Partition Coefficient: Log Pow = 1.48 (R-125)

SECTION XIII – DISPOSAL CONSIDERATIONS

Nature of the Waste: Not a RCRA hazardous waste.

Waste Treatment: Waste from residues / unused products: Can be used after re-conditioning. Product removed from the cylinder must be disposed of in accordance with appropriate National and local regulation. Return cylinders with residual product to the supplier.

SECTION XIV – TRANSPORT INFORMATION

Proper Shipping Name: Liquefied gas, n.o.s., (Pentafluoroethane, 1,1,1-Trifluoroethane)

Hazard Class: 2.2.

UN-No. : 3163.

Marking: 5.

Primary label: Nonflammable Gas

Packing group: III.

Packing Method: Tank Cars. Steel Cylinders. Ton Tanks.

SECTION XV – REGULATORY INFORMATION

* Common dangerous chemical classification and labelling (GB13690-92).

* Regulations on the Control over Safety of Dangerous Chemicals (State Council Decree 344 [2002])

* Regulations on the Safety Use of Chemicals in Workplaces (Department of Labor, Reg 423 [1996]), are enacted to control the safe use, production, storage, transport, operation, trade and disposal of dangerous chemicals.

SECTION XVI – OTHER INFORMATION

Sources of key data used to compile the datasheet:

* Material Safety Data Sheet/"SUVA" -507, Dupont. (MSDS No. DU007297)

* Material Safety Data Sheet/Genetron AZ-50 (R-507), Honeywell. (MSDS No. GTRN-0003)

Department: Foreign Trade Dept.; Environment, Safety and Quality Management Dept.
Zhejiang Nof Chemical Co., Ltd

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The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. It 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.

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