

SAFETY DATA SHEET

Regulation (EC) No 1907/2006 (REACH), Annex II
(COMMISSION REGULATION (EU) No 453/2010)

Version 1

Product Name 1,1,1-Trifluoroethane Pentafluoroethane and 1,1,1,2-Tetrafluoroethane mixtures

Issue Date 22-Oct-2015

Revision date 22-Oct-2015

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name 1,1,1-Trifluoroethane Pentafluoroethane and 1,1,1,2-Tetrafluoroethane mixtures
Other Name Freon 404; HP62; R404a;

Other means of identification

Cas No. No information available

Recommended use of the chemical and restrictions on use

Recommended Use Used as refrigerant, medium temperature controller and air propellant intermediate.
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Zhejiang Lantian Environment Protection High-tech Co., Ltd./
Zhejiang Lantian Environmental Protection Fluoro Materials Co., Ltd.
Address Shangyu Zhejiang
Postal Code 312369
Phone 0571-87397255/0575-82738809/0575-827328369
FAX 0571-88900147
E-mail -

Importer
Address
Postal Code
Phone
FAX
E-mail



Emergency telephone number

0532-83889090

2. HAZARDS IDENTIFICATION

GHS Classification

Gases under pressure Liquefied gas

Label elements

Symbols/Pictograms



Signal word Warning
Hazard Statements Contains gas under pressure; may explode if heated

Precautionary Statements

Prevention	None
Response	None
Storage	Protect from sunlight. Store in a well-ventilated place
Disposal	None

Hazards not otherwise classified (HNOC)

No information available

Unknown acute toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Mixture

Chemical Name	CAS No	Weight-%
Ethane, 1,1,1-trifluoro-	420-46-2	52
Pentafluoroethane	354-33-6	44
1,1,1,2-Tetrafluoroethane	811-97-2	4

4. FIRST AID MEASURES

Description of first aid measures

General advice	Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Administer oxygen if breathing is difficult. Get medical advice/attention if you feel unwell.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Ingestion	Not an expected route of exposure. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	No information available.

Specific hazards arising from the chemical

Heat the cylinder pressure increases the risk of a blowout. Low toxicity. An anesthetic effect high concentration. Thermal decomposition can lead to release of irritating and toxic gases and vapors, e.g. Halogenated hydrogen, carbon dioxide, carbon monoxide, carbon fluorine compounds, acyl halide.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate personnel to safe areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Remove all sources of ignition. Avoid contact with skin, eyes or clothing. Do not breathe dust/fume/gas/mist/vapors/spray. Do not touch or walk through spilled material. Ensure adequate ventilation, especially in confined areas. Use personal protection recommended in Section 8. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so.
Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling. Use personal protection recommended in Section 8. Take precautionary measures against static discharges. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition. Keep locked up and out of reach of children. Keep only in original container. Keep away from food, drink and animal feeding stuffs. Store in accordance with local regulations. Store at temperatures not exceeding 50 °C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

USA Pentafluoroethane AEL(Dupont) 1000ppm, TWA
WEEL(AIHA) 1000 ppm, 4900 mg/m3 , TWA
1,1,1,2-Tetrafluoroethane WEEL(AIHA) 1000 ppm, TWA
Ethane, 1,1,1-trifluoro- AEL(Dupont) 1000ppm , TWA
WEEL(AIHA) 1000 ppm, TWA

Appropriate engineering controls

Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hand Protection	Wear protective gloves.
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin and body protection	Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	volatile liquid, gas under room temperature
Color	colorless
Odor	Slight
Odor Threshold	Not determined
pH	Not determined
Melting point/freezing point	-46.5°C
Boiling point / boiling range	Not determined
Flash point	Not determined
Evaporation rate	Not determined
Flammability (solid, gas)	Not determined
Flammability Limit in Air	Not determined
Vapor Pressure	1241(25°C)
Relative Vapor density	3.43
Density	Not determined
Relative density	1.05
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Not determined
Partition coefficient (LogPow)	1.06
Autoignition temperature	750°C
Decomposition temperature	Not determined
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

Other information

No information available

10. STABILITY AND REACTIVITY

Reactivity

No known effects under normal use conditions.

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

Hazardous polymerization does not occur.

Conditions to avoid

High temperature, oxygen and compressed air.

Incompatible materials

Strong oxidizer, alkali, alkaline earth metal, aluminum, copper. Flammable and combustible.

Hazardous Decomposition Products

- Hydrogen halides
- Carbon dioxide (CO₂)
- Carbon monoxide
- Carbonyl fluoride
- Acyl halide

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	No known effect based on information supplied.
Eye contact	No known effect based on information supplied.
Skin Contact	No known effect based on information supplied.
Ingestion	No known effect based on information supplied.

Information on toxicological effects

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ethane, 1,1,1-trifluoro- (CAS #: 420-46-2)	-	-	>250000ppm
Pentafluoroethane (CAS #: 354-33-6)	-	-	>709000ppm (Rat)
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	-	-	>500000ppm (Rat)

Skin corrosion/irritation

Mild skin irritation

Serious eye damage/eye irritation

Irritating to eyes

Sensitization

No information available.

Germ cell mutagenicity

No information available

Carcinogenicity

This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP

Reproductive toxicity

No information available

STOT - single exposure

No information available

STOT - repeated exposure

No information available

Aspiration hazard

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Ethane, 1,1,1-trifluoro- (CAS #: 420-46-2)	-	>40mg/l/96h	-
Pentafluoroethane (CAS #: 354-33-6)	142 mg/L 96h other: green algae	560 mg/L 24h Oncorhynchus mykiss 450 mg/L 48 72 96h Oncorhynchus mykiss	> 200 mg/L 48h Daphnia magna
1,1,1,2-Tetrafluoroethane (CAS #: 811-97-2)	-	450 mg/L/96h (Oncorhynchus mykiss)	980 mg/L/48h (Daphnia magna)

Persistence and degradability

No information available

Bioaccumulative potential

No information available

Mobility in soil

No information available

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations
Contaminated packaging	Dispose of in accordance with federal, state and local regulations

14. TRANSPORT INFORMATION

DOT

UN/ID No.	3337
Proper shipping name	REFRIGERANT GAS R 404A
Hazard Class	2.2
Packing Group	No information available
Special precautions	No information available
Marine pollutant	No

15. REGULATORY INFORMATION

International Inventories

No information available

US Federal Regulations

SARA 313
Not applicable

SARA 311/312 Hazard Categories
Not applicable

CWA (Clean Water Act)
Not applicable

CERCLA
Not applicable

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations
This product does not contain any substances regulated under applicable state right-to-know regulations

16. OTHER INFORMATION

Revision Note

Issue Date	22-Oct-2015
Revision date	22-Oct-2015
Revision Note	Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)

STEL - STEL (Short Term Exposure Limit)

Ceiling - Maximum limit value

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

Disclaimer

The information provided in this Material 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.

----- **End of Safety Data Sheet** -----