1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: 1,1,2,2-Tetrafluoroethyl-2,2,3,3-tetrafluoropropyl ether
Catalog Number: FC13-4500
Supplier: Fluorox Labs
3650 Research Way, #22
Carson City, NV 89706
USA
Emergency call:
+01-813-248-0585 (International)
+1-800-255-3924 (USA)

2. HAZARDS INFORMATION

Emergency Overview

OSHA Hazards: Flammable Liquid, Toxic liquid
GHS Classification: Flammable liquids (Category 3), Toxic liquid (Category 3)

GHS Label elements, including precautionary statements

Hazard statement(s)
H226 Flammable liquid and vapor
H331 Toxic if inhaled.

Precautionary statement(s)
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.

Potential Health Effects

Inhalation: Toxic by inhalation.
Skin: May cause skin irritation.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed.

3. COMPOSITION AND INFORMATION ON INGREDIENTS
Synonyms
HFE-458;
HFE 458pcf-c;
Propane,1,1,2,2-tetrafluoro-3-(1,1,2,2-tetrafluoroethoxy)-;
Ether,1,1,2,2-tetrafluoroethyl 2,2,3,3-tetrafluoropropyl;
2,2,3,3-Tetrafluoro-1-(1,1,2,2-tetrafluoroethoxy)propane;
Daikin T-5216;
1,1,2,2,5,5,6,6-Octafluoro-3-oxahexane

Chemical formula
C₅H₄F₈O
HCF₂CF₂CH₂OCF₂CF₂H

Components

<table>
<thead>
<tr>
<th>Material</th>
<th>Molecular Weight</th>
<th>CAS #</th>
<th>EINECS #</th>
<th>TSCA</th>
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<tbody>
<tr>
<td>1,1,2,2-Tetrafluoroethyl-2,2,3,3-tetrafluoropropyl ether</td>
<td>232.07</td>
<td>16627-68-2</td>
<td>None</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
Remove casualty from exposure ensuring one’s own safety whilst doing so. If conscious, ensure the casualty sits or lies down. If unconscious and breathing is OK, place in the recovery position. If unconscious, check for breathing and apply oxygen. Call a POISON CENTER or doctor/physician.

In case of skin contact
Wash off with soap and plenty of water. Transfer to hospital if there are symptoms of poisoning.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Rinse the mouth with water. Do not induce vomiting. If conscious, give half a liter of water to drink immediately. If unconscious, check for breathing and apply artificial respiration if necessary. If unconscious and breathing is OK, place in the recovery position. Transfer to hospital as soon as possible.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Suitable extinguishing media for the surrounding fire should be used. Carbon dioxide. Dry chemical powder. Alcohol or polymer foam. Halons. Use water spray to cool containers.

Special protective equipment for firefighters
Wear self-contained breathing apparatus for fire fighting. Wear full protective equipment.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions - carbon oxides, hydrogen fluoride, carbonyl fluoride.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid inhalation of vapor, mist, dust, or gas. Ensure adequate ventilation. Vapors can accumulate in low areas. Evacuate personnel to safe areas.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods for cleaning up
Recover any liquid. Soak up with absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for Safe Handling
Avoid contact with the substance. Avoid formation of mist or respirable particles. Provide appropriate exhaust ventilation at places where dust, mist or vapors are formed. Do not handle in a confined space. Normal measures for preventive fire protection.

Conditions for Safe Storage
Store in dry and cool place. Keep away from heat, sparks and flames. Containers that are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Contains no substances with published occupational exposure limit values. However, inhalation exposure should be strictly limited.

Personal protective equipment

Respiratory protection
Use only in a chemical fume hood or local exhaust ventilation, and process enclosure if necessary to control exposure. Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

9. PHYSICAL AND CHEMICAL PROPERTIES
10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to avoid
Keep away from open flames and heated surfaces. Keep dry.

Materials to avoid

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions - carbon oxides, hydrogen fluoride, carbonyl fluoride.

11. TOXICOLOGICAL INFORMATION

Exposure limits
None established

Acute toxicity
Oral: No data available
Static inhalation LC50 (rat) = 3.16 mg/L/2h

Skin corrosion/irritation
No data available.

Serious eye damage/eye irritation
No data available.

Respiratory or skin sensitization
No data available.

Germ cell mutagenicity
No data available.

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen.
Reproductive toxicity
No data available

Specific target organ toxicity (Globally Harmonized System)
Single exposure
No data available
Repeated exposure
Toxic by inhalation.

Aspiration Hazard
No data available

Potential Health Effects
Inhalation
May cause respiratory irritation
Skin
May cause skin irritation.
Eyes
May cause eyes irritation.
Ingestion
May be toxic if swallowed.

Signs and Symptoms of Exposure
No data available

Synergistic Effects
No data available

Additional Information
No data available

12. ECOLOGICAL INFORMATION

Toxicity
No data available

Persistence and Degradability
No data available

Bioaccumulative Potential
No data available

Mobility in Soil
No data available

PBT and vPvB Assessment
No data available

Air, Photolysis, ODP = 0
Result: no effect on stratospheric ozone.
Reference value for CFC 11: ODP = 1.

Air, Greenhouse Effect
GWP: No data.
Reference value for carbon dioxide: GWP = 1.

Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Contact Fluoryx to return unused product.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORTATION INFORMATION

DOT (US), IMDG, IATA
Class 3 (6.1)
Proper shipping name: FLAMMABLE LIQUID, TOXIC, N.O.S. (1,1,2,2-Tetrafluoroethyl-2,2-
3,3-Tetrafluoropropyl Ether
UN Number: 1992
Packing group III

Labeling: 3 (6.1)

15. REGULATORY INFORMATION

OSHA Hazards Flammable liquid, Toxic liquid
TSCA Status Not listed on US TSCA Inventory. It is for research and development use only.
DSL Status The substance is not specified on any list.
SARA 302 Components No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards Acute health hazard
Massachusetts Right To Know Components 1,1,2,2-Tetrafluoroethyl-2,2,3,3-tetrafluoropropyl ether CAS-No. 16627-68-2
Pennsylvania Right To Know Components 1,1,2,2-Tetrafluoroethyl-2,2,3,3-tetrafluoropropyl ether CAS-No. 16627-68-2
New Jersey Right To Know Components 1,1,2,2-Tetrafluoroethyl-2,2,3,3-tetrafluoropropyl ether CAS-No. 16627-68-2
California Prop. 65 Components This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

HMIS Classification
Health Hazard: 2
Flammability: 2
Physical hazards: 0

NFPA Rating
Health Hazard: 2
Fire: 2
Reactivity Hazard: 0

Legal Disclaimer: Not for drug, household, or other uses. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product,
personal hygiene, and integrity of the work environment. Unless noted to the contrary, the technical information applies only to pure product.

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End of SDS