1. PRODUCT AND COMPANY IDENTIFICATION

Product name: BROMOFLUOROMETHANE
CAS number: 373-52-4
Product code: VCBFM

Use / description of product: Feedstock, toxic volatile liquid

Company name: Valliscor LLC, 1110, NE Circle Blvd., Bldg. 11, Corvallis, OR 97330, USA
Telephone: (+1)-541-286-5082
Emergency Phone: (+1)-541-286-8436

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Compressed gas, Toxic by inhalation, Toxic by ingestion, Irritant

GHS Classification
Gases under pressure (Compressed gas)
Acute toxicity, Oral (Category 4)
Acute toxicity, Inhalation (Category 4)
Skin irritation (Category 2)
Serious eye damage (Category 1)
Specific target organ toxicity - single exposure (Category 3)
Hazardous to the ozone layer (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger
Hazard statement(s)
H319 Causes serious eye irritation
H331 Toxic if inhaled.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H420 Harms public health and the environment by destroying ozone in the upper atmosphere

Precautionary statement(s)
P261 Avoid breathing fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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

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

Potential Health Effects
Toxic if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Causes eye irritation.
Toxic if swallowed.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Synonyms: Fluoromethyl bromide

Formula: CH₂BrF

Molecular Weight: 112.93

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromofluoromethane</td>
<td>99.9%</td>
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<td>CAS No.</td>
<td>373-52-4</td>
</tr>
<tr>
<td>EC No.</td>
<td>206-770-6</td>
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</table>
4. FIRST AID MEASURES (SYMPTOMS)

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

**If inhaled**
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**
Wash off with soap and plenty of water. Consult a physician.

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

**If swallowed**
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

**Conditions of flammability**
Not flammable or combustible.

**Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for firefighters**
Wear self contained breathing apparatus for fighting if necessary.

**Hazardous combustion products**
Hazardous decomposition products formed under fire conditions. – Hydrogen fluoride gas, Hydrogen bromide gas

6. ACCIDENTAL RELEASE MEASURES

**Personal precautions**
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions**
Do not let product enter drains.

**Methods and materials for containment and cleaning up**
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling requirements: Avoid direct contact with the substance. Ensure there is exhaust ventilation of the area. Avoid the formation or spread of mists in the air. only use in fume hood
Storage conditions: Store in a cool and well ventilated area. Keep container tightly closed. Suitable packaging: Must only be kept in original packaging.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION


Personal Protective Equipment

Respiratory Protection
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.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)
Splash protection
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)
data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye Protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin and Body Protection
Complete suit protecting against chemicals. 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 workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
- Form: Liquid, clear
- Color: None

Safety Data
- pH: no data available
- State: Boiling point range: 18-19°C
- Relative density: 1.76 g/mL
- MW: 112.93
- Flash Point: No data available
- Ignition temperature: No data available
- Lower explosion limit: No data available
- Upper explosion limit: No data available
- Odor threshold: No data available

10. STABILITY AND REACTIVITY

Chemical Stability:
Stable under normal conditions.

Possibility of hazardous reaction:
No data available

Conditions to avoid:
No data available

Materials to avoid:
Strong oxidizing agents, Strong bases

Hazardous decomposition products:
Hydrogen bromide, hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

RTECS

Draize test, Rabbit, eye: 100 mg/24H Moderate

Acute Toxicity:
Oral, mouse LD50 = 300 mg / kg
Oral, Rabbit LD50 = 3,200 mg / kg
Oral, Rat LD50 = 980mg / kg

Chronic toxicity:
MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION. Routes of exposure: Refer to section 4 of SDS for routes of exposure and corresponding symptoms. MAY BE HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN.

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 by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

**Aspiration hazard**
no data available

**Potential health effects**
- **Inhalation**: May be harmful if inhaled. Causes respiratory tract irritation.
- **Ingestion**: May be harmful if swallowed.
- **Skin**: May be harmful if absorbed through skin. Causes skin irritation.
- **Eyes**: Causes eye irritation.

**Signs and Symptoms of Exposure**
prolonged or repeated exposure can cause: Nausea, Dizziness, Headache, narcosis, Cough, chest pain, Difficulty in breathing

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**12. ECOLOGICAL INFORMATION**

**Toxicity**
Toxicity to fish - 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

**13. DISPOSAL CONSIDERATIONS**

Disposal operations: MATERIAL SHOULD BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS Disposal of packaging: Dispose of as special waste in compliance with local and national regulations Observe all federal, state and local environmental regulations. NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.
14. TRANSPORT INFORMATION

ADR / RID

UN #: 2810

ADR Class: 6.1

Packing group: III

Classification code:

T1 Shipping name: TOXIC LIQUID, ORGANIC,

Hazard ID no: 60

IMDG / IMO


IATA / ICAO

UN no: 2810 Class: 6.1 Packing group: III Packing instructions: 611(P&CA); 618(CAO) Labelling: 6.1

15. REGULATORY INFORMATION

Hazard symbols: Very toxic.

Risk phrases: R26/27/28: Very toxic by inhalation, in contact with skin and if swallowed. Safety phrases: S28: After contact with skin, wash immediately with plenty of soap and water. S36/37/39: Wear suitable protective clothing, gloves and eye / face protection. S38: In case of insufficient ventilation, wear suitable respiratory equipment. S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

17. OTHER INFORMATION

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.