SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Chemical Name: 1,1,1,3,3,3-Hexafluoro-2-methoxypropane
Trade name: HFMOP; HFE-356mmz1
CAS No.: 13171-18-1
EC INDEX No.: 603-501-8
REACH Registration No.: 01-2120820309-58-0000

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified use(s): Solvent in vapour degreasing / vapour cleaning
Uses advised against: None assigned.

1.3 Details of the supplier of the safety data sheet

Company Identification: Halocarbon Life Sciences, LLC
6525 The Corners Parkway; Suite 200
Peachtree Corners, GA 20092

Telephone: +1 470-419-6363
E-Mail (competent person): sds@halocarbon.com

Distributor: DKSH France SA
1475, quai du Rhône - BP266
F-01702 Miribel Cedex, France

Telephone: +33 4 7855 7875

1.4 Emergency telephone number

Emergency Phone No.: CHEMTREC 24 hr. +1 (703) 527-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture


2.2 Label elements

Hazard Symbol: None
Signal word(s): None
Hazard statement(s): None
Precautionary statement(s): None

2.3 Other hazards

Asphyxiating. May displace oxygen and cause rapid suffocation. Not classified as PBT or vPvB.

2.4 Additional Information

None
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Regulation (EC) No. 1272/2008 (CLP)

<table>
<thead>
<tr>
<th>Hazardous ingredient(s)</th>
<th>%W/W</th>
<th>EC No. and CAS#</th>
<th>REACH Registration No.</th>
<th>According to Regulation (EC) No. 1272/2008 (CLP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,3,3,3-Hexafluoro-2-methoxypropane</td>
<td>&gt; 99.9</td>
<td>603-501-8</td>
<td>01-2120820309-58-0000</td>
<td>Not classified as dangerous for supply/use.</td>
</tr>
</tbody>
</table>

3.2 Mixtures
Not applicable.

3.3 Additional Information— Substances in the product which may present a health or environmental hazard, or which have been assigned occupational exposure limits, are detailed below: None

For full text of H/P phrases see section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures
Inhalation
Move person to fresh air. If breathing is laboured, administer oxygen. If symptoms develop, obtain medical attention.

Skin Contact
Take off immediately all contaminated clothing. Rinse skin with water/shower. If irritation (redness, rash, blistering) develops, get medical attention. Wash contaminated clothing before reuse.

Eye Contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Ingestion
Rinse mouth. Get medical attention.

4.2 Most important symptoms and effects, both acute and delayed
None anticipated

4.3 Indication of the immediate medical attention and special treatment needed
Treat symptomatically

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media
-Suitable Extinguishing Media
Non-flammable / Non-combustible. As appropriate for surrounding fire.

-Unsuitable Extinguishing Media
None known.

5.2 Special hazards arising from the substance or mixture
None known.

5.3 Advice for fire-fighters
A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.
SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective gloves/eye protection. Avoid breathing mist/vapours/spray.

6.2 Environmental precautions
Avoid run off to waterways and sewers.

6.3 Methods and material for containment and cleaning up
Follow the Spill clean up guidelines as suggested in the Hazardous and non-hazardous waste regulations. Transfer to a container for disposal or recovery.

6.4 Reference to other sections
See Section: 8 and 13

6.5 Additional Information
None.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Wear protective gloves/eye protection/face protection. Wash hands and exposed skin thoroughly after handling. Avoid breathing vapours.

7.2 Conditions for safe storage, including any incompatibilities
- Storage Temperature
  Store at room temperature. Keep only in original or other compatible container.
- Incompatible materials
  Strong oxidising agents.

7.3 Specific end use(s)
Cleaning / degreasing solvent

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

<table>
<thead>
<tr>
<th>SUBSTANCE.</th>
<th>CAS No.</th>
<th>LTEL (8 hr TWA ppm)</th>
<th>LTEL (8 hr TWA mg/m³)</th>
<th>STEL (ppm)</th>
<th>STEL (mg/m³)</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None known</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

| Biological limit value
<table>
<thead>
<tr>
<th>Limit value type (country of origin)</th>
<th>SUBSTANCE.</th>
<th>EC No.</th>
<th>Biological limit value</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>None known</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

8.1.2 Recommended monitoring method
None known.

8.1.3 Other Occupational Exposure Limits.
None known.

8.1.4 PNECs and DNELs
PNECs - None known

<table>
<thead>
<tr>
<th>Fresh water</th>
<th>Salt Water</th>
<th>Soil (mg/kg-dw)</th>
<th>STP (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (mg/L)</td>
<td>Sediment (mg/kg-dw)</td>
<td>Intermittent (mg/L)</td>
<td>Water (mg/L)</td>
</tr>
<tr>
<td>__</td>
<td>__</td>
<td>__</td>
<td>__</td>
</tr>
</tbody>
</table>

DNELs - None known

<table>
<thead>
<tr>
<th>Route</th>
<th>Type</th>
<th>DNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

8.2.1 Appropriate engineering controls
Use closed dosing, transfer, sampling and application systems including connectors. Formulate in enclosed or ventilated mixing vessels.
8.2.2 Personal protection equipment

Eye/face protection
Wear protective eyewear (goggles, face shield, or safety glasses).

Skin protection (Hand protection/ Other)
Wear protective gloves. (Neoprene)

Respiratory protection
Normally no personal respiratory protection is necessary. In poorly ventilated areas or confined spaces, use an airline respirator or self-contained breathing apparatus.

Thermal hazards
Not normally required. Use gloves with insulation for thermal protection, when needed.

8.2.3 Environmental Exposure Controls
Avoid release to the environment. Keep containers properly sealed when not in use. Avoid run off to waterways and sewers.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Clear Colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>Not available</td>
</tr>
<tr>
<td>Odour Threshold (ppm)</td>
<td>Not available</td>
</tr>
<tr>
<td>pH (Value)</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point (°C) / Freezing Point (°C)</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling point/boiling range (°C):</td>
<td>50</td>
</tr>
<tr>
<td>Flash Point (°C)</td>
<td>&gt; 93</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive limit ranges</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour Pressure (Pascal)</td>
<td>36,100 @ 25 °C</td>
</tr>
<tr>
<td>Vapour Density (Air=1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Density (g/ml)</td>
<td>1.38</td>
</tr>
<tr>
<td>Solubility (Water)</td>
<td>0.0014 g/ml</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
</tr>
<tr>
<td>Partition Coefficient (n-Octanol/water)</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto Ignition Temperature (°C)</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition Temperature (°C)</td>
<td>Not available</td>
</tr>
<tr>
<td>Kinematic Viscosity (cSt) @ 40°C</td>
<td>0.36 @ 23 °C</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive.</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not oxidizing.</td>
</tr>
</tbody>
</table>

9.2 Other information
Not available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No hazardous reactions known if used for its intended purpose.

10.2 Chemical stability
Considered stable under normal conditions.

10.3 Possibility of hazardous reactions
None known.
10.4 Conditions to avoid
Incompatible materials

10.5 Incompatible materials
Strong oxidising agents, Alkalis and alkali metals, Aluminum, Zinc, Alkaline earth metals.

10.6 Hazardous Decomposition Product(s)
Thermal decomposition products include: Carbon monoxide, Carbon dioxide, and hydrogen fluorides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Substances:

- Acute toxicity
  - Oral: LD50 >5000 mg/kg-bw
  - Dermal: LD50 >5000 mg/kg-bw
  - Inhalation: LC50 >24684 ppm (4-hour) (rat)

- Skin corrosion/irritation
  - Slight irritant to rabbit skin.

- Serious eye damage/irritation
  - Slight irritant to rabbit eyes.

- Respiratory or skin sensitization
  - It is not a skin sensitiser in animal tests.

- Germ cell mutagenicity
  - No data

- Carcinogenicity
  - No data

- Reproductive toxicity
  - No data

- STOT - single exposure
  - May cause drowsiness or dizziness. (By analogy with similar materials)

- STOT - repeated exposure
  - No data

- Aspiration hazard
  - No data

11.1.2 Mixtures
Not applicable

11.1.3 Substances in preparations / mixtures
Not applicable

11.2 Other information
None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

- Short term
  - EC50 (48 hour) >125.7 mg/L (Daphnia magna)
  - EC50 (72 hour) >129.8 mg/L (Pseudokirchneriella subcapita)

- Long Term
  - Not to be expected.

12.2 Persistence and degradability
Not readily biodegradable. Readily volatilizes from water.

12.3 Bioaccumulative potential
The product has low potential for bioaccumulation.

12.4 Mobility in soil
Not available

12.5 Results of PBT and vPvB assessment
Not classified as PBT or vPvB.

12.6 Other adverse effects
None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Disposal should be in accordance with local, state or national legislation. Consult an accredited waste disposal contractor or the local authority for advice.

13.2 Additional Information
None known.
SECTION 14: TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Land transport (ADR/RID)</th>
<th>Sea transport (IMDG)</th>
<th>Air transport (ICAO/IATA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN number</td>
<td>14.2 Proper Shipping Name</td>
<td>14.3 Transport hazard class(es)</td>
</tr>
<tr>
<td>UN 3334</td>
<td>Not classified as dangerous for transport.</td>
<td>9</td>
</tr>
<tr>
<td>14.4 Packing Group</td>
<td>14.5 Environmental hazards</td>
<td>14.6 Special precautions for user</td>
</tr>
<tr>
<td>III</td>
<td>No.</td>
<td>Subject to quantity restrictions/limitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable</td>
</tr>
</tbody>
</table>

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
15.1.1 EU regulations
- Regulation (EC) 689/2008 - Export/Import of Dangerous Chemicals No.
- Regulation (EC) 1907/2006 - REACH Authorisations and/or restrictions on use No.
15.1.2 National regulations Not established.
15.2 Chemical Safety Assessment Not required.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1 - 16

Hazard statement(s) and Precautionary statement(s):
- None.

GHS Classification
- Not classified as dangerous for supply/use.

Training advice: None.

Additional Information: None.

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