Section 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

<table>
<thead>
<tr>
<th>Product name:</th>
<th>1-CHLOROETHYL CHLOROFORMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS number:</td>
<td>50893-53-3</td>
</tr>
<tr>
<td>EINECS number:</td>
<td>256-834-2</td>
</tr>
<tr>
<td>Product code:</td>
<td>OR16433</td>
</tr>
<tr>
<td>Synonyms:</td>
<td>1-CHLOROETHYL CARBONOCHLORIDOATE</td>
</tr>
</tbody>
</table>

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

1.3. Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Company name:</th>
<th>Apollo Scientific Ltd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units 3 &amp; 4</td>
<td></td>
</tr>
<tr>
<td>Parkway</td>
<td></td>
</tr>
<tr>
<td>Denton</td>
<td></td>
</tr>
<tr>
<td>Manchester</td>
<td></td>
</tr>
<tr>
<td>M34 3SG</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td></td>
</tr>
<tr>
<td>Tel:</td>
<td>0161 337 9971</td>
</tr>
<tr>
<td>Fax:</td>
<td>0161 336 6932</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:david.tideswell@apolloscientific.co.uk">david.tideswell@apolloscientific.co.uk</a></td>
</tr>
</tbody>
</table>

1.4. Emergency telephone number

Section 2: Hazards identification

2.1. Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Classification under CHIP:</th>
<th>R10; Xn: R22; T: R23; C: R34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification under CLP:</td>
<td>Acute Tox. 4: H302; Acute Tox. 3: H331; Flam. Liq. 3: H226; Skin Corr. 1B: H314</td>
</tr>
<tr>
<td>Most important adverse effects:</td>
<td>Flammable. Harmful if swallowed. Toxic by inhalation. Causes burns.</td>
</tr>
</tbody>
</table>

2.2. Label elements

<table>
<thead>
<tr>
<th>Label elements under CLP:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard statements:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Signal words:</td>
</tr>
<tr>
<td>Hazard pictograms:</td>
</tr>
</tbody>
</table>
GHS05: Corrosion
GHS06: Skull and crossbones

Precautionary statements:
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Label elements under CHIP:
Hazard symbols: Toxic.

Risk phrases: R10: Flammable.
R22: Harmful if swallowed.
R23: Toxic by inhalation.
R34: Causes burns.

Safety phrases:
S16: Keep away from sources of ignition - No smoking.
S23: Do not breathe vapour.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39: Wear suitable protective clothing, gloves and eye / face protection.
S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S63: In case of accident by inhalation, remove casualty to fresh air and keep at rest.

2.3. Other hazards

Other hazards: In use, may form flammable / explosive vapour-air mixture. Lachrymatory.
PBT: This substance is not identified as a PBT substance.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: 1-CHLOROETHYL CHLOROFORMATE

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin.
Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Transfer to hospital if there are burns or symptoms of poisoning.

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Wash out mouth with water. Do not induce vomiting. If conscious, give half a litre of water
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1-CHLOROETHYL CHLOROFORMATE

4.2. Most important symptoms and effects, both acute and delayed

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Irritation or pain may occur at the site of contact. Absorption through the skin may be fatal.

Eye contact: There may be severe pain. The eyes may water profusely.

Ingestion: There may be soreness and redness of the mouth and throat. There may be vomiting. Convulsions may occur. There may be loss of consciousness.

Inhalation: There may be shortness of breath with a burning sensation in the throat. Absorption through the lungs can occur causing symptoms similar to those of ingestion. Convulsions may occur. There may be loss of consciousness.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

4.3. Indication of any immediate medical attention and special treatment needed

Immediate / special treatment: Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Carbon dioxide, dry chemical powder, foam. DO NOT USE WATER

5.2. Special hazards arising from the substance or mixture


5.3. Advice for fire-fighters

Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Notify the police and fire brigade immediately. Eliminate all sources of ignition. If outside do not approach from downwind. If outside keep bystanders upwind and away from danger point. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Do not attempt to take action without suitable protective equipment.
clothing - see section 8 of SDS. Turn leaking containers leak-side up to prevent the escape of liquid.

**6.2. Environmental precautions**

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

**6.3. Methods and material for containment and cleaning up**

Clean-up procedures: Clean-up should be dealt with only by qualified personnel familiar with the specific substance. Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method. Do not use equipment in clean-up procedure which may produce sparks.

**6.4. Reference to other sections**

Reference to other sections: Refer to section 8 of SDS.

**Section 7: Handling and storage**

**7.1. Precautions for safe handling**

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. Smoking is forbidden. Use non-sparking tools. Only use in fume hood. Open and handle with care. Vent periodically.

**7.2. Conditions for safe storage, including any incompatibilities**

Storage conditions: Store in cool, well ventilated area. Keep container tightly closed. Keep away from sources of ignition. Prevent the build up of electrostatic charge in the immediate area. Ensure lighting and electrical equipment are not a source of ignition. Moisture sensitive. Store under Argon. Recommended storage temp 2-8 °C. Vent periodically.

Suitable packaging: Must only be kept in original packaging.

**7.3. Specific end use(s)**

Specific end use(s): No data available.

**Section 8: Exposure controls/personal protection**

**8.1. Control parameters**

Workplace exposure limits: Not applicable.

**8.2. Exposure controls**

Engineering measures: Ensure there is exhaust ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency.

Hand protection: Impermeable gloves.

Eye protection: Safety glasses with side-shields. Ensure eye bath is to hand.

Skin protection: Impermeable protective clothing.
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Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquid
Colour: Colourless
Odour: Lachrymatory
Solubility in water: Reacts with water.

Boiling point/range°C: 118-121
Melting point/range°C: -65
Flash point°C: 40.5
Vapour pressure: 224.0 hPa at 20 °C
Relative density: 1.325

9.2. Other information

Other information: Not applicable.

Section 10: Stability and reactivity

10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

10.2. Chemical stability

Chemical stability: Stable under normal conditions. Stable at room temperature.

10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4. Conditions to avoid


10.5. Incompatible materials


10.6. Hazardous decomposition products


Section 11: Toxicological information

11.1. Information on toxicological effects

Toxicity values:

<table>
<thead>
<tr>
<th>Route</th>
<th>Species</th>
<th>Test</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORAL</td>
<td>RAT</td>
<td>LD50</td>
<td>470</td>
<td>mg/kg</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
1-CHLOROETHYL CHLOROFORMATE

Relevant hazards for substance:

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Route</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (ac. tox. 4)</td>
<td>ING</td>
<td>Based on test data</td>
</tr>
<tr>
<td>Acute toxicity (ac. tox. 3)</td>
<td>INH</td>
<td>Based on test data</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>DRM</td>
<td>Based on test data</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>OPT</td>
<td>Based on test data</td>
</tr>
</tbody>
</table>

Symptoms / routes of exposure

Skin contact: There may be redness or whiteness of the skin in the area of exposure. Irritation or pain may occur at the site of contact. Absorption through the skin may be fatal.

Eye contact: There may be severe pain. The eyes may water profusely.

Ingestion: There may be soreness and redness of the mouth and throat. There may be vomiting. Convulsions may occur. There may be loss of consciousness.

Inhalation: There may be shortness of breath with a burning sensation in the throat. Absorption through the lungs can occur causing symptoms similar to those of ingestion. Convulsions may occur. There may be loss of consciousness.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

Section 12: Ecological information

12.1. Toxicity

Ecotoxicity values: Not applicable.

12.2. Persistence and degradability

Persistence and degradability: No data available.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available.

12.4. Mobility in soil

Mobility: No data available.

12.5. Results of PBT and vPvB assessment

PBT identification: This substance is not identified as a PBT substance.

12.6. Other adverse effects

Other adverse effects: No data available.

Section 13: Disposal considerations

13.1. Waste treatment methods

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.

[cont...]
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NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

Section 14: Transport information

14.1. UN number

UN number: UN2742

14.2. UN proper shipping name

Shipping name: CHLOROFORMATES, TOXIC, CORROSIVE, FLAMMABLE, N.O.S.

14.3. Transport hazard class(es)

Transport class: 6.1 (3+8)

14.4. Packing group

Packing group: II

14.5. Environmental hazards

Environmentally hazardous: No
Marine pollutant: No

14.6. Special precautions for user

Tunnel code: D/E
Transport category: 2

Section 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Section 16: Other information

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.


Phrases used in s.2 and 3:
H226: Flammable liquid and vapour.
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H331: Toxic if inhaled.
R10: Flammable.
R22: Harmful if swallowed.
R23: Toxic by inhalation.
R34: Causes burns.

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