Warning

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

1.1. Product identifier
Trade name: Bromo chloro difluoro methane (R12 B1)
SDS no: SDS-008-CLP
Chemical description: Bromo chloro difluoro methane (R12 B1)
CAS No: 353-59-3
EC no: 206-537-9
EC index no: ---
Registration-No.: Registration deadline not expired.
Chemical formula: CBrClF2

1.2. Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: Industrial and professional. Perform risk assessment prior to use.
Test gas/Calibration gas.
Laboratory use.
Contact supplier for more information on uses.

1.3. Details of the supplier of the safety data sheet
Company identification: Air Liquide UK Ltd.
Station Road, Coleshill
B46 1JY Birmingham United Kingdom
01675462424
genenq.aluk@airliquide.com

1.4. Emergency telephone number
Emergency telephone number: 01675 462695

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification according to Regulation (EC) No. 1272/2008 [CLP]
Physical hazards: Gases under pressure : Liquefied gas
Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]
Not classified as dangerous substance / mixture.

2.2. Label elements
Labelling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictograms (CLP): GHS04
Signal word (CLP): Warning
Hazard statements (CLP): H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP):

- Storage: P410+P403 - Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards:

: Asphyxiant in high concentrations.

SECTION 3: Composition/information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Directive 67/548/EEC</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromo chloro difluoro methane (R12 B1)</td>
<td>(CAS No) 353-59-3 (EC no) 206-537-9 (EC index no) --- (Registration-No.) *2</td>
<td>100</td>
<td>Not classified</td>
<td>Press. Gas (Liq.), H280</td>
</tr>
</tbody>
</table>

Contains no other components or impurities which will influence the classification of the product.

*1: Listed in Annex IV / V REACH, exempted from registration.
*2: Registration deadline not expired.
*3: Registration not required: Substance manufactured or imported < 1t/y.

Full text of R-phrases see section 16. Full text of H-statements see section 16.

3.2. Mixture:

: Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation: Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact: For liquid spillage - flush with water for at least 15 minutes.
- Eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion: Ingestion is not considered a potential route of exposure.

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

: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. Refer to section 11.

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

: None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media: Water spray or fog.
- Unsuitable extinguishing media: Do not use water jet to extinguish.
5.2. Special hazards arising from the substance or mixture

Specific hazards: Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products: If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:
- Hydrogen fluoride.
- Carbon monoxide.
- Hydrogen bromide.
- Phosgene.
- Hydrogen chloride.
- Carbonyl fluoride.
- Carbonyl bromide.

5.3. Advice for fire-fighters

Specific methods: Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
- If possible, stop flow of product.
- Use water spray or fog to knock down fire fumes if possible.
- Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters: Use self-contained breathing apparatus.
- Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
- Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
- Standard EN 469 - Protective clothing for firefighters.
- Standard - EN 659: Protective gloves for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- Try to stop release.
- Evacuate area.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- Ensure adequate air ventilation.
- Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
- Act in accordance with local emergency plan.
- Stay upwind.

6.2. Environmental precautions

- Try to stop release.

6.3. Methods and material for containment and cleaning up

- Ventilate area.

6.4. Reference to other sections

- See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Safe use of the product:
The substance must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid suck back of water, acid and alkalis. Do not breathe gas. Avoid release of product into atmosphere.

Safe handling of the gas receptacle:
Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

7.2. Conditions for safe storage, including any incompatibilities:
Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage. Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

7.3. Specific end use(s):
None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
OEL (Occupational Exposure Limits): No data available.
DNEL (Derived-No Effect Level): No data available.
PNEC (Predicted No-Effect Concentration): No data available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls
Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment
A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:

PPE compliant to the recommended EN/ISO standards should be selected.

• **Eye/face protection**
  - Wear safety glasses with side shields.
  - Wear safety glasses with side shields or goggles when transferring or breaking transfer connections.
  - Standard EN 166 - Personal eye-protection.

• **Skin protection**
  - **Hand protection**
    - Wear working gloves when handling gas containers.
    - Standard EN 388 - Protective gloves against mechanical risk.
  - **Other**
    - Wear safety shoes while handling containers.
    - Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
    - Keep suitable chemically resistant protective clothing readily available for emergency use.
    - Standard EN 943-1 - Full protective suits against liquid, solid and gaseous chemicals.

• **Respiratory protection**
  - Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
  - Use gas filters and full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
  - Recommended: Filter AX (brown).
  - Recommended: Filter NO (blue).
  - Consult respiratory device supplier’s product information for the selection of the appropriate device.
  - Gas filters do not protect against oxygen deficiency.
  - Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
  - Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136.
  - Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

• **Thermal hazards**
  - None necessary.

8.2.3. **Environmental exposure controls**

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

**SECTION 9: Physical and chemical properties**

9.1. **Information on basic physical and chemical properties**

**Appearance**
- **Physical state at 20°C / 101.3kPa**: Gas.
- **Colour**: Colourless.

**Odour**
- Ethereal. Poor warning properties at low concentrations.

**Odour threshold**
- Odour threshold is subjective and inadequate to warn of overexposure.

**pH value**
- Not applicable.

**Molar mass**
- 165 g/mol

**Melting point**
- -160 °C

**Boiling point**
- -3.3 °C

**Flash point**
- Not applicable for gases and gas mixtures.

**Critical temperature [°C]**
- 153 °C

**Evaporation rate (ether=1)**
- Not applicable for gases and gas mixtures.

**Flammability range**
- Non flammable.

**Vapour pressure [20°C]**
- 2.5 bar(a)
Bromo chloro difluoro methane (R12 B1)

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

No reactivity hazard other than the effects described in sub-sections below.

**10.2. Chemical stability**

Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

None.

**10.4. Conditions to avoid**

None under recommended storage and handling conditions (see section 7).

**10.5. Incompatible materials**

For additional information on compatibility refer to ISO 11114.

**10.6. Hazardous decomposition products**

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

**Acute toxicity**

No known toxicological effects from this product.

**Skin corrosion/irritation**

No known effects from this product.

**Serious eye damage/irritation**

No known effects from this product.

**Respiratory or skin sensitisation**

No known effects from this product.

**Germ cell mutagenicity**

No known effects from this product.

**Carcinogenicity**

No known effects from this product.

**Toxic for reproduction : Fertility**

No known effects from this product.

**Toxic for reproduction : unborn child**

No known effects from this product.

**STOT-single exposure**

No known effects from this product.

**STOT-repeated exposure**

No known effects from this product.

**Aspiration hazard**

Not applicable for gases and gas mixtures.

**SECTION 12: Ecological information**

Air Liquide UK Ltd.
Station Road, Coleshill  B46 1JY
Birmingham United Kingdom
01675462424
Assessment: No data available.

12.2. Persistence and degradability
Assessment: No data available.

12.3. Bioaccumulative potential
Assessment: No data available.

12.4. Mobility in soil
Assessment: Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Results of PBT and vPvB assessment
Assessment: No data available.

12.6. Other adverse effects
Effect on ozone layer: Hazardous to the ozone layer
Harms public health and the environment by destroying ozone in the upper atmosphere
CFC group: III
Ozone depletion potential [R11=1]: 3
Global warming potential [CO2=1]: 1890
Effect on the global warming: Contains Fluorinated greenhouse gases covered by the Kyoto protocol.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Refer to supplier's waste gas recovery programme.
Must not be discharged to atmosphere.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods.

List of hazardous waste codes (from Commission Decision 2001/118/EC):
14 06 01: Chlorofluorocarbons, HCFC, HFC.

13.2. Additional information
None.

SECTION 14: Transport information

14.1. UN number
UN-No.: 1974

14.2. UN proper shipping name
Transport by road/rail (ADR/RID): CHLORODIFLUOROBROMO- METHANE (REFRIGERANT GAS R 12B1)
Transport by air (ICAO-TI / IATA-DGR): CHLORODIFLUOROBROMOMETHANE
Transport by sea (IMDG): CHLORODIFLUOROBROMOMETHANE (REFRIGERANT GAS R 12B1)

14.3. Transport hazard class(es)
Bromo chloro difluoro methane (R12 B1)

SDS Ref.: SDS-008-CLP

Air Liquide UK Ltd.
Station Road, Coleshill B46 1JY
Birmingham United Kingdom
01675462424

EN (English)
SDS Ref.: SDS-008-CLP
8/9

Labelling

Transport by road/rail (ADR/RID)
Class : 2
Classification code : 2A
Hazard identification number : 20
Tunnel Restriction : C/E - Tank carriage : Passage forbidden through tunnels of category C, D and E. Other carriage : Passage forbidden through tunnels of category E

Transport by air (ICAO-TI / IATA-DGR)
Class / Div. (Sub. risk(s)) : 2.2

Transport by sea (IMDG)
Class / Div. (Sub. risk(s)) : 2.2

14.4. Packing group

Transport by road/rail (ADR/RID) : Not applicable
Transport by air (ICAO-TI / IATA-DGR) : Not applicable
Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.
Transport by air (ICAO-TI / IATA-DGR) : None.
Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)
Transport by road/rail (ADR/RID) : P200
Transport by air (ICAO-TI / IATA-DGR) : 200
Passenger and Cargo Aircraft : 200
Cargo Aircraft only : 200
Transport by sea (IMDG) : P200

Special transport precautions
Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use: Use of the substance may be subject to registration and authorisation (Regulation 1005/2009). Extinguishing agent is the only use permitted and to the extend limited in Regulation 744/2010. Authorised only to satisfy essential laboratory and analytical uses as per Commission Decision 2010/375 of 18 June 2010.

Seveso directive 96/82/EC: Not covered.

National regulations

National legislation: Ensure all national/local regulations are observed.

Water hazard class (WGK): -

Kenn-Nr.: 1360

15.2. Chemical safety assessment

: This product is either exempt from REACH, does not meet the minimum volume threshold for a CSR or the CSA has not yet been carried out.

SECTION 16: Other information


Training advice: The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Further information: This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

Full text of R-, H- and EUH-phrases

<table>
<thead>
<tr>
<th>Press. Gas (Liq.)</th>
<th>Gases under pressure: Liquefied gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>H280</td>
<td>Contains gas under pressure; may explode if heated</td>
</tr>
</tbody>
</table>

DISCLAIMER OF LIABILITY: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.