# Safety data sheet
# Chloroethane (R 160)



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

**1.1. Product identifier**
**Product name**
Chloroethane (R 160)

EC No (from EINECS): 200-830-5
CAS No: 75-00-3
Index-Nr. 602-009-00-0
**Chemical formula** C2H5Cl
**REACH Registration number**:
Not available.

**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. Refrigerant.
**Uses advised against**
Consumer use.

**1.3. Details of the supplier of the safety data sheet**
**Company identification**
BOC, PO Box 1201, Bluebell, Dublin
**E-Mail Address** ReachSDS@boc.com

**1.4. Emergency telephone number**
**Emergency phone numbers (24h):** 1850 333 435

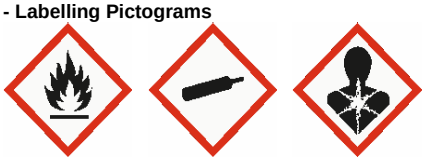
**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)**
Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated.
Flam. Gas 1 - Extremely flammable gas.
Carc. 2 - Suspected of causing cancer.
Aquatic Chronic 3 - Harmful to aquatic life with long lasting effects.

**Classification acc. to Directive 67/548/EEC & 1999/45/EC**
F+; R12 **|** Carc. Cat.3; R40, R52/53
Extremely flammable.
Limited evidence of a carcinogenic effect.
Harmful to aquatic organisms, may cause long term adverse effects in the aquatic environment.
**Risk advice to man and the environment**
Liquefied gas.
Contact with liquid may cause cold burns/frost bite.

**2.2. Label elements**
**- Labelling Pictograms**



**- Signal word**

Danger

**- Hazard Statements**

| | |
|---|---|
| H280 | Contains gas under pressure; may explode if heated. |
| H220 | Extremely flammable gas. |
| H351 | Suspected of causing cancer. |
| H412 | Harmful to aquatic life with long lasting effects. |

**- Precautionary Statements**

**Precautionary Statement Prevention**

| | |
|---|---|
| P202 | Do not handle until all safety precautions have been read and understood. |
| P210 | Keep away from heat/sparks/open flames/hot surfaces. - No smoking. |
| P273 | Avoid release to the environment. |

**Precautionary Statement Response**

| | |
|---|---|
| P377 | Leaking gas fire: Do not extinguish, unless leak can be stopped safely. |
| P381 | Eliminate all ignition sources if safe to do so. |
| P308 + P313 | IF exposed or concerned: Get medical advice/attention. |

**Precautionary Statement Storage**

| | |
|---|---|
| P403 | Store in a well-ventilated place. |

**Precautionary Statement Disposal**
None.

**2.3. Other hazards**
Contact with liquid may cause cold burns/frost bite.

**SECTION 3: Composition/information on ingredients**

**Substance / Mixture**: Substance.

**3.1. Substances**
Chloroethane (R 160)
**CAS No:** 75-00-3
**Index-Nr.**: 602-009-00-0
**EC No (from EINECS):** 200-830-5
**REACH Registration number**:
Not available.
Contains no other components or impurities which will influence the classification of the product.

**3.2. Mixtures**
Not applicable.

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**
**First Aid General Information:**
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
**First Aid 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.
**First Aid Skin / Eye:**
For liquid spillage - flush with water for at least 15 minutes. In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Immediately flush eyes thoroughly with water for at least 15 minutes. Obtain medical assistance.
**First Aid 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.

**4.3. Indication of any immediate medical attention and special treatment needed**
None.

## SECTION 5: Fire fighting measures

**5.1. Extinguishing media**
**Suitable extinguishing media**
All known extinguishants can be used.
**Unsuitable extinguishing media**
Do not use a solid water stream.

**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:
Phosgene, Hydrogen chloride, Carbon monoxide.

**5.3. Advice for fire-fighters**
**Specific methods**

If possible, stop flow of product. Move container away or cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Prevent water used in emergency cases from entering sewers and drainage systems.
**Special protective equipment for fire-fighters**
Use self-contained breathing apparatus and chemically protective clothing. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for fire-fighting.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**
Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate ignition sources. Consider the risk of potentially explosive atmospheres. Monitor concentration of released product. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

**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**
Only experienced and properly instructed persons should handle gases under pressure. The substance must be handled in accordance with good industrial hygiene and safety procedures. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Avoid exposure, obtain special instructions before use. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Purge air from system before introducing gas. Keep away from ignition sources (including static discharges). Do not smoke while handling product. Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment. Consider the use of only non-sparking tools. Ensure the complete gas system has been (or is regularly) checked for leaks before use. Avoid suckback of water, acid and alkalis. Refer to supplier's 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 contaminates 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**
Secure cylinders to prevent them from falling. Segregate from oxidant gases and other oxidants in store. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of

containers. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials. All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere. Containers should not be stored in conditions likely to encourage corrosion.

**7.3. Specific end use(s)**
None.

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

**8.1. Control parameters**
**Exposure limit value**

| Value type | value | Note |
|---|---|---|
| TLV (ACGIH) | 1.000 ppm | ACGIH 1995 - 1996 |
| Great Britain - LTEL | 50 ppm | EH 40/07 |

**Derived No Effect Levels**

| Type | Exposure | Value | Population | Effects |
|---|---|---|---|---|
| DNEL | Long term Dermal | 38,3 mg/kg | Workers | Systemic |
| DNEL | Long term Inhalation | 268 mg/m3 | Workers | Systemic |

**Predicted No Effect Concentrations**

| Type | Compartment Detail | Value |
|---|---|---|
| PNEC | Freshwater | 0,058 mg/L |
| PNEC | Marine water | 0,0058 mg/L |
| PNEC | Intermittent releases | 0,58 mg/L |
| PNEC | STP (Sewage Treatment Plant) | 140 mg/L |
| PNEC | Fresh water sediment | 0,3098 mg/kg sediment dw |
| PNEC | Marine water sediment | 0,031 mg/kg sediment dw |
| PNEC | Soil | 28,2849 mg/kg soil dw |

**8.2. Exposure controls**
**Appropriate engineering controls**
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. Product to be handled in a closed system and under strictly controlled conditions. Keep concentrations well below occupational exposure limits. Gas detectors should be used when quantities of flammable gases/vapours may be released. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance activities. Keep concentrations well below lower explosion limits.
**Personal protective equipment**
**Eye and face protection**
Protect eyes, face and skin from liquid splashes. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wear a face-shield when transfilling and breaking transfer connections. Safety eyewear, goggles or face-shield to EN166 should be used to avoid exposure to liquid splashes. Full-face mask recommended.
Guideline:
EN 136: Respiratory protective devices. Full face masks. Requirements, testing, marking.
**Skin protection**
**Hand protection**
Advice: Wear cold insulating gloves.
Guideline: EN 511 Protective gloves against cold.

Advice: Wear working gloves and safety shoes while handling gas cylinders., Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Min. Breakthrough time: 8 min
Glove thickness: 0,5 mm
Guideline: EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

**Body protection**
Protect eyes, face and skin from contact with product. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved.
Guideline:
EN 943: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles.
**Other protection**
Wear flame resistant/retardant clothing. Take precautionary measures against static discharges. Wear working gloves and safety shoes while handling gas cylinders.
Guideline:
ISO 20345 Safety footwear.
**Respiratory protection**
Keep self contained breathing apparatus readily available for emergency use.Use SCBA in the event of high concentrations.The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.When allowed by a risk assessment Respiratory Protective Equipment (RPE) may be used.
Guideline:
EN 136: Respiratory protective devices. Full face masks. Requirements, testing, marking.

Material:
Filter AX
Guideline:
EN 14387: Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking
**Thermal hazards**
If there is a risk of contact with the liquid, all protective

equipment should be suitable for extremely low temperatures.
**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**
**General information**
**Appearance/Colour:** Colourless gas.
**Odour:** Ethereal Poor warning properties at low concentrations.
**Odour threshold:**
Odour threshold is subjective and inadequate to warn for over exposure.
**Melting point:** -138 °C
**Boiling point:** 12,3 °C
**Flash point:** Not applicable for gases and gas mixtures.
**Evaporation rate**:
Not applicable for gases and gas mixtures.
**Flammability range:** 3,6 %(V) - 14,8 %(V)
**Vapour Pressure 20 °C:** 1,3 bar
**Relative density, gas:** 2,2
**Solubility in water:** No reliable data available.
**Partition coefficient: n-octanol/water:** 1,43 logPow
**Autoignition temperature:** 510 °C
**Viscosity:**
Dynamic: 0,27 mPa.s
**Molecular weight:** 64,5 g/mol
**Critical temperature:** 187 °C
**Relative density, liquid:** 0,91

**9.2. Other information**
Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## SECTION 10: Stability and reactivity

**10.1. Reactivity**
Unreactive under normal conditions.

**10.2. Chemical stability**
Stable under normal conditions.

**10.3. Possibility of hazardous reactions**
Can form potential explosive atmosphere in air., May react violently with oxidants.

**10.4. Conditions to avoid**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

**10.5. Incompatible materials**
Air, Oxidiser. May react violently with alkaline-earth and alkali metals. For material compatibility see latest version of ISO-11114.

**10.6. Hazardous decomposition products**
Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:
Phosgene, Hydrogen chloride, Carbon monoxide.

## SECTION 11: Toxicological information

**11.1. Information on toxicological effects**
**Acute oral toxicity**
No data available.
**Acute inhalation toxicity**
Value: LC50
Species: Rat
Exposure time: 2 h
Value in standard unit mg/l: 152 mg/l
**Acute dermal toxicity**
No data available.
**Acute toxicity other routes**
Ingestion is not considered a potential route of exposure.
**Skin irritation**
No known effects from this product.
**Eye irritation**
No known effects from this product.
**Sensitization**
Not determined.
**Repeated dose toxicity**
No known effects from this product.
**Assessment mutagenicity**
Not determined.
**Assessment carcinogenicity**
May have carcinogenic effect.
**Assessment toxicity to reproduction**
No indication of toxic effects.
**Assessment teratogenicity**
No data available.
**Experiences with human exposure**
Overexposure may cause stomach cramps, vomiting and cough and may also cause kidney and liver damage.

## SECTION 12: Ecological information

**12.1. Toxicity**
Harmful to aquatic life with long lasting effects. Not covered by the 'Montreal Protocol'.
**Acute and prolonged toxicity fish**
Not determined.
**Acute toxicity aquatic invertebrates/ Toxicity aquatic plants**
Species: Scenedesmus subspicatus
Exposure time: 72 h
Value type: EC50
Value in standard unit mg/l: 39 mg/l

**12.2. Persistence and degradability**
Very highly volatile or gaseous product that can be released to atmosphere., No data available.
**Biodegradation**
Test type: Closed bottle test.
Biodegradation: 0 %
Not readily biodegradable.
**Physical chemical eliminability**
Not determined.

**12.3. Bioaccumulative potential**

No data available.

**12.4. Mobility in soil**
No data available.

**12.5. Results of PBT and vPvB assessment**
No data available.

**12.6. Other adverse effects**
Not applicable.

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**
Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. 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. Gases in pressure containers (including halons) containing dangerous substances .
**EWC Nr. 16 05 04***

## SECTION 14: Transport information

**ADR/RID**

**14.1. UN number**
1037

**14.2. UN proper shipping name**
Ethyl Chloride

**14.3. Transport hazard class(es)**
Class: 2
Classification Code: 2F
Labels: 2.1
Hazard number: 23
Tunnel restriction code: (B/D)
Emergency Action Code: 2YE

**14.4. Packing group (Packing Instruction)**
P200

**14.5. Environmental hazards**
None.

**14.6. Special precautions for user**
None.

**IMDG**

**14.1. UN number**
1037

**14.2. UN proper shipping name**
Ethyl Chloride

**14.3. Transport hazard class(es)**
Class: 2.1
Labels: 2.1
EmS: F-D, S-U

**14.4. Packing group (Packing Instruction)**
P200

**14.5. Environmental hazards**
None.

**14.6. Special precautions for user**
None.

**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
Not applicable.

**IATA**

**14.1. UN number**
1037

**14.2. UN proper shipping name**
Ethyl Chloride

**14.3. Transport hazard class(es)**
Class: 2.1
Labels: 2.1

**14.4. Packing group (Packing Instruction)**
P200

**14.5. Environmental hazards**
None.

**14.6. Special precautions for user**
None.

**Other transport information**
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 that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
Seveso Directive 96/82/EC: Covered

**15.2. Chemical safety assessment**
A CSA does not need to be carried out for this product.

## SECTION 16: Other information

Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

**Advice**

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. Details given in this document are believed to be correct at the time of going to press.

**Further information**

Note:
When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.
As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

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