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 C_2H_5Cl
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, Priestley Road, Worsley, Manchester M28 2UT
E-Mail Address ReachSDS@boc.com

1.4. Emergency telephone number
Emergency phone numbers (24h): 0800 111 333

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

Other regulations
Chemical Hazards Information and Packaging for Supply (CHIP, 1994 No. 3247)
Control of Major Accident Hazards Regulations (COMAH,

1999 No. 743)
Control of Substances Hazardous to Health Regulations (COSHH, 2002 No. 2677)
Dangerous Substances and Explosive Atmospheres Regulations (DSEAR 2002 No. 2776)
Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations (EPS, 1996 No. 192)
Management of Health and Safety at Work Regulations (1999 No. 3242)
Personal Protective Equipment Regulations (1992 No. 2966)
Pressure Systems Safety Regulations (PER, 2000 No. 128)
Provision and Use of Work Equipment Regulations (PUWER, 1998 No. 2306)
The Regulatory Reform (Fire Safety) Order 2005 The Regulatory Reform (Fire Safety) Order 2005 (2005 No. 1541)

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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