BOC
A Member of The Linde Group

# SAFETY DATA SHEET

**# 0174**

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

### 1.1 Product identifier

**Product name** **STENCH GAS**

**Synonym(s)** 0174 - SDS NUMBER • BOC STENCH GAS • PRODUCT CODE: 283

### 1.2 Uses and uses advised against

**Use(s)** WARNING DEVICE - UNDERGROUND MINES

### 1.3 Details of the supplier of the product

**Supplier name** **BOC LIMITED (AUSTRALIA)**

**Address** 10 Julius Avenue, North Ryde, NSW, 2113, AUSTRALIA

**Telephone** 131 262, (02) 8874 4400

**Fax** 132 427 (24 hours)

**Website** http://www.boc.com.au

### 1.4 Emergency telephone number(s)

**Emergency** 1800 653 572 (24/7) (Australia only)

## 2. HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

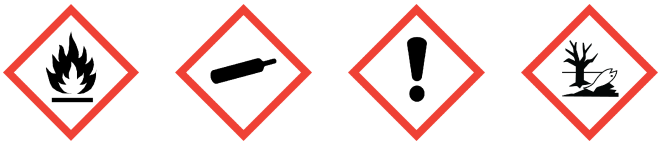
CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

**GHS classification(s)**
Flammable Gases: Category 1
Aquatic Toxicity (Chronic): Category 2
Gases Under Pressure: Compressed gas
Acute Toxicity: Inhalation: Category 4

### 2.2 Label elements

**Signal word** **DANGER**

**Pictogram(s)**



**Hazard statement(s)**

| | |
|---|---|
| H220 | Extremely flammable gas. |
| H280 | Contains gas under pressure; may explode if heated. |
| H332 | Harmful if inhaled. |
| H411 | Toxic to aquatic life with long lasting effects. |

**Prevention statement(s)**

| | |
|---|---|
| P210 | Keep away from heat/sparks/open flames/hot surfaces. No smoking. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |

**Response statement(s)**

| | |
|---|---|
| P304 + P340 | IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. |
| P312 | Call a POISON CENTER or doctor/physician if you feel unwell. |
| P377 | Leaking gas fire: Do not extinguish, unless leak can be stopped safely. |
| P381 | Eliminate all ignition sources if safe to do so. |
| P391 | Collect spillage. |

**Storage statement(s)**

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

**Disposal statement(s)**

| | |
|---|---|
| P501 | Dispose of contents/container in accordance with relevant regulations. |

### 2.3 Other hazards

Asphyxiant. Effects are proportional to oxygen displacement.

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS

### 3.1 Substances / Mixtures

| Ingredient | CAS Number | EC Number | Content (v/v) |
|---|---|---|---|
| ETHYL MERCAPTAN | 75-08-1 | 200-837-3 | 15% |
| CARBON DIOXIDE | 124-38-9 | 204-696-9 | 85% |

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

| | |
|---|---|
| **Eye** | Cold burns: Immediately flush with tepid water or with sterile saline solution. Hold eyelids apart and irrigate for 15 minutes. Seek medical attention. |
| **Inhalation** | If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). Be aware of possible explosive atmospheres. Apply artificial respiration if not breathing. Give oxygen if available. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor. |
| **Skin** | Cold burns: Remove contaminated clothing and gently flush affected areas with warm water (30°C) for 15 minutes. Apply sterile dressing and treat as for a thermal burn. For large burns, immerse in warm water for 15 minutes. DO NOT apply any form of direct heat. Seek immediate medical attention. |
| **Ingestion** | Due to product form and application, ingestion is considered unlikely. |
| **First aid facilities** | No information provided. |

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

In high concentrations may cause asphyxiation. Direct contact with the liquefied material or escaping compressed gas may cause frostbite injury. Low concentrations of CO2 cause increased respiration and headache. Inhalation of ethyl mercaptan may cause central nervous system effects.

### 4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

### 5.1 Extinguishing media

Stop flow of gas if safe to do so, such as by slowly closing the cylinder valve. Remove cool cylinders from the path of the fire. Evacuate if unable to keep cylinders cool. If a flame from the cylinder is impinging on flammable materials or other cylinders then evacuate the area. If the cylinder is standing alone then let the flame continue until all gas has been consumed. Ensure work area is thoroughly ventilated before re-entry.

### 5.2 Special hazards arising from the substance or mixture

Extremely flammable. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, mobile phones etc. when handling.

### 5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture and internal pressure relief devices to be activated. Cool cylinders or containers exposed to fire by applying water from a protected location. Do not approach cylinders or containers suspected of being hot. This material is capable of forming explosive mixtures in air. Heating ethyl mercaptan or contact with acid, acid vapour, water or steam will produce toxic fumes of sulphur oxides.

### 5.4 Hazchem code

2WE

2 Fine Water Spray.

W Risk of violent reaction or explosion. Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

E Evacuation of people in and around the immediate vicinity of the incident should be considered.

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

If the cylinder is leaking, evacuate area of personnel. Inform manufacturer/supplier of leak. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Eliminate all sources of ignition. Consider the risk of potentially explosive atmospheres.

### 6.2 Environmental precautions

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

### 6.3 Methods of cleaning up

Carefully move material to a well ventilated remote area, then allow to discharge if safe to do so. Do not attempt to repair leaking valve or cylinder safety devices.

### 6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Do not drag, drop, slide or roll cylinders. The uncontrolled release of a gas under pressure may cause physical harm. Use a suitable hand truck for cylinder movement.

### 7.2 Conditions for safe storage, including any incompatibilities

Do not store near sources of ignition or incompatible materials. Cylinders should be stored below 45°C in a secure area, upright and restrained to prevent cylinders from falling. Cylinders should also be stored in a dry, well ventilated area constructed of non-combustible material with firm level floor (preferably concrete), away from areas of heavy traffic and emergency exits.

### 7.3 Specific end use(s)

No information provided.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 Control parameters

**Exposure standards**

| Ingredient | Reference | TWA | | STEL | |
|---|---|---|---|---|---|
| | | ppm | mg/m³ | ppm | mg/m³ |
| Carbon dioxide | SWA (AUS) | 5000 | 9000 | 30000 | 54000 |
| Carbon dioxide in coal mines | SWA (AUS) | 12500 | 22500 | 30000 | 54000 |
| Ethyl mercaptan | SWA (AUS) | 0.5 | 1.3 | -- | -- |

**Biological limits**

No biological limit values have been entered for this product.

### 8.2 Exposure controls

**Engineering controls** Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Maintain vapour levels below the recommended exposure standard.

**PPE**

| | |
|---|---|
| **Eye / Face** | Wear safety glasses. |
| **Hands** | Wear leather gloves. |
| **Body** | Wear safety boots. |
| **Respiratory** | Where an inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator. |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | COLOURLESS GAS |
| **Odour** | PENETRATING GARLIC-LIKE ODOUR |
| **Flammability** | EXTREMELY FLAMMABLE |
| **Flash point** | 17°C (Ethyl mercaptan) |
| **Boiling point** | -78°C (Approximately) |
| **Melting point** | NOT AVAILABLE |
| **Evaporation rate** | NOT APPLICABLE |
| **pH** | NOT APPLICABLE |
| **Vapour density** | NOT AVAILABLE |
| **Specific gravity** | NOT APPLICABLE |
| **Solubility (water)** | 0.759 $cm^3/cm^3$ (Carbon dioxide) |
| **Vapour pressure** | 6300 kPa @ 25°C (Approximately) |
| **Upper explosion limit** | 18.2 % (Ethyl mercaptan) |
| **Lower explosion limit** | 2.8 % (Ethyl mercaptan) |
| **Partition coefficient** | NOT AVAILABLE |
| **Autoignition temperature** | 570°C (Ethyl mercaptan) |
| **Decomposition temperature** | NOT AVAILABLE |
| **Viscosity** | NOT AVAILABLE |
| **Explosive properties** | NOT AVAILABLE |
| **Oxidising properties** | NOT AVAILABLE |
| **Odour threshold** | NOT AVAILABLE |

### 9.2 Other information

| | |
|---|---|
| **Density** | 1.5 (Air = 1) |
| **Critical pressure** | 7,380 kPa (Approximately) |
| **% Volatiles** | 100 % |

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

### 10.2 Chemical stability

No information provided.

### 10.3 Possibility of hazardous reactions

Polymerization will not occur.

### 10.4 Conditions to avoid

No information provided.

### 10.5 Incompatible materials

Ethyl mercaptan can react vigorously with oxidising materials. Will react with acid, acid vapour, water or steam to produce toxic and flammable vapours. The manufacturer reports that aluminium, chrome and manganese dust may heat and explode when heated in carbon dioxide. Also incompatible with oxidising agents (e.g. hypochlorites), acids (e.g. nitric acid), water/steam (evolving toxic and flammable gases), acryaldehyde, aziridine, metal acetylides and sodium peroxide.

### 10.6 Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

| | |
|---|---|
| **Acute toxicity** | Harmful if inhaled. Inhalation of ethyl mercaptan may cause central nervous system effects. Low concentrations of carbon dioxide cause increased respiration and headache.<br><br>ETHYL MERCAPTAN<br>LC50 (Inhalation): 2270 ppm / 4 hours (mouse) |
| **Skin** | Not classified as a skin irritant. Contact with dry ice powder may cause frostbite injury or cold burns. |
| **Eye** | Not classified as an eye irritant. Contact with dry ice powder may cause frostbite injury or cold burns. |
| **Sensitization** | Not classified as causing skin or respiratory sensitisation. |
| **Mutagenicity** | Not classified as a mutagen. |
| **Carcinogenicity** | Not classified as a carcinogen. |
| **Reproductive** | Not classified as a reproductive toxin. |
| **STOT – single exposure** | Asphyxiant. Effects are proportional to oxygen displacement. Over exposure may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness. |
| **STOT – repeated exposure** | Repeated exposure may cause damage to the central nervous system. |
| **Aspiration** | Not classified as causing aspiration. |

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### 12.2 Persistence and degradability

No information provided.

### 12.3 Bioaccumulative potential

No information provided.

### 12.4 Mobility in soil

No information provided.

### 12.5 Other adverse effects

When discharged to the atmosphere, carbon dioxide may contribute to the greenhouse effect. TERRESTRIAL FATE: Ethyl mercaptan has a relatively high vapour pressure and therefore surface transport (by volatilisation) to the atmosphere is expected to be an important fate process. AQUATIC FATE: Volatilisation is expected to be an important transport process for ethyl mercaptan in water. ATMOSPHERIC FATE: Ethyl mercaptan is expected to exist primarily in the vapour-phase in the ambient atmosphere. It will degrade readily in the atmosphere by the vapour-phase reaction with photochemically produced hydroxyl radicals (estimated half-life of about 8 hours) (HSDB).

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

| | |
|---|---|
| **Waste disposal** | Cylinders should be returned to the manufacturer or supplier for disposal of contents. |
| **Legislation** | Dispose of in accordance with relevant local legislation. |

## 14. TRANSPORT INFORMATION

**CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE**

| | LAND TRANSPORT (ADG) | SEA TRANSPORT (IMDG / IMO) | AIR TRANSPORT (IATA / ICAO) |
|---|---|---|---|
| **14.1 UN Number** | 3161 | 3161 | 3161 |
| **14.2 Proper Shipping Name** | LIQUEFIED GAS, FLAMMABLE, N.O.S. (Contains ethyl mercaptan) | LIQUEFIED GAS, FLAMMABLE, N.O.S. (Contains ethyl mercaptan) | LIQUEFIED GAS, FLAMMABLE, N.O.S. (Contains ethyl mercaptan) |
| **14.3 Transport hazard class** | 2.1 | 2.1 | 2.1 |
| **14.4 Packing Group** | None Allocated | None Allocated | None Allocated |

**14.5 Environmental hazards** No information provided

**14.6 Special precautions for user**

**Hazchem code** 2WE

**GTEPG** 2A2

**EMS** F-D, S-U

**Other information** Ensure cylinder is separated from driver and that outlet of relief device is not obstructed.

## 15. REGULATORY INFORMATION

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

**Poison schedule** A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

**Classifications** Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

**Hazard codes**

| | |
|---|---|
| F+ | Extremely flammable |
| N | Dangerous for the environment |
| Xn | Harmful |

**Risk phrases**

| | |
|---|---|
| R12 | Extremely Flammable. |
| R20 | Harmful by inhalation. |
| R51/53 | Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment. |

**Safety phrases**

| | |
|---|---|
| S9 | Keep container in a well ventilated place. |
| S16 | Keep away from sources of ignition - No smoking. |
| S33 | Take precautionary measures against static discharges. |

**Inventory listing(s)** **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

## 16. OTHER INFORMATION

**Additional information** The storage of significant quantities of gas cylinders must comply with AS4332 The storage and handling of gases in cylinders.

APPLICATION METHOD: Cylinder or manifolded cylinders connected to fixed pipework distribution system.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

**Abbreviations**

| | |
|---|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| CAS # | Chemical Abstract Service number - used to uniquely identify chemical compounds |
| CNS | Central Nervous System |
| EC No. | EC No - European Community Number |
| EMS | Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods) |
| GHS | Globally Harmonized System |
| GTEPG | Group Text Emergency Procedure Guide |
| IARC | International Agency for Research on Cancer |
| LC50 | Lethal Concentration, 50% / Median Lethal Concentration |
| LD50 | Lethal Dose, 50% / Median Lethal Dose |
| $mg/m^3$ | Milligrams per Cubic Metre |
| OEL | Occupational Exposure Limit |
| pH | relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). |
| ppm | Parts Per Million |
| STEL | Short-Term Exposure Limit |
| STOT-RE | Specific target organ toxicity (repeated exposure) |
| STOT-SE | Specific target organ toxicity (single exposure) |
| SUSMP | Standard for the Uniform Scheduling of Medicines and Poisons |
| SWA | Safe Work Australia |
| TLV | Threshold Limit Value |
| TWA | Time Weighted Average |

**Report status**

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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**[ End of SDS ]**