

SAFETY DATA SHEET

2527

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name 5 COMPONENT MIXTURE (C3H8, NO <1%, CO, CO2, BALANCE N2)
Synonym(s) 2527 - SDS NUMBER • SPECIAL GAS MIXTURE

1.2 Uses and uses advised against

Use(s) CALIBRATION • INDUSTRIAL APPLICATIONS

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) Gases Under Pressure: Compressed gas
Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2
Acute Toxicity: Inhalation: Category 4
Toxic to Reproduction: Category 1A

2.2 Label elements

Signal word DANGER

Pictogram(s)



Hazard statement(s)

H280 Contains gas under pressure; may explode if heated.
H332 Harmful if inhaled.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.

Prevention statement(s)

P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P281 Use personal protective equipment as required.

Response statement(s)

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

PRODUCT NAME 5 COMPONENT MIXTURE (C3H8, NO <1%, CO, CO2, BALANCE N2)**Storage statement(s)**

P405 Store locked up.
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

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

| Ingredient | CAS Number | EC Number | Content (v/v) |
|-----------------|------------|-----------|---------------|
| CARBON MONOXIDE | 630-08-0 | 211-128-3 | 1 to 9% |
| PROPANE | 74-98-6 | 200-827-9 | <3.5% |
| NITRIC OXIDE | 10102-43-9 | 233-271-0 | <1% |
| NITROGEN | 7727-37-9 | 231-783-9 | Remainder |
| CARBON DIOXIDE | 124-38-9 | 204-696-9 | 10 to 20% |

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator or Self Contained Breathing Apparatus (SCBA). 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 If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion Due to product form and application, ingestion is considered unlikely.

First aid facilities Eye wash facilities should be available.

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. May cause irritation of the eyes, skin, nose and throat. Headache, dizziness, lassitude, nausea and vomiting may occur in some cases. Over exposure to carbon monoxide may result in rapid breathing, nausea, lack of coordination, unconsciousness and coma. Carbon monoxide reacts with haemoglobin in the blood to prevent oxygen uptake and release. May cause harm to the unborn child.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use water fog to cool containers from protected area.

5.2 Special hazards arising from the substance or mixture

Non flammable.

5.3 Advice for firefighters

Temperatures in a fire may cause cylinders to rupture. Cool cylinders or containers exposed to fire by applying water from a protected location. Remove cool cylinders from the path of the fire. Evacuate the area if unable to keep cylinders cool. Do not approach cylinders or containers suspected of being hot.

5.4 Hazchem code

2TE

2 Fine Water Spray.

T Wear full fire kit and breathing apparatus. Dilute 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. Use Personal Protective Equipment (PPE) as detailed in Section 8 of the SDS.

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 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/m ³ | ppm | mg/m ³ |
| Carbon dioxide | SWA (AUS) | 5000 | 9000 | 30000 | 54000 |
| Carbon dioxide in coal mines | SWA (AUS) | 12500 | 22500 | 30000 | 54000 |
| Carbon monoxide | SWA (AUS) | 30 | 34 | -- | -- |
| Nitric oxide | SWA (AUS) | 25 | 31 | -- | -- |
| Nitrogen | SWA (AUS) | Asphyxiant | | | |
| Propane | SWA (AUS) | Asphyxiant | | | |

Biological limits

| Ingredient | Determinant | Sampling Time | BEI |
|-----------------|------------------------------------|---------------|--------------------|
| CARBON MONOXIDE | Carboxyhemoglobin in blood | End of shift | 3.5% of hemoglobin |
| | Carbon monoxide in end-exhaled air | End of shift | 20 ppm |

Reference: ACGIH Biological Exposure Indices

8.2 Exposure controls

Engineering controls

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. 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 an Air-line respirator or a Type NO (Nitrogen Oxides) respirator. |



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|----------------------------------|-----------------------|
| Appearance | COLOURLESS GAS |
| Odour | SLIGHT ODOUR |
| Flammability | NON FLAMMABLE |
| Flash point | NOT RELEVANT |
| Boiling point | NOT AVAILABLE |
| Melting point | NOT AVAILABLE |
| Evaporation rate | NOT APPLICABLE |
| pH | NOT APPLICABLE |
| Vapour density | NOT AVAILABLE |
| Specific gravity | NOT APPLICABLE |
| Solubility (water) | REACTS (Nitric oxide) |
| Vapour pressure | NOT AVAILABLE |
| Upper explosion limit | NOT RELEVANT |
| Lower explosion limit | NOT RELEVANT |
| Partition coefficient | NOT AVAILABLE |
| Autoignition temperature | NOT AVAILABLE |
| Decomposition temperature | NOT AVAILABLE |
| Viscosity | NOT AVAILABLE |
| Explosive properties | NOT AVAILABLE |
| Oxidising properties | NOT AVAILABLE |
| Odour threshold | NOT AVAILABLE |

9.2 Other information

| | |
|--------------------|-------|
| % 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

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Nitric oxide reacts in air to form nitrogen dioxide which is highly oxidising. Reacts violently with fluorine and chlorine in the presence of moisture. Moist carbon dioxide is corrosive, hence acid resistant materials are required (stainless steel). Incompatible with oxidising agents (nitrates, oxygen), halogens (chlorine, bromine), acids (nitric acid) and some chlorides.

10.6 Hazardous decomposition products

May evolve nitrogen oxides when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

| | |
|---------------------------------|--|
| Acute toxicity | Harmful if inhaled. Headache, dizziness, lassitude, nausea and vomiting may occur in some cases. Some 6 to 24 hours after exposure further symptoms develop: lips become blue and soon breathing becomes difficult, accelerated and irregular choking, cyanosis and tightness of the chest follow and palpitations may occur. Brief exposure to high concentrations causes sudden onset of pulmonary oedema which can be rapidly fatal. CARBON MONOXIDE LC50 (Inhalation): 1807 ppm / 4 hours (rat) NITRIC OXIDE LC50 (Inhalation): 115 ppm / 1 hour (rat) |
| Skin | Not classified as a skin irritant. Contact may cause temporary mild skin irritation. |
| Eye | Not classified as an eye irritant. Contact may cause discomfort, lacrimation and redness. |
| Sensitization | Not classified as causing skin or respiratory sensitisation. |
| Mutagenicity | Not classified as a mutagen. However, some animal studies have shown possible evidence for mutagenic effects. |
| Carcinogenicity | Not classified as a carcinogen. |
| Reproductive | May cause harm to the unborn child. Exposure to carbon monoxide can result in developmental defects on foetuses without maternal symptoms. |
| 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 | Increased evidence of cardiovascular problems have been demonstrated upon chronic exposure to carbon monoxide. Can aggravate some diseases of the cardiovascular system such as coronary artery disease. The effect is enhanced by cigarette smoking. Adverse behavioural effects have been noted including impairment of vigilance, co-ordination, timing, behaviour, visual perception and certain cognitive functions. Some adaptation occurs in individuals repeatedly exposed to moderate concentrations. |
| Aspiration | Not classified as causing aspiration. |

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

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

Nitrogen oxides react with volatile organic compounds to produce ozone, a principal factor in photochemical smog. Will form nitric acid in contact with water. Nitrates can persist for prolonged periods in water. Not expected to concentrate in the food chain.

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 | 1956 | 1956 | 1956 |
| 14.2 Proper Shipping Name | COMPRESSED GAS, N.O.S. (contains nitrogen) | COMPRESSED GAS, N.O.S. (contains nitrogen) | COMPRESSED GAS, N.O.S. (contains nitrogen) |
| 14.3 Transport hazard class | 2.2 | 2.2 | 2.2 |
| 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 | 2TE |
| GTEPG | 2C1 |
| EMS | F-C, S-V |
| Other information | Ensure cylinder is separated from driver and that outlet of relief device is not obstructed. Refer to Commonwealth, State and Territory Dangerous Goods Legislation which contain requirements which affect gas storage and transport. |

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 | Repr. Xn | Reproductive toxin Harmful |
| Risk phrases | R20 R48/20 R61 | Harmful by inhalation. Harmful: danger of serious damage to health by prolonged exposure through inhalation. May cause harm to the unborn child. |
| Safety phrases | S45 S53 | In case of accident or if you feel unwell seek medical advice immediately (show the label where possible). Avoid exposure - obtain special instructions before use. |
| 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: Gas regulator of suitable pressure and flow rating fitted to cylinder or manifold with low pressure gas distribution to equipment. |
|-------------------------------|--|

PRODUCT NAME 5 COMPONENT MIXTURE (C3H8, NO <1%, CO, CO2, BALANCE N2)

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.

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Prepared by

Risk Management Technologies
5 Ventnor Ave, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmt.com.au.

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