

SECTION 1: Identification : Product identifier and chemical identity

1.1. Product identifier

Product form : Mixture
Trade name : <= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2
Product code : 357

1.2. Recommended uses and restrictions

:

1.3. Supplier information

CAC GAS & Instrumentation Pty Ltd
Unit 3 36 Holbeche Rd
2148 Arndell Park - AUSTRALIA
T +61 2 8676 6500 - F +61 2 9933 8832
cac@cacgas.com.au - <http://www.cacgas.com.au/>
Emergency telephone number: 0400959760

SECTION 2: Hazards identification

2.1. Classification of the hazardous chemical

Classification (GHS-AU)

Press. Gas (Comp.) H280

2.2. Label elements

Hazard pictograms (GHS-AU) :



GHS04

Signal word (GHS-AU) : Warning
Hazard statements (GHS-AU) : H280 - Contains gas under pressure; may explode if heated
Precautionary statements (GHS-AU) : P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards

Other hazards not contributing to the classification : None.

SECTION 3: Composition/information on ingredients

Name	CAS No	Compound type	%	Classification according to the United Nations GHS (Rev. 4, 2011)
Nitrogen	7727-37-9		76.8	Press. Gas (Comp.), H280
Oxygen	7782-44-7		<= 22	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Propane	74-98-6		<= 1.1	Flam. Gas 1, H220 Press. Gas (Liq.), H280

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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Name	CAS No	Compound type	%	Classification according to the United Nations GHS (Rev. 4, 2011)
Hydrogen sulphide	7783-06-4		<= 0.05	Flam. Gas 1, H220 Press. Gas (Liq.), H280 Acute Tox. 2 (Inhalation: gases), H330 Aquatic Acute 1, H400
Carbon monoxide	630-08-0		<= 0.05	Flam. Gas 1, H220 Press. Gas (Comp.), H280 Repr. 1A, H360 Acute Tox. 3 (Inhalation: gases), H331 STOT RE 1, H372

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Adverse effects not expected from this product.
First-aid measures after skin contact : Adverse effects not expected from this product.
First-aid measures after eye contact : Adverse effects not expected from this product.
First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Symptoms caused by exposure

Most important symptoms and effects, both acute and delayed : Refer to section 11.

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

Other medical advice or treatment : None.

SECTION 5: Fire-fighting 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

General measures : Act in accordance with local emergency plan. Stay upwind.
Hazardous combustion products : Sulphur dioxide.

5.3. Special protective equipment and precautions for fire-fighters

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.
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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Act in accordance with local emergency plan. Stay upwind.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

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6.2. Environmental precautions

None.

6.3. Methods and material for containment and cleaning up

Methods and material for containment and cleaning up : None.

SECTION 7: Handling and storage, including how the chemical may be safely used

7.1. Precautions for safe handling

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. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock.

Safe use of the product : The product 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. Use only oxygen approved lubricants and oxygen approved sealings. Avoid suck back of water, acid and alkalis. Do not breathe gas. Avoid release of product into atmosphere.

7.2. Conditions for safe storage, including any incompatibilities

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.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters - exposure standards

Carbon monoxide (630-08-0)		
Australia	Local name	Carbon monoxide
Australia	TWA (mg/m ³)	34 mg/m ³
Australia	TWA (ppm)	30 ppm
USA - ACGIH	Local name	Carbon monoxide
USA - ACGIH	ACGIH TWA (ppm)	25 ppm
China	Local name	一氧化碳
China	OEL TWA	20 mg/m ³ 非高原
China	OEL STEL	30 mg/m ³ 非高原
China	OEL MAC (mg/m ³)	20 mg/m ³ 高原 海拔 2000~3000m

Exposure limit values for the other components

No additional information available

8.2. Monitoring

No additional information available

8.3. Appropriate engineering controls

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). Consider the use of a work permit system e.g. for maintenance activities.

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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8.4. Personal protective equipment

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.
Hand protection	: Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risk.
Eye protection	: Wear safety glasses with side shields. Standard EN 166 - Personal eye-protection - specifications
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 with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers. Gas filters do not protect against oxygen deficiency. Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136.
Thermal hazard protection	: None in addition to the above sections.
Environmental exposure controls	: None necessary.
Other information	: Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

9.1. SECTION 9: Physical and chemical properties

Physical state	: Gas
Appearance	:
Molecular mass	: Not applicable for gas mixtures.
Colour	: Mixture contains one or more component(s) which have the following colour(s): Colourless.
Odour	: There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour(s): Rotten eggs. Stenchant often added. Sweetish.
Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
pH	: Not applicable for gases and gas mixtures.
Relative evaporation rate (butylacetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable for gases and gas mixtures.
Melting point / Freezing point	: Melting point : Not applicable for gas mixtures.
Boiling point	: Not applicable for gas mixtures.
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: Non flammable.
Decomposition temperature	: Not applicable.
Flammability (solid, gas)	: No data available
Vapour pressure	: Vapour pressure : Not applicable. Vapour pressure at 50 °C : Not applicable.
Relative density	: Relative vapour density at 20 °C : Not applicable. Relative gas density : Lighter or similar to air.
Density	: No data available
Solubility	: No data available
Log Pow	: Not applicable for gas mixtures.
Viscosity	: Viscosity, kinematic : Not applicable. Viscosity, dynamic : Not applicable.
Explosive properties	: Not applicable.
Oxidising properties	: Not applicable.
Explosive limits	: Non flammable.
Minimum ignition energy	: No data available
Fat solubility	: No data available
Additional information	: None.

10.1. SECTION 10: Stability and reactivity

Reactivity	: No reactivity hazard other than the effects described in sub-sections below.No reactivity hazard other than the effects described in sub-sections below.
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<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: None under normal use.
Conditions to avoid	: Avoid moisture in installation systems.
Incompatible materials	: For additional information on compatibility refer to ISO 11114.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11.1. SECTION 11: Toxicological information

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Classification criteria are not met.

Hydrogen sulphide (7783-06-4)

LC50 inhalation rat (ppm)	356 ppm/4h
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Carbon monoxide (630-08-0)

LC50 inhalation rat (ppm)	1880 ppm/4h
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Skin corrosion/irritation	: No known effects from this product. pH: Not applicable for gases and gas mixtures.
Serious eye damage/irritation	: No known effects from this product. pH: Not applicable for gases and gas mixtures.
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.
Reproductive toxicity	: Not classified
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: Classification criteria are not met.
Aspiration hazard	:

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Viscosity, dynamic	Not applicable.
Viscosity, kinematic	Not applicable.

SECTION 12: Ecological information

According to the National Code of Practice for the Preparation of Material Safety Data Sheets, Environmental classification information is not mandatory. Information relevant for GHS classification is available on request

12.1. Ecotoxicity

Ecology - general	: Classification criteria are not met.
Acute aquatic toxicity	: Not classified
Chronic aquatic toxicity	: Not classified

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

Log Kow	Not applicable for gas mixtures.
Log Pow	Not applicable for gas mixtures.

Hydrogen sulphide (7783-06-4)

LC50 96 h - Fish [mg/l]	0.007 - 0.019 mg/l
EC50 48h - Daphnia magna [mg/l]	0.12 mg/l
EC50 72h - Algae [mg/l]	1.87 mg/l
Log Pow	Not applicable for inorganic gases.

Carbon monoxide (630-08-0)

LC50 96 h - Fish [mg/l]	Study scientifically unjustified.
EC50 48h - Daphnia magna [mg/l]	Study scientifically unjustified.
EC50 72h - Algae [mg/l]	Study scientifically unjustified.
Log Pow	1.78

Propane (74-98-6)

LC50 96 h - Fish [mg/l]	49.9 mg/l
EC50 48h - Daphnia magna [mg/l]	27.1 mg/l
EC50 72h - Algae [mg/l]	11.9 mg/l
Log Pow	2.36

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Oxygen (7782-44-7)	
Log Pow	Not applicable for inorganic gases.

Nitrogen (7727-37-9)	
Log Pow	Not applicable for inorganic gases.

12.2. Persistence and degradability

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2	
Persistence and degradability	No data available.

Hydrogen sulphide (7783-06-4)	
Persistence and degradability	Not applicable for inorganic gases.

Carbon monoxide (630-08-0)	
Persistence and degradability	Will not undergo hydrolysis. Not readily biodegradable. Not applicable for inorganic gases.

Propane (74-98-6)	
Persistence and degradability	The substance is biodegradable. Unlikely to persist.

Oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.

Nitrogen (7727-37-9)	
Persistence and degradability	No ecological damage caused by this product.

12.3. Bioaccumulative potential

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2	
Log Pow	See section 12.1 on ecotoxicology
Log Kow	See section 12.1 on ecotoxicology
Bioaccumulative potential	No data available.

Hydrogen sulphide (7783-06-4)	
Log Pow	See section 12.1 on ecotoxicology
Bioaccumulative potential	No data available.

Carbon monoxide (630-08-0)	
Log Pow	See section 12.1 on ecotoxicology
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

Propane (74-98-6)	
Log Pow	See section 12.1 on ecotoxicology
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

Oxygen (7782-44-7)	
Log Pow	See section 12.1 on ecotoxicology
Bioaccumulative potential	No ecological damage caused by this product.

Nitrogen (7727-37-9)	
Log Pow	See section 12.1 on ecotoxicology
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

Hydrogen sulphide (7783-06-4)	
Log Pow	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

Carbon monoxide (630-08-0)	
Log Pow	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

Propane (74-98-6)	
Log Pow	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

Oxygen (7782-44-7)	
Log Pow	See section 12.1 on ecotoxicology
Ecology - soil	No ecological damage caused by this product.

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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Nitrogen (7727-37-9)	
Log Pow	See section 12.1 on ecotoxicology
Ecology - soil	No ecological damage caused by this product.

12.5. Other adverse effects

Ozone	: Not classified
Other adverse effects	: No known effects from this product.
Effect on the ozone layer	: None.

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2	
Effect on the ozone layer	None.
Fluorinated greenhouse gases	False
GWPmix comment	Contains greenhouse gas(es).

Hydrogen sulphide (7783-06-4)	
Effect on the ozone layer	None.
Effect on global warming	No known effects from this product.
Fluorinated greenhouse gases	False

Carbon monoxide (630-08-0)	
Effect on the ozone layer	None.
Fluorinated greenhouse gases	False
GWP 20 years	28
GWP 100 years	1.9
GWP 500 years	0.3
GWP Comment	Estimates are subject to large uncertainties

Propane (74-98-6)	
Effect on the ozone layer	None.
Effect on global warming	No known effects from this product.
Fluorinated greenhouse gases	False

Oxygen (7782-44-7)	
Effect on the ozone layer	None.
Effect on global warming	No known effects from this product.
Fluorinated greenhouse gases	False

Nitrogen (7727-37-9)	
Effect on the ozone layer	None.
Effect on global warming	None.
Fluorinated greenhouse gases	False

SECTION 13: Disposal considerations

Waste treatment methods	: May be vented to atmosphere in a well ventilated place. Return unused product in original cylinder to supplier.
Additional information	: External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number

UN-No. (ADG)	: 1956
UN-No. (IMDG)	: 1956
UN-No. (IATA)	: 1956

14.2. Proper Shipping Name - Addition

Proper Shipping Name (ADG)	: COMPRESSED GAS, N.O.S. (Oxygen ; Nitrogen MIXTURE)
Transport by air (ICAO-TI / IATA-DGR)	: Compressed gas, n.o.s. (Oxygen ; Nitrogen MIXTURE)
Transport by sea (IMDG)	: COMPRESSED GAS, N.O.S. (Oxygen ; Nitrogen MIXTURE)

14.3. Transport hazard class(es)

ADG

Transport hazard class(es) (ADG)	: 2.2
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<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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Danger labels (ADG) : 2.2



IMDG

Transport hazard class(es) (IMDG) : 2.2

Danger labels (IMDG) : 2.2



IATA

Transport hazard class(es) (IATA) : 2.2

Hazard labels (IATA) : 2.2



14.4. Packing group

Packing group (ADG) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

14.5. Environmental hazards

Marine pollutant : No

14.6. Special precautions for user

Specific storage requirement : No data available

Shock sensitivity : No data available

14.7. Additional information

Other information : No supplementary information available

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.

Transport by road and rail

UN-No. (ADG) : 1956

Special provision (ADG) : 274, 292

Limited quantities (ADG) : 120ml

Packing instructions (ADG) : P200

Transport by sea

UN-No. (IMDG) : 1956

Special provisions (IMDG) : 274

Limited quantities (IMDG) : 120 ml

Excepted quantities (IMDG) : E1

Packing instructions (IMDG) : P200

EmS-No. (Fire) : F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES

EmS-No. (Spillage) : S-V - SPILLAGE SCHEDULE Victor - GASES (NON-FLAMMABLE, NON-TOXIC)

Stowage category (IMDG) : A

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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Air transport

UN-No. (IATA)	: 1956
PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 200
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 200
CAO max net quantity (IATA)	: 150kg
ERG code (IATA)	: 2L

14.8. Hazchem or Emergency Action Code

Hazchemcode : 2TE

SECTION 15: Regulatory information

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

No additional information available

15.2. International agreements

No additional information available

SECTION 16: Any other relevant information

Abbreviations and acronyms	: ATE - Acute Toxicity Estimate CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 EINECS - European Inventory of Existing Commercial Chemical Substances CAS# - Chemical Abstract Service number PPE - Personal Protection Equipment LC50 - Lethal Concentration to 50 % of a test population RMM - Risk Management Measures PBT - Persistent, Bioaccumulative and Toxic vPvB - Very Persistent and Very Bioaccumulative STOT- SE : Specific Target Organ Toxicity - Single Exposure CSA - Chemical Safety Assessment EN - European Standard UN - United Nations ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road IATA - International Air Transport Association IMDG code - International Maritime Dangerous Goods RID - Regulations concerning the International Carriage of Dangerous Goods by Rail WGK - Water Hazard Class
Other information	: Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP.

Classification:

Press. Gas (Comp.)	H280
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Full text of H-statements:

Acute Tox. 2 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 2
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Flam. Gas 1	Flammable gases, Category 1
Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Repr. 1A	Reproductive toxicity, Category 1A
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
H220	Extremely flammable gas
H270	May cause or intensify fire; oxidizer

<= 500ppm H2S/500ppm CO/22% O2/1.1%C3//N2

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H280	Contains gas under pressure; may explode if heated
H330	Fatal if inhaled
H331	Toxic if inhaled
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life

SDS Australia Calgas

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product