

**Warning****SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

SDS no : AL162

**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.  
Test gas/Calibration gas.  
Laboratory use.  
Contact supplier for more information on uses.

Uses advised against : Consumer use.

**1.3. Details of the supplier of the safety data sheet**Company identification : Air Liquide Australia Limited  
Level 12 / 600 St. Kilda Road  
3004 Melbourne VIC Australia  
+61 3 9697 9888  
ALAEquiries@AirLiquide.com**1.4. Emergency telephone number**

Emergency telephone number : 1800 812 588

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Classification according to WHS Regulation**

Physical hazards Gases under pressure : Compressed gas H280

**2.2. Label elements****Classification according to WHS Regulation**

Hazard pictograms :



GHS04

Signal word : Warning

Hazard statements : H280 - \_H\_280\_EU.

Precautionary statements

- Storage : P403 - \_P\_403\_EU.

**2.3. Other hazards**

: None.

### SECTION 3: Composition/information on ingredients

**3.1. Substances** : Not applicable

**3.2. Mixtures**

Name	Product identifier	%	Classification according to WHS Regulation
Carbon dioxide	(CAS-No.) 124-38-9 (EC-No.) 204-696-9 (EC Index-No.) --- (REACH-no) *1	≤ 75	Press. Gas (Liq.), H280
Oxygen	(CAS-No.) 7782-44-7 (EC-No.) 231-956-9 (EC Index-No.) 008-001-00-8 (REACH-no) *1	≤ 23.5	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Nitrogen	(CAS-No.) 7727-37-9 (EC-No.) 231-783-9 (EC Index-No.) --- (REACH-no) *1	Balance	Press. Gas (Comp.), H280
Carbon monoxide	(CAS-No.) 630-08-0 (EC-No.) 211-128-3 (EC Index-No.) 006-001-00-2 (REACH-no) 01-2119480165-39	≤ 0.1999	Flam. Gas 1A, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360D STOT RE 1, H372

Full text of H-statements: see section 16

*Contains no other components or impurities which will influence the classification of the product.*

\*1: Listed in Annex IV / V REACH, exempted from registration.

\*2: Registration deadline not expired.

\*3: Registration not required: Substance manufactured or imported < 1t/y.

### SECTION 4: First aid measures

**4.1. Description of first aid measures**

- Inhalation : Adverse effects not expected from this product.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Adverse effects not expected from this product.
- Ingestion : Ingestion is not considered a potential route of exposure.

**4.2. Most important symptoms and effects, both acute and delayed**

- : No effect on living tissue.  
Refer to section 11.

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

- : None.

### SECTION 5: Firefighting 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**

- Specific hazards : Supports combustion.  
Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : None.

**5.3. Advice for fire-fighters**

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.
Special protective equipment for fire fighters	: Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.
Hazchem Code	: 2TE

## SECTION 6: Accidental release measures

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

: Try to stop release.  
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.  
Act in accordance with local emergency plan.  
Stay upwind.

### 6.2. Environmental precautions

: None.

### 6.3. Methods and material for containment and cleaning up

: None.

### 6.4. Reference to other sections

: See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

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.

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.  
Containers should be stored in the vertical position and properly secured to prevent them from falling over.

### 7.2. 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.

### 7.3. Specific end use(s)

: None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Carbon monoxide (630-08-0)		
OEL : Occupational Exposure Limits		
Australia	TWA (mg/m <sup>3</sup> )	34 mg/m <sup>3</sup>
	TWA (ppm)	30 ppm

Carbon dioxide (124-38-9)		
OEL : Occupational Exposure Limits		
Australia	TWA (mg/m <sup>3</sup> )	22500 mg/m <sup>3</sup>
	TWA (ppm)	12500 ppm
	STEL (mg/m <sup>3</sup> )	54000 mg/m <sup>3</sup>
	STEL (ppm)	30000 ppm

Carbon monoxide (630-08-0)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	100 ppm
Acute - systemic effects, inhalation	117 mg/m <sup>3</sup>
Long-term - local effects, inhalation	20 ppm
Long-term - systemic effects, inhalation	23 mg/m <sup>3</sup>

Carbon monoxide (630-08-0)
----------------------------

### 8.2. Exposure controls

**8.2.1. 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.

**8.2.2. Individual protection measures, e.g. 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.

## • Eye/face protection

: Wear safety glasses with side shields.  
Standard EN 166 - Personal eye-protection - specifications

## • Skin protection

## - Hand protection

: Wear working gloves when handling gas containers.  
Standard EN 388 - Protective gloves against mechanical risk.

## - Other

: Wear safety shoes while handling containers.  
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

## • 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.  
Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.  
Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136.  
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

## • Thermal hazards

: None necessary.

**8.2.3. Environmental exposure controls**

: None necessary.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

## Appearance

- Physical state at 20°C / 101.3kPa : Gas.
- Colour : Mixture contains one or more component(s) which have the following colour(s):  
Colourless.

## Odour

: Odourless.

## Odour threshold

: Odour threshold is subjective and inadequate to warn of overexposure.

## pH value

: Not applicable for gas mixtures.

## Molar mass

: Not applicable for gas mixtures.

## Melting point

: Not applicable for gas mixtures.

## Boiling point

: Not applicable for gas mixtures.

## Flash point

: Not applicable for gas mixtures.

## Evaporation rate (ether=1)

: Not applicable for gas mixtures.

## Flammability range

: Non flammable.

## Vapour pressure [20°C]

: Not applicable.

## Vapour pressure [50°C]

: Not applicable.

## Relative density, gas (air=1)

: Heavier than air.

Solubility in water	: No data available
Partition coefficient n-octanol/water [log Kow]	: Not applicable for gas mixtures.
Auto-ignition temperature	: Non flammable.
Decomposition point [°C]	: Not applicable.
Viscosity [20°C]	: Not applicable.
Explosive Properties	: Not applicable.
Oxidising Properties	: Not applicable.

## 9.2. Other information

Other data	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
------------	--

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

### 10.2. Chemical stability

: Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

: None.

### 10.4. Conditions to avoid

: Avoid moisture in installation systems.

### 10.5. Incompatible materials

: For additional information on compatibility refer to ISO 11114.

### 10.6. Hazardous decomposition products

: None.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute toxicity

: Classification criteria are not met.  
Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.  
Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO<sub>2</sub> has been found to act synergistically to increase the toxicity of certain other gases (CO, NO<sub>2</sub>). CO<sub>2</sub> has been shown to enhance the production of carboxy- or met-hemoglobin by these gases possibly due to carbon dioxide's stimulatory effects on the respiratory and circulatory systems.  
For more information, see 'EIGA Safety Info 24: Carbon Dioxide, Physiological Hazards' at [www.eiga.eu](http://www.eiga.eu).

#### Carbon monoxide (630-08-0)

LC50 inhalation rat (ppm)	3760 ppm/1h 1300 ppm/4h
---------------------------	----------------------------

<b>Skin corrosion/irritation</b>	: No known effects from this product.
<b>Serious eye damage/irritation</b>	: No known effects from this product.
<b>Respiratory or skin sensitisation</b>	: No known effects from this product.
<b>Germ cell mutagenicity</b>	: No known effects from this product.
<b>Carcinogenicity</b>	: No known effects from this product.
<b>Toxic for reproduction : Fertility</b>	: No known effects from this product.
<b>Toxic for reproduction : unborn child</b>	: No known effects from this product.
<b>STOT-single exposure</b>	: No known effects from this product.
<b>STOT-repeated exposure</b>	: No known effects from this product.

**Aspiration hazard** : Not applicable for gases and gas mixtures.

## SECTION 12: Ecological information

### 12.1. Toxicity

Assessment : No ecological damage caused by this product.

### 12.2. Persistence and degradability

Assessment : No data available.

### 12.3. Bioaccumulative potential

Assessment : No data available.

### 12.4. Mobility in soil

Assessment : No data available.

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution.  
Partition into soil is unlikely.

### 12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

### 12.6. Other adverse effects

: No known effects from this product.

Effect on the ozone layer : None.

Effect on global warming : Contains greenhouse gas(es).

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Contact supplier if guidance is required.  
May be vented to atmosphere.  
May be vented to atmosphere in a well ventilated place.  
Do not discharge into any place where its accumulation could be dangerous.  
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.  
Return unused product in original cylinder to supplier.

List of hazardous waste codes (from Commission Decision 2001/118/EC) : 16 05 05 : Gases in pressure containers other than those mentioned in 16 05 04.

### 13.2. Additional information

: None.  
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. : 1956

### 14.2. UN proper shipping name

**Transport by road/rail (ADR/RID)** : COMPRESSED GAS, N.O.S. (Carbon dioxide, Carbon monoxide)

**Transport by air (ICAO-TI / IATA-DGR)** : Compressed gas, n.o.s. (Carbon dioxide, Carbon monoxide)

**Transport by sea (IMDG)** : COMPRESSED GAS, N.O.S. (Carbon dioxide, Carbon monoxide)

**14.3. Transport hazard class(es)**

**Labelling** :



2.2 : Non-flammable, non-toxic gases

**Transport by road/rail (ADG)**

Class : 2  
Hazchem Code : 2TE  
Hazard identification number : 20  
Tunnel Restriction : E - Passage forbidden through tunnels of category E

**Transport by air (ICAO-TI / IATA-DGR)**

Class / Div. (Sub. risk(s)) : 2.2

**Transport by sea (IMDG)**

Class / Div. (Sub. risk(s)) : 2.2  
Emergency Schedule (EmS) - Fire : F-C  
Emergency Schedule (EmS) - Spillage : S-V

**14.4. Packing group**

Transport by road/rail (ADR/RID) : Not applicable  
Transport by air (ICAO-TI / IATA-DGR) : Not applicable  
Transport by sea (IMDG) : Not applicable

**14.5. Environmental hazards**

Transport by road/rail (ADR/RID) : None.  
Transport by air (ICAO-TI / IATA-DGR) : None.  
Transport by sea (IMDG) : None.

**14.6. Special precautions for user**

**Packing Instruction(s)**

Transport by road/rail (ADR/RID) : P200  
Transport by air (ICAO-TI / IATA-DGR)  
    Passenger and Cargo Aircraft : 200  
    Cargo Aircraft only : 200  
Transport by sea (IMDG) : P200



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.

HAZCHEM CODE : 2TE

#### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not applicable.

### SECTION 15: Regulatory information

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

##### National regulations

Ensure all national/local regulations are observed.

#### 15.2. Chemical safety assessment

: A CSA does not need to be carried out for this product.

#### For the following substances of this mixture a chemical safety assessment has been carried out

Carbon monoxide

### SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010.

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. STOT - RE : Specific Target Organ Toxicity - Repeated Exposure.

Training advice : Receptacle under pressure.

#### Full text of H-statements

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Flam. Gas 1A	
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	_H_220_EU
H270	_H_270_EU
H280	_H_280_EU
H331	_H_331_EU
H360D	_H360-D_EU
H372	_H_372_EU

**DISCLAIMER OF LIABILITY**

: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.  
Details given in this document are believed to be correct at the time of going to press.  
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.