

Safety Data Sheet



60% Carbon Monoxide Balance Carbon Dioxide

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Version: 5.0

SDS reference: AL053

Danger



SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

SDS no : AL053

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 9 / 380 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

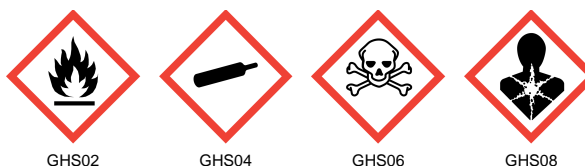
Classification according to WHS Regulation

Physical hazards	Flammable gases, Category 1	H220
	Gases under pressure : Compressed gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 3	H331
	Reproductive toxicity, Category 1A	H360
	Specific target organ toxicity — Repeated exposure, Category 1	H372

2.2. Label elements

Classification according to WHS Regulation

Hazard pictograms :



Signal word : Danger

Hazard statements : H220 - Extremely flammable gas.

H280 - Contains gas under pressure; may explode if heated.
 H331 - Toxic if inhaled.
 H360 - May damage fertility or the unborn child.
 H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

- Prevention : P202 - Do not handle until all safety precautions have been read and understood
 P260 - Do not breathe gas, vapours
 P280 - Wear protective gloves, protective clothing, eye protection, face protection
 P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
- Response : P304+P340+P315 - IF INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention
 P308+P313 - IF exposed or concerned: Get medical advice/attention

2.3. Other hazards

: None

SECTION 3: Composition/information on ingredients
3.1. Substance : Not applicable

3.2. Mixture

Name	Product identifier	%	Classification according to WHS Regulation
Carbon monoxide	(CAS No) 630-08-0 (EC no) 211-128-3 (EC index no) 006-001-00-2 (REACH-no) 01-2119480165-39	60	Flam. Gas 1, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360D STOT RE 1, H372
Carbon dioxide	(CAS No) 124-38-9 (EC no) 204-696-9 (EC index no) (REACH-no) *1	40	Press. Gas (Liq.), H280

Full text of R- and 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 : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped
- 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

- : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation
 Refer to section 11

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

- : Obtain medical assistance

SECTION 5: Firefighting measures**5.1. Extinguishing media**

- Suitable extinguishing media : Water spray or fog
- Unsuitable extinguishing media : Carbon dioxide
Do not use water jet to extinguish

5.2. Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode
- Hazardous combustion products : None that are more toxic than the product itself

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
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire
Move containers away from the fire area if this can be done without risk
- Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus
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
- Hazchemcode : 2SE

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

- : Try to stop release
Evacuate area
Monitor concentration of released product
Consider the risk of potentially explosive atmospheres
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe
Eliminate ignition sources
Ensure adequate air ventilation
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

- : 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**

- Safe use of the product** : The substance 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
Avoid exposure, obtain special instructions before use
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt
Installation of a cross purge assembly between the cylinder and the regulator is recommended
Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service
Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment
Purge air from system before introducing gas
Take precautionary measures against static discharge
Keep away from ignition sources (including static discharges)
Consider the use of only non-sparking tools
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
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
Segregate from oxidant gases and other oxidants in store
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s)

- : None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

60% Carbon Monoxide Balance Carbon Dioxide		
OEL : Occupational Exposure Limits		
Australia	TWA (mg/m ³)	34 mg/m ³ Carbon Monoxide
	TWA (ppm)	30 ppm Carbon Monoxide

Carbon monoxide (630-08-0)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	100 ppm
Acute - systemic effects, inhalation	100 ppm
Long-term - local effects, inhalation	20 ppm
Long-term - systemic effects, inhalation	20 ppm

Carbon monoxide (630-08-0)

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- : Product to be handled in a closed system and under strictly controlled conditions
- Provide adequate general and local exhaust ventilation
- Preferably use only permanent leak-tight installations (e.g. welded pipes)
- Systems under pressure should be regularly checked for leakages
- Ensure exposure is below occupational exposure limits (where available)
- Gas detectors should be used when toxic gases may be released
- Keep concentrations well below lower explosion limits
- Consider 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

- Skin protection

- Hand protection
- Other

- : Wear working gloves when handling gas containers
- Standard EN 388 - Protective gloves against mechanical risk
- : Consider the use of flame resistant anti-static safety clothing
- Standard EN ISO 14116 - Limited flame spread materials
- Standard EN ISO 1149-5 - Protective clothing: Electrostatic properties
- 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 and full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers
- Consult respiratory device supplier's product information for the selection of the appropriate device
- Gas filters do not protect against oxygen deficiency
- Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136
- Keep self contained breathing apparatus readily available for emergency use
- Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask
- Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems

- Thermal hazards

- : None necessary

8.2.3. 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**

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 : Flammability range not available.

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 : Not known.

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: May react violently with oxidants
Can form explosive mixture with air**10.4. Conditions to avoid**

: Keep away from heat/sparks/open flames/hot surfaces. – No smoking

10.5. Incompatible materials

: May react violently with oxidants

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Toxic by inhalation

Carbon monoxide (630-08-0)

LC50 inhalation rat (ppm)	3760 ppm/1h (P200) 1300 ppm/4h
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Skin corrosion/irritation : No known effects from this product
Serious eye damage/irritation : No known effects from this product
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
Toxic for reproduction : Fertility : No known effects from this product
Toxic for reproduction : unborn child : May cause harm to the unborn child
STOT-single exposure : No known effects from this product
STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure
Aspiration hazard : Not applicable for gases and gas mixtures

SECTION 12: Ecological information
12.1. Toxicity

Assessment : Classification criteria are not met.

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.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB

12.6. Other adverse effects

Effect on ozone layer : None
 Effect on the global warming : Contains greenhouse gas(es) not covered by Regulation (EC) 842/2006.

SECTION 13: Disposal considerations
13.1. Waste treatment methods

Contact supplier if guidance is required
 Must not be discharged to atmosphere
 Ensure that the emission levels from local regulations or operating permits are not exceeded
 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

List of hazardous waste codes (from Commission Decision 2001/118/EC) : 16 05 04: Gases in pressure containers (including halons) containing dangerous substances

13.2. Additional information

: None

SECTION 14: Transport information**14.1. UN number**

UN-No. : 1954

14.2. UN proper shipping name**Transport by road/rail (ADR/RID)** : COMPRESSED GAS, FLAMMABLE, N.O.S. (Carbon monoxide, Carbon dioxide)**Transport by air (ICAO-TI / IATA-DGR)** : Compressed gas, flammable, n.o.s. (Carbon monoxide, Carbon dioxide)**Transport by sea (IMDG)** : COMPRESSED GAS, FLAMMABLE, N.O.S. (Carbon monoxide, Carbon dioxide)**14.3. Transport hazard class(es)****Labelling**

2.1 : Flammable gases

Transport by road/rail (ADG)Class : 2
Hazchemcode : 2SE
Hazard identification number : 23
Tunnel Restriction : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other carriage : Passage forbidden through tunnels of category D and E**Transport by air (ICAO-TI / IATA-DGR)**

Class / Div. (Sub. risk(s)) : 2.1

Transport by sea (IMDG)Class / Div. (Sub. risk(s)) : 2.1
Emergency Schedule (EmS) - Fire : F-D
Emergency Schedule (EmS) - Spillage : S-U**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	: Forbidden
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.
HAZCHEMCODE	: 2SE

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

SECTION 16: Other information

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

Training advice : Ensure operators understand the flammability hazard. Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard. Receptacle under pressure.

Full text of H-statements

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Flam. Gas 1	Flammable 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
Repr. 1A	Reproductive toxicity, Category 1A
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
H331	Toxic if inhaled
H360	May damage fertility or the unborn child
H360D	May damage the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
R12	Extremely flammable
R23	Toxic by inhalation



R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation
R61	May cause harm to the unborn child
F+	Extremely flammable
T	Toxic

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