

Australian statement of hazardous nature : Classified as hazardous according to criteria of Safe Work Australia

## Section 1 - Identification

**Product Name**

Carbon monoxide

**Product Code**

**ALQ004030**

**Address**

ThermoFisher Scientific Australia Pty Ltd  
 5 Caribbean Drive, Scoresby  
 VICTORIA 3179, Australia

**Emergency Tel.**

**CHEMTREC®**  
**03 9757 4559 or +613 9757 4559**

**Telephone / Fax Numbers**

Tel: 1300 735 292  
 Fax: 1800 067 639

**E-mail address**

ANZinfo@thermofisher.com

**Recommended Use**

Laboratory chemicals.

**Uses advised against**

This product does not contain any substance(s) on the Illicit Drug Precursors/Reagents list. This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction. This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern.

## Section 2 - Hazard(s) Identification

### Classification under Safe Work Australia

Classified as hazardous according to criteria of Safe Work Australia

#### Physical hazards

Gases under pressure

#### Health hazards

#### Environmental hazards

No hazards identified

### Label Elements



**Signal Word**

**Warning**

**Hazard Statements**

H280 - Contains gas under pressure; may explode if heated

**Precautionary Statements**

P201 - Obtain special instructions before use  
P202 - Do not handle until all safety precautions have been read and understood  
P220 - Keep away from clothing and other combustible materials  
P244 - Keep valves and fittings free from oil and grease  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P308 + P313 - IF exposed or concerned: Get medical advice/attention  
P370 + P376 - In case of fire: Stop leak if safe to do so  
P403 - Store in a well-ventilated place  
P501 - Dispose of contents/ container to an approved waste disposal plant

**Other information**

No information available

This product does not contain any known or suspected endocrine disruptors

**Section 3 - Composition and Information on Ingredients**

Component	CAS No	Weight %
Nitrogen	7727-37-9	>60
Oxygen	7782-44-7	<23.5
Methane	74-82-8	<2.5
Carbon monoxide	630-08-0	<0.1
Hydrogen sulfide	7783-06-4	<0.015

**Section 4 - First Aid Measures**

<b>Inhalation</b>	Remove to fresh air. Get medical attention immediately if symptoms occur.
<b>Ingestion</b>	Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
<b>Self-Protection of the First Aider</b>	No special precautions required.
<b>First Aid Facilities</b>	Eyewash, safety shower and washroom.
<b>Most important symptoms and effects</b>	None reasonably foreseeable.
<b>Notes to Physician</b>	Treat symptomatically.

**Section 5 - Fire Fighting Measures****Suitable Extinguishing Media**Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam.**Extinguishing media which must not be used for safety reasons**

No information available.

**Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors.

**Special protective equipment and precautions for fire fighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## Section 6 - Accidental Release Measures

**Emergency procedures**

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.

**Environmental Precautions**

Should not be released into the environment. See Section 12 for additional Ecological Information.

**Methods for Containment and Clean Up****Clean-up methods - small spillage**

Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

**Clean-up methods - large spillage**

Typically only supplied in small quantities as packaged goods.

If extremely toxic or used in larger quantities ensure a spillage action plan is in place. Evacuate area. Control the source and/or contain the spill if safe and able to do so. Use temporary diking, sand bags, dry sand, earth or proprietary booms/absorbent pads if available. Obtain advice on containment, neutralisation and clean-up from local emergency responders.

**Reference to Other Sections**

Refer to protective measures listed in Sections 8 and 13.

## Section 7 - Handling and Storage

**Precautions for Safe Handling**

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.

**Conditions for Safe Storage, Including any Incompatibilities**

Keep containers tightly closed in a dry, cool and well-ventilated place.

AS/NZS 2243.10:2004, Safety in laboratories - Storage of chemicals

## Section 8 - Exposure Controls and Personal Protection

**Exposure limits**

**ACGIH** - Threshold Limit Values - Ceiling (TLV-C) guidelines by the American Conference of Governmental Industrial Hygienists (ACGIH) for controlling worker exposure to airborne chemical concentrations in the workplace.

**UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

**DE** - MAK and BAT values of Hazardous Chemical Compounds in the Work Area. Published by German Research Foundation on July 1, 2011

**AUS** - Exposure Standards for Atmospheric Contaminants in the Occupational Environment - Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)]

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)] updated in August, 2005. Safe Work Australia

**NZ** - Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor

Component	Australia	New Zealand WEL	ACGIH TLV	The United Kingdom	Germany
Nitrogen			:		
Methane			:		
Carbon monoxide	TWA: 30 ppm TWA: 34 mg/m <sup>3</sup>	TWA: 20 ppm STEL: 100 ppm	TWA: 25 ppm	STEL: 200 ppm 15 min STEL: 232 mg/m <sup>3</sup> 15	TWA: 30 ppm (8 Stunden). AGW -

		Ceiling: 200 ppm		min STEL: 117 mg/m <sup>3</sup> 15 min STEL: 100 ppm 15 min TWA: 30 ppm 8 hr TWA: 35 mg/m <sup>3</sup> 8 hr TWA: 20 ppm 8 hr TWA: 23 mg/m <sup>3</sup> 8 hr	exposure factor 2 TWA: 35 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 2 TWA: 30 ppm (8 Stunden). MAK TWA: 35 mg/m <sup>3</sup> (8 Stunden). MAK Höhepunkt: 60 ppm Höhepunkt: 70 mg/m <sup>3</sup>
Hydrogen sulfide	STEL: 15 ppm STEL: 21 mg/m <sup>3</sup> TWA: 10 ppm TWA: 14 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 7 mg/m <sup>3</sup> STEL: 10 ppm STEL: 14 mg/m <sup>3</sup>	TWA: 1 ppm STEL: 5 ppm	STEL: 10 ppm 15 min STEL: 14 mg/m <sup>3</sup> 15 min TWA: 5 ppm 8 hr TWA: 7 mg/m <sup>3</sup> 8 hr	TWA: 5 ppm (8 Stunden). AGW - exposure factor 2 TWA: 7.1 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 2 TWA: 5 ppm (8 Stunden). MAK TWA: 7.1 mg/m <sup>3</sup> (8 Stunden). MAK Höhepunkt: 10 ppm Höhepunkt: 14.2 mg/m <sup>3</sup>

**Biological limit values**

**UK** - Biological Monitoring Guidance Values provided by the UK's Health and Safety Executive (HSE) Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended) and EH40/2005.

Component	Australia	New Zealand	European Union	United Kingdom	Germany
Carbon monoxide		3.5 % of hemoglobin (blood) end of shift (Carboxyhaemoglobin) 20 ppm (exhaled air) as soon as practicable following potential exposure (Carbon monoxide)		Carbon monoxide: 30 ppm end-tidal breath post shift	CO-Hb: 5 % whole blood (end of shift derivation of biological threshold limit due to acute toxic effects; separate evaluation for smokers)

**Exposure Controls****Engineering Measures**

None under normal use conditions.

**Personal protective equipment****Eye Protection**

Wear safety glasses with side shields (or goggles) (Australian/New Zealand Standard AS/NZS 1337 - Eye protectors for Industrial applications)

**Hand Protection**

Protective gloves

Glove material	Breakthrough time	Glove thickness	AUS/NZ Standard	Glove comments
Disposable gloves	See manufacturers recommendations	-	AS/NZS 2161	(minimum requirement)

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection**

Long sleeved clothing

**Respiratory Protection**

Use an AS/NZS 1716 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained in line with AS/NZS 1715 on the use and maintenance of respiratory protective devices

**Recommended Filter type:**

Particle filter (or AUS/NZ equivalent)

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available.

## Section 9 - Physical and Chemical Properties

### Information on basic physical and chemical properties

<b>Appearance</b>	Colorless	
<b>Physical State</b>	Gas	
<b>Odor</b>	No information available	
<b>Odor Threshold</b>	No data available	
<b>pH</b>	Not applicable	
<b>Melting Point/Range</b>	No data available °C / °F	
<b>Softening Point</b>	No data available	
<b>Boiling Point/Range</b>	Not applicable °C / °F	
<b>Flash Point</b>	Not applicable	<b>Method -</b> No information available
<b>Evaporation Rate</b>	No data available	
<b>Flammability (solid,gas)</b>	No information available	
<b>Explosion Limits</b>	No data available	
<b>Vapor Pressure</b>	No data available	
<b>Vapor Density</b>	No data available	(Air = 1.0)
<b>Specific Gravity / Density</b>	No data available	
<b>Bulk Density</b>	No data available	
<b>Water Solubility</b>	No information available	
<b>Solubility in other solvents</b>	No information available	
<b>Partition Coefficient (n-octanol/water)</b>		
<b>Component</b>	<b>log Pow</b>	
Methane	1.09	
Hydrogen sulfide	0.45	
<b>Autoignition Temperature</b>	No data available	
<b>Decomposition Temperature</b>	No data available	
<b>Viscosity</b>	No data available	
<b>Explosive Properties</b>	No information available	
<b>Oxidizing Properties</b>	No information available	

### Other information

## Section 10 - Stability and Reactivity

<b>Reactivity</b>	Yes
<b>Stability</b>	Stable under normal conditions.
<b>Conditions to Avoid</b>	Incompatible products, Excess heat, Avoid dust formation.
<b>Incompatible Materials</b>	None known.
<b>Hazardous Decomposition Products</b>	None under normal use conditions.
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.

## Section 11 - Toxicological Information

## Information on Toxicological Effects

## Product Information

## (a) acute toxicity;

Oral

Based on available data, the classification criteria are not met

Dermal

Based on available data, the classification criteria are not met

Inhalation

Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Methane		LD50 > 2000 mg/kg ( Rat )	LC50 = 539600 ppm ( Rat ) 2 h
Carbon monoxide			Per CGA P-20: 3760 ppm/1 hr. (Rat) (Time adjusted)
Hydrogen sulfide			712 ppm/1 hr ( Rat )

(b) skin corrosion/irritation; No data available

(c) serious eye damage/irritation; No data available

## (d) respiratory or skin sensitization;

Respiratory

No data available

Skin

No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

Target Organs

No information available.

(j) aspiration hazard; No data available

Symptoms / effects, both acute and delayed No information available

## Section 12 - Ecological Information

## Ecotoxicity effects

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Hydrogen sulfide	LC50: = 0.016 mg/L, 96h flow-through (Pimephales promelas) LC50: = 0.0448 mg/L, 96h flow-through (Lepomis macrochirus)			

Persistence and Degradability No information available

Persistence

Persistence is unlikely, based on information available.

Bioaccumulative Potential

Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Methane	1.09	No data available
Hydrogen sulfide	0.45	No data available

**Mobility** The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. Will likely be mobile in the environment due to its volatility. Disperses rapidly in air.

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors.

**Persistent Organic Pollutant** This product does not contain any known or suspected substance.

**Ozone Depletion Potential** This product does not contain any known or suspected substance.

## Section 13 - Disposal Considerations

**Waste from Residues/Unused Products** Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes, including emptied containers, are controlled wastes and should be disposed of in accordance with all federal, E.P.A., state and local regulations. Assure conformity with all applicable regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

**Other Information** Chemical wastes should be disposed through a licensed commercial waste collection service. Waste codes should be assigned by the user based on the application for which the product was used. Do not flush to sewer. Can be landfilled or incinerated, when in compliance with local regulations.

## Section 14 - Transport Information

### IMDG/IMO

**UN-No** UN1956  
**Proper Shipping Name** COMPRESSED GAS, N.O.S.  
**Technical Shipping Name** Gas mix (Hydrogen sulphide, Nitrogen, Carbon monoxide, Methane, Oxygen)  
**Hazard Class** 2

### ADG

**UN-No** UN1956  
**Proper Shipping Name** COMPRESSED GAS, N.O.S.  
**Technical Shipping Name** Gas mix (Hydrogen sulphide, Nitrogen, Carbon monoxide, Methane, Oxygen)  
**Hazard Class** 2

Component	Hazchem Code
Nitrogen 7727-37-9 ( >60 )	2T
Oxygen 7782-44-7 ( <23.5 )	2S 2P
Methane 74-82-8 ( <2.5 )	2SE 2YE
Carbon monoxide 630-08-0 ( <0.1 )	2SE
Hydrogen sulfide 7783-06-4 ( <0.015 )	2WE

### IATA

**UN-No** UN1956  
**Proper Shipping Name** COMPRESSED GAS, N.O.S.  
**Technical Shipping Name** Gas mix (Hydrogen sulphide, Nitrogen, Carbon monoxide, Methane, Oxygen)  
**Hazard Class** 2.2

<b>Environmental hazards</b>	No hazards identified
<b>Special Precautions</b>	No special precautions required
<b>Additional information</b>	None known

## Section 15 - Regulatory Information

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

#### National Regulations                      **Australia**

See section 8 for national exposure control parameters.

#### **Standard for the Uniform Scheduling of Medicines and Poisons**

Classified as a scheduled poison according to the Standard for Uniform Scheduling of Medicines and Poisons.

Component	Standard for the Uniform Scheduling of Medicines and Poisons
Hydrogen sulfide - 7783-06-4	Schedule 7 listed

#### **Australian Industrial Chemicals Introduction Scheme (AICIS)**

Component	Australian Industrial Chemicals Introduction Scheme (AICIS)	Additional information
Nitrogen - 7727-37-9	Present	-
Oxygen - 7782-44-7	Present	-
Methane - 74-82-8	Present	-
Carbon monoxide - 630-08-0	Present	-
Hydrogen sulfide - 7783-06-4	Present	-

#### **Australian - Illicit Drug Precursors/Reagents Substance List**

This product does not contain any substance(s) on the Illicit Drug Precursors/Reagents list.

#### **Chemicals of Security Concern**

This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern

Component	Australian - Illicit Drug Precursors/Reagents Substance List	Chemicals of Security Concern
Carbon monoxide - 630-08-0		Listed in Appendix A
Hydrogen sulfide - 7783-06-4		Listed in Appendix A

#### **Legend**

**Chemicals of Security Concern** - for further information see <http://www.chemicalsecurity.gov.au/securityconcerns>

#### **National pollutant inventory**                      Subject to reporting requirements

Component	National pollutant inventory
Nitrogen - 7727-37-9	15 tonne/yr. Threshold category 3 total
Carbon monoxide - 630-08-0	10 tonne/yr. Threshold category 1 400 tonne/yr. Threshold category 2a 1 tonne/h. Threshold category 2a 2000 tonne/yr. Threshold category 2b 60000 MWH. Threshold category 2b 20 MW. Threshold category 2b
Hydrogen sulfide - 7783-06-4	10 tonne/yr. Threshold category 1



**Prohibition or notification/licensing requirements**

Shown below are details of specific prohibition/notifications or licensing requirements when they apply.

This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction.

**International Inventories**

Component	AICS	NZIoC	EINECS	ELINCS	TSCA	DSL	NDSL	PICCS	ENCS	ISHL	IECSC	KECL
Nitrogen	X	X	231-783-9	-	X	X	-	X	X		X	KE-25994
Oxygen	X	X	231-956-9	-	X	X	-	X	X		X	KE-27737
Methane	X	X	200-812-7	-	X	X	-	X	X	X	X	KE-23181
Carbon monoxide	X	X	211-128-3	-	X	X	-	X	X	X	X	KE-04745
Hydrogen sulfide	X	X	231-977-3	-	X	X	-	X	X	X	X	KE-20209

**Legend:** X - Listed. '-' - Not Listed. **KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

**International Regulations**

**Ozone Depletion Potential** This product does not contain any known or suspected substance

**Persistent Organic Pollutant** This product does not contain any known or suspected substance

**Rotterdam Convention (PIC)** Not applicable

**Basel convention on the control of transboundary movements of hazardous wastes and their disposal**

Not applicable.

Component	CAS No	OECD HPV	Restriction of Hazardous Substances (RoHS)	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Nitrogen	7727-37-9	Listed	Not applicable	Not applicable	Not applicable
Oxygen	7782-44-7	Listed	Not applicable	200 tonne	2000 tonne
Methane	74-82-8	Listed	Not applicable	Not applicable	Not applicable
Carbon monoxide	630-08-0	Listed	Not applicable	Not applicable	Not applicable
Hydrogen sulfide	7783-06-4	Listed	Not applicable	5 tonne	20 tonne

**Authorisation/Restrictions according to EU REACH**

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Carbon monoxide	-	Use restricted. See item 30. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-

<https://echa.europa.eu/substances-restricted-under-reach>

**Section 16 - Other Information**

**Legend**

<b>AICS</b> - Australian Inventory of Chemical Substances	<b>NZIoC</b> - New Zealand Inventory of Chemicals
<b>TSCA</b> - United States Toxic Substances Control Act Section 8(b) Inventory	<b>EINECS/ELINCS</b> - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
<b>DSL/NDL</b> - Canadian Domestic Substances List/Non-Domestic Substances List	<b>ENCS</b> - Japanese Existing and New Chemical Substances
<b>IECSC</b> - Chinese Inventory of Existing Chemical Substances	<b>KECL</b> - Korean Existing and Evaluated Chemical Substances
<b>PICCS</b> - Philippines Inventory of Chemicals and Chemical Substances	<b>CAS</b> - Chemical Abstracts Service
<b>TWA</b> - Time Weighted Average	<b>ACGIH</b> - American Conference of Governmental Industrial Hygienists
<b>IARC</b> - International Agency for Research on Cancer	Predicted No Effect Concentration (PNEC)
<b>ICAO/IATA</b> - International Civil Aviation Organization/International Air Transport Association	<b>IMO/IMDG</b> - International Maritime Organization/International Maritime Dangerous Goods Code
<b>MARPOL</b> - International Convention for the Prevention of Pollution from Ships	
<b>NZS 5433:2020</b> - Transport of Dangerous Goods on Land	<b>OECD</b> - Organisation for Economic Co-operation and Development
<b>LD50</b> - Lethal Dose 50%	<b>LC50</b> - Lethal Concentration 50%
<b>EC50</b> - Effective Concentration 50%	<b>ATE</b> - Acute Toxicity Estimate
<b>WEL</b> - Workplace Exposure Limit	<b>RPE</b> - Respiratory Protective Equipment
<b>DNEL</b> - Derived No Effect Level	<b>NOEC</b> - No Observed Effect Concentration
<b>POW</b> - Partition coefficient Octanol:Water	<b>BCF</b> - Bioconcentration factor
<b>vPvB</b> - very Persistent, very Bioaccumulative	<b>PBT</b> - Persistent, Bioaccumulative, Toxic
<b>VOC</b> - (Volatile Organic Compound)	

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>  
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

<b>Revision Date</b>	14-Jul-2023
<b>Revision Summary</b>	Update to GHS format.

**This Safety Data Sheet (SDS) is prepared in accordance to and complies with the requirements of Safe Work Australia - Work Health and Safety Regulations (WHS Regulations).**

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**