2GASSP116CO2

Safety Data Sheet

according to the Work Health and Safety (WHS) Regulations
Issue date: 14/01/2024 Revision date: 14/01/2029 Version: 1.0

SECTION 1: Product identifier

1.1. GHS Product identifier

Trade name : 2GASSP116CO2

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Recommended use : For use in the Calibration and Test of Gas Detection Instruments.

1.4. Details of manufacturer or importer

CAC Gas & Instrumentation Pty Ltd
Unit 3, 36 Holbeche Road Arndell Park
New South Wales 2148
Australia
T +61 2 8676 6500
cac@cacgas.com.au

1.5. Emergency phone number

Emergency number : +61 2 8676 6500

SECTION 2: Hazard identification

2.1. Classification of the hazardous chemical

Classification according to the model Work Health and Safety Regulations (WHS Regulations)

Flammable gases, Category 1B	H221
Gases under pressure : Compressed gas	H280

2.2. GHS Label elements, including precautionary statements

Hazard pictograms (GHS AU) :

Flame Gas cylinder

Signal word (GHS AU) : Danger

Hazard statements (GHS AU) : H221 - Flammable gas
H280 - Contains gas under pressure; may explode if heated

Precautionary statements (GHS AU) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
P403 - Store in a well-ventilated place.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards which do not result in classification

Other hazards which do not result in classification : None.

SECTION 3: Composition and information on ingredients

Name	CAS-No.	%	Classification according to the model Work Health and Safety Regulations (WHS Regulations)
methane	74-82-8	60	Flam. Gas 1A, H220 Press. Gas (Comp.), H280
Carbon dioxide	124-38-9	39.9	Press. Gas (Liq.), H280
hydrogen sulphide	7783-06-4	0.1	Flam. Gas 1A, H220 Press. Gas (Liq.), H280 Acute Tox. 2 (Inhalation:gas), H330 STOT SE 3, H335 Aquatic Acute 1, H400

SECTION 4: First aid measures

4.1. Description of necessary first-aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.

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 : See section 11.

4.3. Medical attention and special treatment

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 : Carbon dioxide. Do not use water jet to extinguish.

5.2. Specific hazards arising from the chemical

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

Hazardous combustion products : Carbon monoxide. Sulphur dioxide.

5.3. Special protective equipment and precautions for fire-fighters

Hazchem Code : 2SE

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.

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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : 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. 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

6.2. Environmental precautions

Try to stop release.

6.3. Methods and materials for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.

SECTION 7: Handling and storage

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 containers 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 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 content of the container. 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. Avoid suck back of water, acid and alkalis. 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 work area. Ensure equipment is adequately earthed.

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. 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.

SECTION 8: Exposure controls and personal protection

8.1. Control parameters - exposure standards

No additional information available

8.2. Biological Monitoring

No additional information available

8.3. Engineering controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Product to be handled in a closed system. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Gas detectors should be used when flammable gases/vapours may be released. Consider the use of a work permit system e.g. for maintenance activities.

8.4. Individual protection measures, such as personal protective equipment (PPE)

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 risks, performance level 1 or higher.

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 standard EN136, full face masks .

Personal protective equipment symbol(s)

Thermal hazard protection : None in addition to the above sections.

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information : Consider the use of flame resistant anti-static safety clothing. Standard EN ISO 14116 - Limited flame spread materials. Standard EN 1149-5 - Protective clothing: Electrostatic properties. Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

SECTION 9: Physical and chemical properties

Physical state : Gas

Appearance : No data available

Molecular mass	:	Not applicable for gas mixtures.
Colour	:	Colourless
Odour	:	Odour threshold is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour: Rotten eggs.
Odour threshold	:	Odour threshold is subjective and inadequate to warn of overexposure.
pH	:	Not applicable for gases and gas mixtures.
pH solution	:	No data available
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	:	Not known.
Decomposition temperature	:	Not applicable.
Flammability	:	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
Partition coefficient n-octanol/water (Log Pow)	:	Not applicable for gas mixtures.
Viscosity, kinematic	:	No reliable data available.
Viscosity, dynamic	:	No reliable data available.
Explosive properties	:	Not applicable.
Oxidising properties	:	Not applicable.
Explosive limits	:	Flammability range not available.
Minimum ignition energy	:	No data available
Fat solubility	:	No data available
Additional information	:	None.

SECTION 10: Stability and reactivity

Reactivity	:	No reactivity hazard other than the effects described in sub-sections below.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Can form explosive mixture with air. May react violently with oxidants.
Conditions to avoid	:	Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems.
Incompatible materials	:	Air, Oxidisers. 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.

SECTION 11: Toxicological information

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Classification criteria are not met,Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO2 has been found to act synergistically to increase the toxicity of certain other gases (CO, NO2). CO2 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.

hydrogen sulphide (7783-06-4)	
LC50 Inhalation - Rat [ppm]	356 ppm/4h

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 : Classification criteria are not met.

hydrogen sulphide (7783-06-4)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : No known effects from this product.
Aspiration hazard :

2GASSP116CO2	
Viscosity, kinematic	No reliable data available.

Carbon dioxide (124-38-9)	
Viscosity, kinematic	Not applicable for gases and gas mixtures.

methane (74-82-8)	
Hydrocarbon	Yes
Viscosity, kinematic	No reliable data available.

hydrogen sulphide (7783-06-4)	
Viscosity, kinematic	No reliable data available.

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.
Hazardous to the aquatic environment, short–term (acute) : Not classified
Hazardous to the aquatic environment, long–term (chronic) : Not classified

Carbon dioxide (124-38-9)	
Partition coefficient n-octanol/water (Log Kow)	0.83

methane (74-82-8)	
Partition coefficient n-octanol/water (Log Kow)	1.09

hydrogen sulphide (7783-06-4)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.

12.2. Persistence and degradability

2GASSP116CO2	
Persistence and degradability	No data available.

Carbon dioxide (124-38-9)	
Persistence and degradability	No ecological damage caused by this product..

methane (74-82-8)	
Persistence and degradability	The substance is readily biodegradable. Unlikely to persist..

hydrogen sulphide (7783-06-4)	
Persistence and degradability	Not applicable for inorganic products..

12.3. Bioaccumulative potential

2GASSP116CO2	
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.
Bioaccumulative potential	No data available.

Carbon dioxide (124-38-9)	
Partition coefficient n-octanol/water (Log Kow)	0.83
Bioaccumulative potential	No ecological damage caused by this product.

methane (74-82-8)	
Partition coefficient n-octanol/water (Log Kow)	1.09

hydrogen sulphide (7783-06-4)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.
Bioaccumulative potential	No data available.

12.4. Mobility in soil

2GASSP116CO2	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.

Carbon dioxide (124-38-9)	
Ecology - soil	No ecological damage caused by this product.
Partition coefficient n-octanol/water (Log Kow)	0.83

methane (74-82-8)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
Partition coefficient n-octanol/water (Log Kow)	1.09

hydrogen sulphide (7783-06-4)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
Partition coefficient n-octanol/water (Log Kow)	Not applicable for inorganic products.

12.5. Other adverse effects

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

2GASSP116CO2	
Effect on the ozone layer	None.
Fluorinated greenhouse gases	False
GWPmix comment	Contains greenhouse gas(es).

Carbon dioxide (124-38-9)	
Effect on the ozone layer	No effect on the ozone layer.
Effect on global warming	When discharged in large quantities may contribute to the greenhouse effect. Contains greenhouse gas(es).
Fluorinated greenhouse gases	False
GWP 100 years	1

methane (74-82-8)	
Effect on the ozone layer	No effect on the ozone layer.
Effect on global warming	When discharged in large quantities may contribute to the greenhouse effect. Contains greenhouse gas(es).
Fluorinated greenhouse gases	False
GWP 100 years	25

hydrogen sulphide (7783-06-4)	
Effect on the ozone layer	No effect on the ozone layer.
Effect on global warming	No known effects from this product.
Fluorinated greenhouse gases	False

SECTION 13: Disposal considerations

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into any place where its accumulation could be dangerous. 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.eu for more guidance on suitable disposal methods. Return unused product in original container to supplier.

Additional information : External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

In accordance with ADG / IMDG / IATA

14.1. UN number

UN-No. (ADG) : 1954
UN-No. (IMDG) : 1954
UN-No. (IATA) : 1954

14.2. UN Proper Shipping Name

Proper Shipping Name (ADG) : COMPRESSED GAS, FLAMMABLE, N.O.S.
Proper Shipping Name (IMDG) : COMPRESSED GAS, FLAMMABLE, N.O.S.
Proper Shipping Name (IATA) : Compressed gas, flammable, n.o.s.
Transport document description (ADG) : Not applicable
Transport document description (IMDG) : UN 1954 COMPRESSED GAS, FLAMMABLE, N.O.S. (methane, carbon dioxide), 2.1
Transport document description (IATA) : UN 1954 Compressed gas, flammable, n.o.s. (methane, carbon dioxide), 2.1

14.3. Transport hazard class(es)

ADG
Transport hazard class(es) (ADG) : 2.1
Danger labels (ADG) : 2.1

:

IMDG

Transport hazard class(es) (IMDG) : 2.1
Danger labels (IMDG) : 2.1

:

IATA

Transport hazard class(es) (IATA) : 2.1
Danger labels (IATA) : 2.1

:

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
Dangerous for the environment : No
Other information : No supplementary information available

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 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) : 1954
Special provision (ADG) : 274
Limited quantities (ADG) : 0
Excepted quantities (ADG) : E0
Packing instructions (ADG) : P200

Transport by sea

UN-No. (IMDG) : 1954
Special provisions (IMDG) : 274, 392
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P200
EmS-No. (Fire) : F-D - FIRE SCHEDULE Delta - FLAMMABLE GASES

EmS-No. (Spillage)	:	S-U - SPILLAGE SCHEDULE Uniform - GASES (FLAMMABLE, TOXIC OR CORROSIVE)
Stowage category (IMDG)	:	D
Stowage and handling (IMDG)	:	SW2

Air transport

UN-No. (IATA)	:	1954
PCA Excepted quantities (IATA)	:	E0
PCA Limited quantities (IATA)	:	Forbidden
PCA limited quantity max net quantity (IATA)	:	Forbidden
PCA packing instructions (IATA)	:	Forbidden
PCA max net quantity (IATA)	:	Forbidden
CAO packing instructions (IATA)	:	200
CAO max net quantity (IATA)	:	150kg
Special provisions (IATA)	:	A1, A807
ERG code (IATA)	:	10L

14.8. Hazchem or Emergency Action Code

Hazchem Code : 2SE

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations specific for the product in question

No additional information available

15.2. International agreements

No additional information available

SECTION 16: Other 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
STOT - RE : Specific Target Organ Toxicity - Repeated Exposure

Revision date : 14/01/2029

Other information : Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at : http://www.eiga.eu. Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Classification	
Flam. Gas 1B	H221
Press. Gas (Comp.)	H280

Full text of H-statements	
Acute Tox. 2 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 2
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Gas 1B	Flammable gases, Category 1B
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation
H220	Extremely flammable gas
H221	Flammable gas
H280	Contains gas under pressure; may explode if heated
H330	Fatal if inhaled
H335	May cause respiratory irritation
H400	Very toxic to aquatic life

Safety Data Sheet (SDS), Australia

Before using this product in any new process or experiment, a thorough material compatability and safety study should be carried out.
Details given in the document are believed to be correct at the time of SDS generation.
Whilst proper care has been taken by competent individuals in the preparation of this document, no liability for injury or damage to property resulting from its use can be accepted.