

## A-GAS METHYL BROMIDE

### A-Gas Rural

Chemwatch: 1062  
Version No: 7.1.1.1  
Safety Data Sheet according to WHS and ADG requirements

Chemwatch Hazard Alert Code: 3

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S.GHS.AUS.EN

## SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

### Product Identifier

Product name	A-GAS METHYL BROMIDE
Chemical Name	methyl bromide
Synonyms	CH3Br, bromomethane, methogas, monobromomethane, Fumigant-1 (OBS) EDCO, Agrigas M, Halon 1001, RCRA Waste No. U029, Haltox, Terabol, Kayafume, Terr-O-Gas 67, Brom-o-gas, Bromo-o-gaz, MB, MBX, MBC Fumigant, Terr-O-Gas 100, Bromosol, Metafume, Pestmaster (OBS), Brozone, Isocobrome, Zytox, Curafume, Dawson 100, MEBR, Profume(OBS), Rotox, Embafume, Dowfume MC-2, MC-33 Soil Fumigant, Mebrom Methyl Bromide Fumigant 1000
Proper shipping name	METHYL BROMIDE with not more than 2% chloropicrin
Chemical formula	CH3Br
Other means of identification	Not Available
CAS number	74-83-9

### Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	<p>Dangerous <b>POISON</b>. Available <u>ONLY</u> for industrial and manufacturing purposes. To be used by or in accordance with directions of accredited pest control officers. Operators to be trained in procedures for safe use of material.</p> <p>The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.</p> <p>Highly toxic to insect pests and rodents. Widely used insect fumigant for soils, grain silos, mills, warehouses, vaults, ships and rail cars. Used in organic synthesis, as a special purpose solvent. Obsolescent use in fire extinguishing systems.</p>
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### Details of the supplier of the safety data sheet

Registered company name	A-Gas Rural
Address	24 Chamberlain Street SA 5013 Australia
Telephone	+61 8 8347 3838
Fax	Not Available
Website	www.agas.com
Email	info.rural@agas.com

### Emergency telephone number

Association / Organisation	Toll
Emergency telephone numbers	1800 024 973
Other emergency telephone numbers	Not Available

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

Poisons Schedule	S7
Classification <sup>[1]</sup>	Gas under Pressure (Liquefied gas), Acute Toxicity (Oral) Category 3, Acute Toxicity (Inhalation) Category 3, Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Germ cell mutagenicity Category 2, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Specific target organ toxicity - repeated exposure Category 2, Acute Aquatic Hazard Category 1, Hazardous to the Ozone Layer Category 1
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HSIS; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

### Label elements

Hazard pictogram(s)



SIGNAL WORD

**DANGER**

#### Hazard statement(s)

<b>H280</b>	Contains gas under pressure; may explode if heated.
<b>H301</b>	Toxic if swallowed.
<b>H331</b>	Toxic if inhaled.
<b>H315</b>	Causes skin irritation.
<b>H319</b>	Causes serious eye irritation.
<b>H341</b>	Suspected of causing genetic defects.
<b>H335</b>	May cause respiratory irritation.
<b>H373</b>	May cause damage to organs through prolonged or repeated exposure.
<b>H400</b>	Very toxic to aquatic life.
<b>H420</b>	Harms public health and the environment by destroying ozone in the upper atmosphere.
<b>AUH044</b>	Risk of explosion if heated under confinement.

#### Precautionary statement(s) Prevention

<b>P201</b>	Obtain special instructions before use.
<b>P260</b>	Do not breathe dust/fume/gas/mist/vapours/spray.
<b>P270</b>	Do not eat, drink or smoke when using this product.
<b>P271</b>	Use only outdoors or in a well-ventilated area.

#### Precautionary statement(s) Response

<b>P301+P310</b>	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
<b>P308+P313</b>	IF exposed or concerned: Get medical advice/attention.
<b>P330</b>	Rinse mouth.
<b>P362</b>	Take off contaminated clothing and wash before reuse.

#### Precautionary statement(s) Storage

<b>P403+P233</b>	Store in a well-ventilated place. Keep container tightly closed.
<b>P405</b>	Store locked up.
<b>P410+P403</b>	Protect from sunlight. Store in a well-ventilated place.

#### Precautionary statement(s) Disposal

<b>P501</b>	Dispose of contents/container in accordance with local regulations.
<b>P502</b>	Refer to manufacturer/supplier for information on recovery/recycling.

### SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

#### Substances

CAS No	%[weight]	Name
74-83-9	>99.5	<u>A-Gas Methyl Bromide</u>

#### Mixtures

See section above for composition of Substances

### SECTION 4 FIRST AID MEASURES

#### Description of first aid measures

<b>Eye Contact</b>	<ul style="list-style-type: none"> <li>▶ If product comes in contact with eyes remove the patient from gas source or contaminated area.</li> <li>▶ Take the patient to the nearest eye wash, shower or other source of clean water.</li> <li>▶ Open the eyelid(s) wide to allow the material to evaporate.</li> <li>▶ Gently rinse the affected eye(s) with clean, cool water for at least 15 minutes. Have the patient lie or sit down and tilt the head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners.</li> <li>▶ The patient may be in great pain and wish to keep the eyes closed. It is important that the material is rinsed from the eyes to prevent</li> </ul>
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	<ul style="list-style-type: none"> <li>▶ further damage.</li> <li>▶ Ensure that the patient looks up, and side to side as the eye is rinsed in order to better reach all parts of the eye(s)</li> <li>▶ Transport to hospital or doctor.</li> <li>▶ Even when no pain persists and vision is good, a doctor should examine the eye as delayed damage may occur.</li> <li>▶ If the patient cannot tolerate light, protect the eyes with a clean, loosely tied bandage.</li> <li>▶ Ensure verbal communication and physical contact with the patient.</li> </ul> <p><b>DO NOT</b> allow the patient to rub the eyes  <b>DO NOT</b> allow the patient to tightly shut the eyes  <b>DO NOT</b> introduce oil or ointment into the eye(s) without medical advice  <b>DO NOT</b> use hot or tepid water.</p>
<b>Skin Contact</b>	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul> <p>In case of cold burns (frost-bite):</p> <ul style="list-style-type: none"> <li>▶ Move casualty into warmth before thawing the affected part; if feet are affected carry if possible</li> <li>▶ Bathe the affected area immediately in luke-warm water (not more than 35 deg C) for 10 to 15 minutes, immersing if possible and without rubbing</li> <li>▶ <b>DO NOT apply hot water or radiant heat.</b></li> <li>▶ Apply a clean, dry, light dressing of "fluffed-up" dry gauze bandage</li> <li>▶ If a limb is involved, raise and support this to reduce swelling</li> <li>▶ If an adult is involved and where intense pain occurs provide pain killers such as paracetamol</li> <li>▶ Transport to hospital, or doctor</li> <li>▶ Subsequent blackening of the exposed tissue indicates potential of necrosis, which may require amputation.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>▶ Following exposure to gas, remove the patient from the gas source or contaminated area.</li> <li>▶ NOTE: Personal Protective Equipment (PPE), including positive pressure self-contained breathing apparatus may be required to assure the safety of the rescuer.</li> <li>▶ Prostheses such as false teeth, which may block the airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ If the patient is not breathing spontaneously, administer rescue breathing.</li> <li>▶ If the patient does not have a pulse, administer CPR.</li> <li>▶ If medical oxygen and appropriately trained personnel are available, administer 100% oxygen.</li> <li>▶ Summon an emergency ambulance. If an ambulance is not available, contact a physician, hospital, or Poison Control Centre for further instruction.</li> <li>▶ Keep the patient warm, comfortable and at rest while awaiting medical care.</li> <li>▶ <b>MONITOR THE BREATHING AND PULSE, CONTINUOUSLY.</b></li> <li>▶ Administer rescue breathing (preferably with a demand-valve resuscitator, bag-valve mask-device, or pocket mask as trained) or CPR if necessary.</li> </ul>
<b>Ingestion</b>	<p>Not considered a normal route of entry.  If poisoning occurs, contact a doctor or Poisons Information Centre.</p> <ul style="list-style-type: none"> <li>▶ Avoid giving milk or oils.</li> <li>▶ Avoid giving alcohol.</li> </ul>

### Indication of any immediate medical attention and special treatment needed

For methyl bromide intoxication:

Onset of symptoms may be delayed from 2-48 hours. Keep under observation for at least 48 hours. Should pulmonary oedema develop, 100% oxygen should be administered and bed rest. Convulsions may require the administration of barbiturates and anti-convulsants.

Period of convalescence and rehabilitation may be lengthy.

Methyl bromide is converted in vivo to bromide ion - the severity of some clinical signs correlate to blood bromide levels. Although methyl bromide is also metabolised to methanol, the quantities of methanol produced are insufficient to account for the toxicity of methyl bromide. Such toxicity appears to reside with the intact molecule.

~HEALTH SURVEILLANCE

As methyl bromide is rapidly taken up through the skin, biological monitoring, for example, should determine the level of methylation of haemoglobin or albumin.

## SECTION 5 FIREFIGHTING MEASURES

### Extinguishing media

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).

### Special hazards arising from the substrate or mixture

<b>Fire Incompatibility</b>	▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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### Advice for firefighters

<b>Fire Fighting</b>	<p>-----  GENERAL  -----</p> <ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear full body protective clothing with breathing apparatus.</li> <li>▶ Fight fire from a safe distance, with adequate cover.</li> <li>▶ If safe, switch off electrical equipment until vapour fire hazard removed.</li> </ul>
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<b>Fire/Explosion Hazard</b>	<ul style="list-style-type: none"> <li>▶ Containers may explode when heated - Ruptured cylinders may rocket</li> <li>▶ May burn but does not ignite easily.</li> <li>▶ Fire exposed cylinders may vent contents through pressure relief devices thereby increasing vapour concentration..</li> <li>▶ Fire may produce irritating, poisonous or corrosive gases.</li> <li>▶ Runoff may create fire or explosion hazard.</li> </ul> <p>Decomposition may produce toxic fumes of:</p> <ul style="list-style-type: none"> <li>, carbon monoxide (CO)</li> <li>, carbon dioxide (CO2)</li> <li>, hydrogen bromide</li> <li>, other pyrolysis products typical of burning organic material.</li> </ul> <p><b>Contains low boiling substance:</b> Closed containers may rupture due to pressure buildup under fire conditions.</p> <ul style="list-style-type: none"> <li>▶ Vented gas is more dense than air and may collect in pits, basements.</li> </ul>
<b>HAZCHEM</b>	2X

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

See section 8

### Environmental precautions

See section 12

### Methods and material for containment and cleaning up

<b>Minor Spills</b>	<p>Environmental hazard - contain spillage.</p> <ul style="list-style-type: none"> <li>▶ Avoid breathing vapour and any contact with liquid or gas. Protective equipment including respirator should be used.</li> <li>▶ <b>DO NOT enter confined spaces where gas may have accumulated.</b></li> <li>▶ Increase ventilation.</li> </ul>
<b>Major Spills</b>	<p>Environmental hazard - contain spillage.</p> <ul style="list-style-type: none"> <li>▶ Clear area of all unprotected personnel and move upwind.</li> <li>▶ Alert Emergency Authority and advise them of the location and nature of hazard.</li> <li>▶ Wear full body clothing with breathing apparatus.</li> <li>▶ Prevent by any means available, spillage from entering drains and water-courses.</li> <li>▶ Remove leaking cylinders to a safe place.</li> <li>▶ Fit vent pipes. Release pressure under safe, controlled conditions</li> <li>▶ Burn issuing gas at vent pipes.</li> <li>▶ <b>DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.</b></li> </ul> <p>Absorb liquid methyl bromide or water spray used for knock down onto sand /vermiculite, sodium bicarbonate mix; with a sand-soda mixture (90/10).</p>

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 HANDLING AND STORAGE

### Precautions for safe handling

<b>Safe handling</b>	<ul style="list-style-type: none"> <li>· Consider use in closed pressurised systems, fitted with temperature, pressure and safety relief valves which are vented for safe dispersal. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature</li> <li>· The tubing network design connecting gas cylinders to the delivery system should include appropriate pressure indicators and vacuum or suction lines.</li> <li>· Fully-welded types of pressure gauges, where the bourdon tube sensing element is welded to the gauge body, are recommended.</li> <li>· Before connecting gas cylinders, ensure manifold is mechanically secure and does not containing another gas.</li> </ul> <p>▶ <b>DO NOT transfer gas from one cylinder to another.</b></p>
<b>Other information</b>	<ul style="list-style-type: none"> <li>▶ Outside or detached storage is preferred.</li> <li>▶ Store below 38 deg. C.</li> <li>▶ Cylinders should be stored in a purpose-built compound with good ventilation, preferably in the open.</li> <li>▶ Such compounds should be sited and built in accordance with statutory requirements.</li> <li>▶ The storage compound should be kept clear and access restricted to authorised personnel only.</li> <li>▶ Cylinders stored in the open should be protected against rust and extremes of weather.</li> </ul>

### Conditions for safe storage, including any incompatibilities

<b>Suitable container</b>	<ul style="list-style-type: none"> <li>▶ <b>DO NOT use aluminium or galvanised containers</b></li> <li>▶ Cylinder: <ul style="list-style-type: none"> <li>▶ Ensure the use of equipment rated for cylinder pressure.</li> <li>▶ Ensure the use of compatible materials of construction.</li> <li>▶ Valve protection cap to be in place until cylinder is secured, connected.</li> <li>▶ Cylinder must be properly secured either in use or in storage.</li> </ul> </li> </ul>
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<b>Storage incompatibility</b>	<p>For methylene bromide</p> <ul style="list-style-type: none"> <li>▶ is a combustible gas but not easily ignited</li> <li>▶ has narrow flammability limits in air (10-16% by volume); the sensitivity of these limits may widened by pressure, oxygen, aluminium, zinc and their alloys</li> <li>▶ reacts with water</li> <li>▶ attacks aluminium or magnesium and alloys of these metals to form pyrophoric metal alkyl salts which may ignite spontaneously</li> <li>▶ is incompatible with strong oxidisers, metals, dimethylsulfoxide, ethylene oxide</li> <li>▶ attacks zinc, magnesium, alkali metals and their alloys</li> <li>▶ attacks some plastics, rubber, and coatings</li> <li>▶ In presence of moisture, the material is corrosive to aluminium, zinc and tin producing highly flammable hydrogen gas.</li> <li>▶ Avoid reaction with oxidising agents</li> </ul>
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## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control parameters

#### OCCUPATIONAL EXPOSURE LIMITS (OEL)

#### INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	A-Gas Methyl Bromide	Methyl bromide	19 mg/m <sup>3</sup> / 5 ppm	Not Available	Not Available	Not Available

#### EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
A-Gas Methyl Bromide	Methyl bromide; (Bromomethane)	19 ppm	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
A-Gas Methyl Bromide	250 ppm	Not Available

### Exposure controls

<b>Appropriate engineering controls</b>	<p>Fumigated areas with methyl bromide must be well ventilated and atmosphere tested before entry. Provide adequate ventilation in warehouse or closed storage areas.</p> <p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p>
<b>Personal protection</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>▶ Chemical goggles.</li> <li>▶ Full face shield may be required for supplementary but never for primary protection of eyes.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	<ul style="list-style-type: none"> <li>▶ When handling sealed and suitably insulated cylinders wear cloth or leather gloves.</li> <li>▶ Insulated gloves:</li> </ul> <p>NOTE: Insulated gloves should be loose fitting so that may be removed quickly if liquid is spilled upon them. Insulated gloves are not made to permit hands to be placed in the liquid; they provide only short-term protection from accidental contact with the liquid. Avoid rubber gloves or leather gloves when exposed to substance directly - these absorb methyl bromide and may cause serious burns.</p>
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<ul style="list-style-type: none"> <li>▶ Protective overalls, closely fitted at neck and wrist.</li> <li>▶ Eye-wash unit.</li> <li>▶ Ensure availability of lifeline in confined spaces.</li> <li>▶ Staff should be trained in all aspects of rescue work.</li> </ul>
<b>Thermal hazards</b>	Not Available

### Recommended material(s)

#### GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

A-GAS METHYL BROMIDE

Material	CPI

### Respiratory protection

Type BE Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum	Half-Face	Full-Face	Powered Air

BUTYL	A
NATURAL RUBBER	A
NEOPRENE	A
PE	A
SARANEX-23	B

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Protection Factor	Respirator	Respirator	Respirator
up to 10 x ES	BE-AUS	-	BE-PAPR-AUS / Class 1
up to 50 x ES	-	BE-AUS / Class 1	-
up to 100 x ES	-	BE-2	BE-PAPR-2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

- ▶ Positive pressure, full face, air-supplied breathing apparatus should be used for work in enclosed spaces if a leak is suspected or the primary containment is to be opened (e.g. for a cylinder change)
- ▶ Air-supplied breathing apparatus is required where release of gas from primary containment is either suspected or demonstrated.

Normally use full face air supplied breathing apparatus or Air Line hood.

Canister type respirators are only suitable for minor exposure

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Appearance</b>	Packed as liquid under pressure and remains liquid only under pressure. Sudden release of pressure or leakage may result in rapid vapourisation with generation of large volumes of gas.   Supplied as liquified gas in pressure cylinders. TOXIC GAS UNDER PRESSURE. Poisonous colourless gas. Sharp burning taste when impure.   Slightly soluble in water. Soluble in alcohol, chloroform, ether,   carbon disulfide, carbon tetrachloride and benzene.   Liquid is highly volatile and is unstable in sunlight. Forms liquid   hydrate below 4 deg. C.
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<b>Physical state</b>	Liquified Gas	<b>Relative density (Water = 1)</b>	1.730
<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	537
<b>pH (as supplied)</b>	Not Applicable	<b>Decomposition temperature</b>	Not Available
<b>Melting point / freezing point (°C)</b>	-93.6	<b>Viscosity (cSt)</b>	Not Applicable
<b>Initial boiling point and boiling range (°C)</b>	3.6	<b>Molecular weight (g/mol)</b>	94.95
<b>Flash point (°C)</b>	Non flammable	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Very fast	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Non flammable	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	16	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Available
<b>Lower Explosive Limit (%)</b>	10	<b>Volatile Component (%vol)</b>	100
<b>Vapour pressure (kPa)</b>	191 @ 20 deg. C	<b>Gas group</b>	Not Available
<b>Solubility in water (g/L)</b>	Miscible	<b>pH as a solution (1%)</b>	Not available.
<b>Vapour density (Air = 1)</b>	3.27	<b>VOC g/L</b>	Not Available

## SECTION 10 STABILITY AND REACTIVITY

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	<ul style="list-style-type: none"> <li>▶ Unstable in the presence of incompatible materials.</li> <li>▶ Product is considered stable.</li> <li>▶ Hazardous polymerisation will not occur.</li> </ul>   High temperature.
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7
<b>Incompatible materials</b>	See section 7

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

<p><b>Inhaled</b></p>	<p>Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.</p> <p>Acute intoxication by halogenated aliphatic hydrocarbons appears to take place over two stages. Signs of a reversible narcosis are evident in the first stage and in the second stage signs of injury to organs may become evident, a single organ alone is (almost) never involved.</p> <p>Depression of the central nervous system is the most outstanding effect of most halogenated aliphatic hydrocarbons. Inebriation and excitation, passing into narcosis, is a typical reaction. In severe acute exposures there is always a danger of death from respiratory failure or cardiac arrest due to a tendency to make the heart more susceptible to catecholamines (adrenalin)</p> <p>In the case of iodised and brominated compounds, exposure effects cannot be described by simple central nervous system depression produced by other halogenated aliphatic hydrocarbons. Headache, nausea, ataxia (loss of muscle co-ordination), tremors, speech difficulties, visual disturbances, convulsions, paralysis, delirium, mania and apathy are all evidence of additional effects.</p> <p>Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation.</p> <p>Exposure may cause nausea, vomiting, headache, dizziness, visual disturbances, lethargy and faintness. Severe exposure causes convulsions, muscle tremors, lung congestion, bluing of the extremities, delirium, coma, and death. In humans, fluid in the lungs is the main effect. Other symptoms include muscle weakness and pain, loss of co-ordination and gait, an inability to focus, and high temperature.</p> <p>Inhalation of the vapour is hazardous and may even be fatal</p>						
<p><b>Ingestion</b></p>	<p><b>Toxic effects</b> may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.</p> <p>Not normally a hazard due to physical form of product.</p> <p>Considered an unlikely route of entry in commercial/industrial environments</p> <p>At normal temperatures methyl bromide gas is impossible to swallow. Gavage of rats for 90 days produced squamous cell carcinomas of the forestomach at a dose of 50 mg/kg; 2 to 10 mg/kg produced a dose-related incidence of hyperplasia of the forestomach</p> <p>At sufficiently high doses the material may be nephrotoxic (i.e. poisonous to the kidney). At sufficiently high doses the material may be hepatotoxic (i.e. poisonous to the liver).</p>						
<p><b>Skin Contact</b></p>	<p>This material can cause inflammation of the skin on contact in some persons.</p> <p>The material may accentuate any pre-existing dermatitis condition</p> <p>Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.</p> <p>Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours later</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p> <p>Vapourising liquid causes rapid cooling and contact may cause cold burns, frostbite, even through normal gloves. Frozen skin tissues are painless and appear waxy and yellow. Signs and symptoms of frost-bite may include "pins and needles", paleness followed by numbness, a hardening and stiffening of the skin, a progression of colour changes in the affected area, (first white, then mottled and blue and eventually black; on recovery, red, hot, painful and blistered).</p> <p>Liquid methyl bromide may penetrate through all clothing, and skin contact produces superficial burns with blisters.</p> <p>Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation.</p>						
<p><b>Eye</b></p>	<p>This material can cause eye irritation and damage in some persons.</p> <p>Vapourising liquid causes rapid cooling and contact may cause cold burns, frostbite, even through normal gloves. Frozen skin tissues are painless and appear waxy and yellow. Signs and symptoms of frost-bite may include "pins and needles", paleness followed by numbness, a hardening and stiffening of the skin, a progression of colour changes in the affected area, (first white, then mottled and blue and eventually black; on recovery, red, hot, painful and blistered).</p>						
<p><b>Chronic</b></p>	<p>Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.</p> <p>There is some evidence from animal testing that exposure to this material may result in toxic effects to the unborn baby.</p> <p>Main route of exposure to the gas in the workplace is by inhalation.</p> <p>Chronic exposure in humans at low concentrations may produce nervous system signs, inco-ordination, toxicity to the liver and kidney and behavioural changes such as general unwellness, headache and visual disturbance. The liver may become enlarged, and there may be protein in the urine. Animal testing shows that methyl bromide does not cause cancer but it can cause damage other than tumours in the brain, heart, breastbone and nose, as well as degenerative changes in the brain and heart muscle. It may cause genetic damage.</p> <p>There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.</p>						
<p><b>A-Gas Methyl Bromide</b></p>	<table border="1"> <thead> <tr> <th data-bbox="375 1973 938 2011">TOXICITY</th> <th data-bbox="938 1973 1482 2011">IRRITATION</th> </tr> </thead> <tbody> <tr> <td data-bbox="375 2011 938 2049">Inhalation (mouse) LC50: 0.77 mg/l/2H<sup>[2]</sup></td> <td data-bbox="938 2011 1482 2049">Not Available</td> </tr> <tr> <td data-bbox="375 2049 938 2087">Oral (rat) LD50: 214 mg/kg<sup>[2]</sup></td> <td data-bbox="938 2049 1482 2087"></td> </tr> </tbody> </table>	TOXICITY	IRRITATION	Inhalation (mouse) LC50: 0.77 mg/l/2H <sup>[2]</sup>	Not Available	Oral (rat) LD50: 214 mg/kg <sup>[2]</sup>	
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Inhalation (mouse) LC50: 0.77 mg/l/2H <sup>[2]</sup>	Not Available						
Oral (rat) LD50: 214 mg/kg <sup>[2]</sup>							
<p><b>Legend:</b></p>	<p>1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances</p>						

<b>A-GAS METHYL BROMIDE</b>	<p>Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.</p> <p>For methyl bromide:</p> <p>Inhalation of 6mg/L methyl bromide for 10-20 hours or 30mg/L for 1.5 hours is lethal to humans. Methyl bromide can be highly irritating to the lining of the eyes, airways and the skin. It can be odourless at levels that are toxic. Initial acute effects include headache, dizziness, nausea or vomiting, chest and abdominal pain, and irritation of the eyes, nose and throat.</p> <p><b>NOTE:</b> Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.</p> <p>The substance is classified by IARC as Group 3:</p> <p><b>NOT</b> classifiable as to its carcinogenicity to humans.</p> <p>Evidence of carcinogenicity may be inadequate or limited in animal testing.</p>
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<b>Acute Toxicity</b>	✓	<b>Carcinogenicity</b>	⊘
<b>Skin Irritation/Corrosion</b>	✓	<b>Reproductivity</b>	⊘
<b>Serious Eye Damage/Irritation</b>	✓	<b>STOT - Single Exposure</b>	✓
<b>Respiratory or Skin sensitisation</b>	⊘	<b>STOT - Repeated Exposure</b>	✓
<b>Mutagenicity</b>	✓	<b>Aspiration Hazard</b>	⊘

**Legend:** ✗ – Data available but does not fill the criteria for classification  
 ✓ – Data available to make classification  
 ⊘ – Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

### Toxicity

	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	<b>A-Gas Methyl Bromide</b>	LC50	96	Fish	0.0008mg/L
	EC50	48	Crustacea	1.7mg/L	4
	NOEC	72	Fish	=0.1mg/L	1

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

On the basis of the available evidence concerning properties and predicted or observed environmental fate and behavior, the material may present a danger to the structure and/or functioning of the stratospheric ozone layer.

Very toxic to aquatic organisms.

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

Dangerous for the ozone layer.

Environmental Fate: Methyl bromide, usually used as a gas fumigant for pest control, is released into the environment as a result during its application.

Breakdown in soil and groundwater: Methyl bromide will quickly evaporate at temperature ordinarily encountered during fumigation, but some may be entrapped in soil micropores following application thus possible leaching may occur. The chemical is soluble in water and has very low adsorptive potential onto soils. Higher organic matter in soil will increase the rate of degradation of methyl bromide into bromide.

Following release of ozone-depleting substances into the atmosphere, they eventually enter the troposphere where they persist undegraded. Subsequently they diffuse into the stratosphere and degrade slowly. In the stratosphere, these substances react slowly with oxygen free radicals and release halogen atoms which catalytically destroy ozone, producing irreversible damage. Use of these substances has been restricted by the Montreal Protocol on Substances that Deplete the Ozone Layer (1988) and also by US EPA Regulation 3093/94.

**DO NOT discharge into sewer or waterways.**

The material is classified as an **ecotoxin\*** because the **Fish LC50 (96 hours)** is less than or equal to 0.1 mg/l

\* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993 Commission of the European Communities

### Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
A-Gas Methyl Bromide	LOW (Half-life = 38 days)	HIGH (Half-life = 680.29 days)

### Bioaccumulative potential

Ingredient	Bioaccumulation
A-Gas Methyl Bromide	LOW (LogKOW = 1.19)

## Mobility in soil

Ingredient	Mobility
A-Gas Methyl Bromide	LOW (KOC = 14.3)

## SECTION 13 DISPOSAL CONSIDERATIONS

### Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> <li>▶ Evaporate residue at an approved site.</li> <li>▶ Return empty containers to supplier. If containers are marked non-returnable establish means of disposal with manufacturer prior to purchase.</li> <li>▶ Ensure damaged or non-returnable cylinders are gas-free before disposal.</li> </ul>
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## SECTION 14 TRANSPORT INFORMATION

### Labels Required

Marine Pollutant	
HAZCHEM	2X

### Land transport (ADG)

UN number	1062*				
UN proper shipping name	METHYL BROMIDE with not more than 2% chloropicrin				
Transport hazard class(es)	<table border="0"> <tr> <td>Class</td> <td>2.3</td> </tr> <tr> <td>Subrisk</td> <td>Not Applicable</td> </tr> </table>	Class	2.3	Subrisk	Not Applicable
Class	2.3				
Subrisk	Not Applicable				
Packing group	Not Applicable				
Environmental hazard	Environmentally hazardous				
Special precautions for user	<table border="0"> <tr> <td>Special provisions</td> <td>23</td> </tr> <tr> <td>Limited quantity</td> <td>0</td> </tr> </table>	Special provisions	23	Limited quantity	0
Special provisions	23				
Limited quantity	0				

### Air transport (ICAO-IATA / DGR)

UN number	1062*														
UN proper shipping name	Methyl bromide with not more than 2% chloropicrin														
Transport hazard class(es)	<table border="0"> <tr> <td>ICAO/IATA Class</td> <td>2.3</td> </tr> <tr> <td>ICAO / IATA Subrisk</td> <td>Not Applicable</td> </tr> <tr> <td>ERG Code</td> <td>2P</td> </tr> </table>	ICAO/IATA Class	2.3	ICAO / IATA Subrisk	Not Applicable	ERG Code	2P								
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Passenger and Cargo Limited Quantity Packing Instructions	Forbidden														
Passenger and Cargo Limited Maximum Qty / Pack	Forbidden														

### Sea transport (IMDG-Code / GGVSee)

UN number	1062*
UN proper shipping name	METHYL BROMIDE with not more than 2.0% chloropicrin

<b>Transport hazard class(es)</b>	IMDG Class	2.3
	IMDG Subrisk	Not Applicable
<b>Packing group</b>	Not Applicable	
<b>Environmental hazard</b>	Marine Pollutant	
<b>Special precautions for user</b>	EMS Number	F-C, S-U
	Special provisions	23
	Limited Quantities	0

### Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

## SECTION 15 REGULATORY INFORMATION

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

#### A-GAS METHYL BROMIDE(74-83-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards

Australia Hazardous Substances Information System - Consolidated Lists

Australia Inventory of Chemical Substances (AICS)

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (A-Gas Methyl Bromide)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
<b>Legend:</b>	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

## SECTION 16 OTHER INFORMATION

### Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

### Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average

PC—STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit.

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

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