

Methyl bromide

CH₃Br

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

1.1. Product identifier

Name of product	Methyl bromide (Bromomethane)
Art-Nr(n):	2100
Name of substance	Bromomethane
Index No	602-002-00-2
EC No	200-813-2
REACH registration number	01-2119919335-38
CAS No	74-83-9

Manufacturer / Distributor:

Ehsan International Gases

40/9, Aurangabad, Nazimabad
#3, Karachi 74600, Pakistan.
+92 21 36612091 – 36612907

info@ehsan.com.pk

www.ehsan.com.pk

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended intended purpose(s) Basic substance. Intermediate.

1.3. Details of the supplier of the safety data sheet

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to 67/548/EEC or 1999/45/EC

T; R23/25
Xi; R36/37/38
Xn; R48/20
N; R50
N; R59
Muta. Cat. 3; R68

R-phrases

23/25	Toxic by inhalation and if swallowed.
36/37/38	Irritating to eyes, respiratory system and skin.
48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
50	Very toxic to aquatic organisms.
59	Dangerous for the ozone layer.
68	Possible risk of irreversible effects.

Additional hints

Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

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Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard Hazard Statements Classification procedure categories

Liquef. Gas	H280
Acute Tox. 3	H301
Acute Tox. 3	H331
Skin Irrit. 2	H315
Eye Irrit. 2	H319
Muta. 2	H341
STOT SE 3	H335
STOT RE 2	H373
Aquatic Acute 1	H400
Ozone 1	H420

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

H301 + H331 Toxic if swallowed or if inhaled.
 H315 Causes skin irritation.
 H319 Causes serious eye irritation.
 H335 May cause respiratory irritation.
 H341 Suspected of causing genetic defects.
 H373 May cause damage to organs through prolonged or repeated exposure by inhalation.

Hazard statements for environmental hazards

H400 Very toxic to aquatic life.
 H420 Harms public health and the environment by destroying ozone in the upper atmosphere.

Additional hints

Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]



GHS06



GHS08



GHS09

Signal word

Danger

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

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Hazard statements for environmental hazards

H400 Very toxic to aquatic life.
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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.

Response

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
 P308 + P313 IF exposed or concerned: Get medical advice/attention.

Storage

P403 Store in a well-ventilated place.
 P405 Store locked up.

Hazardous ingredients for labeling

Bromomethane

Special rules for supplemental label elements for certain mixtures

The substance may only be used as feedstock. Restricted to professional users.

2.3. Other hazards

Adverse physicochemical effects

Even though the substance has a flammability hazard, it only exhibits such hazard under extreme fire conditions in confined areas.

Adverse human health effects and symptoms

Contact with liquid may cause cold burns/frostbite.

Information pertaining to special dangers for human and environment

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

SECTION 3: Composition/ information on ingredients

3.1. Substances

CAS No 74-83-9	Bromomethane
EC No 200-813-2	
Index No 602-002-00-2	
REACH registration number 01-2119919335-38	

3.2. Mixtures

not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

Remove contaminated soaked clothing immediately.
 Adhere to personal protective measures when giving first aid.
 Seek medical advice immediately.

In case of inhalation

Remove the casualty into fresh air and keep him immobile.
 In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).
 Seek medical treatment immediately.
 In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

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In case of contact with skin wash off with soap and water.

In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

Seek medical treatment immediately.

In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

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

Physician's information / possible symptoms Redness / blebs on the skin.

The following symptoms may occur in case of strong exposition:

Eye defects vomiting Headache

Nausea

Trembling, clouded awareness, convulsions with delay of several hours

Dizziness

Physician's information / possible dangers

Risk of pulmonary oedema

In case of massive exposure: Risk of damage to the liver, kidneys and central nervous system.

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

Treatment (Advice to doctor) Treat symptoms.

Continue to monitor for pneumonia and pulmonary oedema.

Monitor circulation.

Keep under medical supervision for at least 24 hours.

Symptoms may not occur until several hours.

SECTION 5: Firefighting measures

5.1. Extinguishing media**Suitable extinguishing media**

Foam

Carbon dioxide

Water spray jet

Unsuitable extinguishing media

Full water jet

5.2. Special hazards arising from the substance or mixture

In case of fire formation of dangerous gases possible.

In the event of fire the following can be released:

Carbon monoxide (CO)

Carbonyl bromide

Hydrogen bromide (HBr)

5.3. Advice for firefighters**Special protective equipment for fire-fighters**

Use breathing apparatus with independent air supply (isolated). Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture / explode.

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Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations. Collect contaminated firefighting water separately, must not be discharged into the drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

See chapter 8.

Remove persons to safety.

Evacuate area.

Personal protection by wearing close-fitting protective clothing and breathing apparatus.

Keep people away and stay on the upwind side.

Eliminate all ignition sources if safe to do so.

Keep away sources of ignition.

6.2. Environmental precautions

Do not discharge into the drains or bodies of water..

Collect contaminated water / firefighting water separately.

If possible, stop flow of product.

Eliminate ignition sources.

Prevent spread over a wide area (e.g. by containment or oil barriers).

If necessary, secure leaky pressure receptacles in a salvage packaging.

Suppress gases/vapours/mists with water spray jet Do not discharge into the subsoil/soil.

6.3. Methods and material for containment and cleaning up

Ensure adequate air ventilation.

Clean contaminated objects and floor thoroughly under consideration of environment regulations.

Additional Information

No water on the leaks.

6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Use only in thoroughly ventilated areas.

Transfer and handle only in enclosed systems.

Containers' temperature may not be increased above 50 °C.

Do not heat with open flames.

The working pressure in the receptacle must not exceed the saturation vapour pressure of the pure product resulting at a temperature of 50 °C.

Provide good room ventilation even at ground level (vapours are heavier than air).

Prevent cylinders from falling over.

Avoid release to the environment.

Ensure valve outlet cap nut or plug is correctly fitted.

Ensure valve protection device is correctly fitted.

Open valve slowly to avoid pressure shock.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.

Do not allow backfeed into the container.

Suck back of water into the container must be prevented.

No water to valves, flanges and other fittings.

Purging of pipes and valves with inert gases - to avoid: water, solvents.

General protective measures

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Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink, smoke or take drugs. Wash hands before breaks and after work.

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking

Even though the substance has a flammability hazard, it only exhibits such hazard under extreme fire conditions in confined areas.

Pay attention to general rules of internal fire prevention.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels Ventilate store-rooms thoroughly.

Use transportable pressure equipment.

Suitable materials: Normalised steel and carbon steel, tempered steel, stainless steel.

Valve: Suitable materials: Brass, copper alloys, carbon steels, stainless steel. Unsuitable materials: Aluminium alloys.

Advice on storage compatibility

Do not store with spontaneously flammable materials.

Do not store together with combustible liquids or combustible solids.

Do not store together with animal feedstuffs.

Do not store together with explosives.

Do not store together with infectious substances.

Do not store together with radioactive material.

Do not store together with toxic liquids or toxic solids.

Do not store together with food.

Do not store together with oxidizing liquids or oxidizing solids.

Further information on storage conditions

Ensure valve protection device is correctly fitted.

Store closed container at cool and aired place.

Store only in original container at temperature of 50°C maximum (=122°F).

Prevent cylinders from falling over.

Protect from heat/overheating.

7.3. Specific end use(s)

Recommendation(s) for intended use

Use as an intermediate under strictly controlled conditions.

Use in accordance with regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m ³]	[ppm]	Remark
74-83-9	Bromomethane	WEL, 8 hours	20	5	EH40, 2007, UK
		Short-term	59	15	
74-83-9	Methyl bromide	PEL, 8 hours	80	20	OSHA, Table Z-1, USA
		Short-term			

8.2. Exposure controls

Respiratory protection

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Breathing apparatus in the event of high concentrations.
Keep self contained breathing apparatus readily available for emergency use. Short term: filter apparatus, filter AX

Hand protection

Leather gloves
FKM gloves

Eye protection

Do not wear contact lenses.
Safety goggles, in case of increased risk add protective face shield

Skin protection

Safety shoes with steel toe.
Body covering work clothing, or chemical resistant suit at increased risk.

Additional advice on system design

Transfer and handle only in enclosed systems.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form

Gaseous / liquefied under pressure.

Colour

colourless, clear

Odour

sweetish, similar to chloroform

Odour threshold

80 - 4000 mg/m³

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	not applicable				
Acid number	not applicable				
boiling point	3,6 °C		1013 hPa		
melting point	-93,7 °C				
Flash point	194 °C				
Flammable solid	not applicable				

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	Value	Temperature	at	Method	Remark
Flammability (gas)					Even though the substance has a flammability hazard, it only exhibits such hazard under extreme fire conditions in confined areas.
Ignition temperature	535 °C			DIN 51794	
Lower explosion limit	8,6 Vol-%				
Upper explosion limit	20 Vol-%				
Vapour pressure	1890 hPa	20 °C			
Relative density	1,73	0 °C			Water = 1 - information concerns to liquid phase.
Bulk density	not applicable				
Vapour density	3,974	0 °C	1013 hPa		Heavier than air.
Solubility in water	17,5 g/l	20 °C			hydrolyses
Partition coefficient (log p_{OW})	1,19				
Viscosity dynamic	0,397 mPa*s	20 °C			liquid phase
Solvent concentration	not applicable				
Oxidising properties	no				

9.2. Other information

Molar mass: 94.94 g/mol

SECTION 10: Stability and reactivity

10.1. Reactivity

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See section "Possibility of hazardous reactions".

10.2. Chemical stability Stable under normal conditions.

10.3. Possibility of hazardous reactions

May react violently with oxidants.

Danger of fire and explosion with strong oxidants, alkali metals and earth alkali metals. May react with aluminium.

10.4. Conditions to avoid

Heat sources / heat - risk of bursting.

Humidity.

Formation of ignitable vapour-air mixtures possible if stored in large containers and above room temperature.

10.5. Incompatible materials

Materials to avoid Metals in powder form.

Oxidants.

Alkali metals.

Earth alkali metals.

Aluminium / Aluminium alloys.

10.6. Hazardous decomposition products

Carbon monoxide

Hydrogen bromide

Thermal decomposition

Remark No decomposition below 400°C.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LD50 acute oral	104 mg/kg	rat		
LC50 acute inhalation	780 ppm (4 h)	Rat (male)		KATO, N., MORINOBU, S., ISHZU, S.: Subacute Inhalation Experiments for Methyl Bromide in Rats. Industrial Health, 24 (1986), 87-103.
Irritability skin	irritant			experiences
Irritability eye	irritant - risk of strong eye injuries			experiences
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

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Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Chronic Toxicity				Disorders of the central nervous system: mental confusion, lethargy, incoordination, amyosthenia (muscular weakness).
Mutagenicity				Information on genotoxicity in vivo and in vitro available.
Reproduction-Toxicity	NOAEL 90 ppm	Rat		No indications of toxic effects were observed in reproduction studies in animals.
	Inhalation			
Carcinogenicity				No indications of carcinogenic effects are available from long-term trials.

Specific target organ toxicity (single exposure)

May cause respiratory irritation.

Specific target organ toxicity (repeated exposure)

May cause damage to organs through prolonged or repeated exposure by inhalation.

Aspiration hazard

not applicable

Experiences made from practice

Risk of strong health injuries in case of long-term exposition.
 Repetitive skin contact may cause dermatitis.
 Irritates respiratory tract.
 Renal damage is possible.
 Irritates mucous membranes.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 3,9 mg/l (96 h)	rainbow trout		
Daphnia	EC50 2,6 mg/l (48 h)	Daphnia magna		
Algae	EC50 5 mg/l (48 h)	Selenastrum capricornutum		

12.2. Persistence and degradability

Degradability	17 % (28 d)		Closed-bottles-test	not readily degradable
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12.3. Bioaccumulative potential

Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is not expected.

12.4. Mobility in soil

high mobility

Adsorption in the soil is not likely.

12.5. Results of PBT and vPvB assessment

not determined

12.6. Other adverse effects

ODP: 0,6

General regulation

Do not allow uncontrolled leakage of product into the environment.

Product is not allowed to be discharged into the ground water or aquatic environment.

Product is not allowed to be discharged into aquatic environment, drains or sewage treatment plants.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste code No.

16 05 04*

Name of waste

gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

Recommendations for the product

Dispose of as hazardous waste.

Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

SECTION 14: Transport information

Land and inland navigation transport ADR/RID

UN 1062 METHYL BROMIDE, 2.3, (C/D), ENVIRONMENTALLY HAZARDOUS, Classification code: 2T

Marine transport IMDG

UN 1062 METHYL BROMIDE, 2.3

MARINE POLLUTANT: Yes

Ems: F-C, S-U

Air transport ICAO/IATA-DGR

UN 1062 Methyl bromide, 2.3

ENVIRONMENTALLY HAZARDOUS: Yes

FORBIDDEN

Special precautions for user

The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.

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

No transport as bulk according IBC - Code.

SECTION 15: Regulatory information

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

Application restrictions

Use in accordance with regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

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Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals.
Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

VOC standard

VOC content >=99 % 20 °C 1890 hPa

15.2. Chemical Safety Assessment

For this substance a chemical safety assessment has not been carried out.

SECTION 16: Other information**Recommended uses and restrictions**

National and local regulations concerning chemicals shall be observed.

Further information

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product. Indication of changes: "!" = Data changed compared with the previous version.

Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)

R 23/25 Toxic by inhalation and if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation. R

50 Very toxic to aquatic organisms.

R 59 Dangerous for the ozone layer.

R 68 Possible risk of irreversible effects.

H280 Contains gas under pressure; may explode if heated.

H301 Toxic if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H331 Toxic if inhaled.

H335 May cause respiratory irritation.

H341 Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).

H373 May cause damage to organs (or state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).

H400 Very toxic to aquatic life.

H420 Harms public health and the environment by destroying ozone in the upper atmosphere.