



SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
The Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Revision date 04-Sep-2022

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Revision Number 13.1

1. IDENTIFICATION

Product identifier

Product Name Methyl Bromide

Other means of identification

Product Code(s) 8326

UN/ID no UN1062

Chemical Family Halogenated alkane

Trade name / designation Methyl Bromide
Metabrom 100
Metabrom Q

Synonyms Bromomethane, MBr

Formula CH₃Br

Recommended use of the chemical and restrictions on use

Recommended use For industrial use
A broad-spectrum pesticide widely used as a powerful fumigant.

Supplier's details

Manufacturer

Bromine Compounds Ltd.
P.O.B 180, Beer Sheva 8410101, Israel
Tel +972-8-6297835
e-mail: msdsinfo@icl-group.com

Lianyungang Dead Sea Bromine Compounds Co., Ltd.
Banqiao Industrial Park, Lianyung district,
Lianyungang, Jiangsu, China 222066
Tel. 86-518-82323651 Fax: 86-518-82253595

Emergency telephone number

Emergency Telephone Chemtrec (International): +1 (703) 527-3887

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Germ cell mutagenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Acute aquatic toxicity	Category 1
Ozone	Category 1

Gases under pressure

Compressed gas

GHS Label elements, including precautionary statements

Contains METHYL BROMIDE

**Signal word**

Danger

Hazard statements

Toxic if swallowed

Toxic if inhaled

Causes skin irritation

Causes serious eye irritation

Suspected of causing genetic defects

May cause respiratory irritation

Very toxic to aquatic life

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

May cause damage to organs through prolonged or repeated exposure

Contains gas under pressure; may explode if heated

Precautionary Statements - EU (§28, 1272/2008)

P202 - Do not handle until all safety precautions have been read and understood

P260 - Do not breathe dust/fume/gas/mist/vapors/spray

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P311 - Call a POISON CENTER or doctor/physician

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

P330 - Rinse mouth

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P502 - Refer to manufacturer/supplier for information on recovery/recycling

Other hazards which do not result in classification

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Chemical name	CAS No	Weight-%
METHYL BROMIDE	74-83-9	100

4. FIRST AID MEASURES**Description of necessary first aid measures****General advice**

Immediate medical attention is required. Remove to fresh air. Do not breathe dust/fume/gas/mist/vapors/spray. Show this safety data sheet to the doctor in attendance. A

24-HOUR MEDICAL SURVEILLANCE PERIOD IS MANDATORY IN ALL CASES OF EXPOSURE TO METHYL BROMIDE, EVEN IN THE ABSENCE OF ANY IMMEDIATE SIGNS OF POISONING.

Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention immediately.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Take off contaminated clothing. Get medical attention immediately.
Ingestion	If swallowed, wash mouth thoroughly with plenty of water. Get medical attention immediately. NOTE: Never give an unconscious person anything to drink

Most important symptoms/effects, acute and delayed

Symptoms	Burning sensation. May cause redness and tearing of the eyes. Coughing and/ or wheezing. Difficulty in breathing. Suspected of causing genetic defects. Contact with liquid or high concentrations of gas with the eyes may cause severe but usually reversible injury involving temporary blindness. Liquid splashed on clothing or leather or high gas concentrations held in contact with skin may cause skin burns with large blisters appearing after several hours. Less severe exposures may cause itching skin rash even after several days. May be absorbed through the skin in sufficient amount to cause systemic toxicity. Toxic if inhaled. May cause respiratory irritation. May cause damage to organs through prolonged or repeated exposure by inhalation. Acute poisoning from methyl bromide is characterized by marked irritation to the respiratory tract which may lead, in severe cases, to pulmonary edema. High concentrations may damage the liver, kidneys and central nervous system. Symptoms of poisoning include headache, dizziness, somnolence, vertigo, blurred vision, slurred speech, nausea and vomiting and possibly convulsions and coma. ONSET OF TOXIC SYMPTOMS MAY BE DELAYED FROM 30 MINUTES TO SEVERAL DAYS. Toxic if swallowed. Severe irritant to mucous membranes and toxic poison if ingested, although ingestion is highly unlikely.
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Indication of immediate medical attention and special treatment needed, if necessary

Note to physicians	Intense vesicant. Signs and symptoms of toxicity are primarily referable to the CNS, respiratory tract and the cardiovascular system. Treat symptomatically and supportively. No specific antidote.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Suitable Extinguishing Media Carbon dioxide, dry chemicals, foam, water spray (fog).

Unsuitable extinguishing media DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Specific hazards arising from the chemical

Specific hazards arising from the chemical Cylinders may rupture under extreme heat. Damaged cylinders should be handled only by specialists. Containers may explode when heated. Ruptured cylinders may rocket. Although it is considered practically nonflammable, methyl bromide can be ignited with a high energy source of ignition. Containers may rupture violently if exposed to fire or excessive heat for sufficient time. In confined spaces such as buildings or sewers, there is a danger of vapour accumulation, which may result in explosion in the presence of an ignition source. Will decompose from ca. 400°C releasing poisonous and corrosive fumes of carbon monoxide and hydrogen bromide.

Special protective actions for fire-fighters

Special protective equipment and precautions for fire-fighters Wear self-contained breathing apparatus in positive pressure mode and appropriate protective clothing. If possible stop material flow immediately. Do not extinguish burning gas unless flow can be shut off immediately. Use water spray, fog nozzle or CO₂ to keep cylinder cool. If there is no risk, move cylinder away from fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Contents under pressure. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Do not breathe vapor or mist. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Wear self-contained breathing apparatus in positive pressure mode.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up

If practicable, stop flow of vapour. Ventilate and/or allow to evaporate, keeping people away from the area until safe re-entry levels are shown by halide detector.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Contents under pressure. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers. Avoid contact with skin, eyes or clothing. Do not breathe vapor or mist. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Handle in accordance with good industrial hygiene and safety practice. In case of insufficient ventilation, wear suitable respiratory equipment. Keep containers tightly closed. Use an appropriate monitoring instrument for methyl bromide in any area where it is being stored or handled. Move and transport containers with requisite care. Do not use hooks, rope sling, etc. to unload. Use hand or fork trucks to firmly cradle cylinders. Do not bump or drag them.

Conditions for safe storage, including any incompatibilities**Storage Conditions**

Protect from sunlight. Keep container tightly closed in a dry and well-ventilated place. Store containers upright, in a secure manner, either outdoors under ambient conditions, or indoors in a well ventilated area, away from seeds, foods/feedstuffs and human and animal habitation. Post as a pesticide storage area. Test periodically for leaks by halide leak detector. Keep away from Incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**Exposure guidelines**

Chemical name	ACGIH TLV	OSHA PEL	European Union	China
METHYL BROMIDE 74-83-9	TWA: 1 ppm S*	(vacated) TWA: 5 ppm (vacated) TWA: 20	-	TWA: 2 mg/m ³ Skin*

		mg/m ³ (vacated) S* Ceiling: 20 ppm Ceiling: 80 mg/m ³ S*		
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Appropriate engineering controls

Engineering controls Ventilation must be sufficient to maintain atmospheric concentration below recommended exposure limit
Mechanical ventilation is recommended. Use local exhaust at source of vapour.

Individual protection measures, such as personal protective equipment

Eye/face protection Splash-proof safety glasses. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL. DO NOT WEAR GOGGLES.

Hand protection DO NOT WEAR GLOVES when working with MBr because of the danger that liquid or concentrated vapour may be trapped inside them.

Skin and body protection No specially designed protective clothing is available. Do not wear gloves, impervious boots, finger rings or adhesive bandages on hands when handling this material.

Respiratory protection For escape -
Gas mask with a new organic vapour canister
For any detectable concentration -
Self-contained breathing apparatus or supplied-air respirator with a full face-piece.

General hygiene considerations Avoid contact with skin, eyes or clothing. Do not breathe vapor or mist. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Gas

Appearance Colourless gas, odourless at low concentrations; sweetish odour at very high concentrations. Clear, colourless to straw-coloured liquid under pressure or below 3.5°C.

Color Colourless to pale straw

Odor Odorless to sweet

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	-94 °C	
Boiling point / boiling range	3.5 - 4.0 °C	
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	16	
Lower flammability or explosive limits	10	
Flash point	.	None
Autoignition temperature	537 °C	
Decomposition temperature	~ 400°C	
pH	No data available	None known
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	
Water solubility	0.132 gr/100ml at 25°C (partial	

	pressure CH ₃ Br - 73 torr)
	0.138 gr/100ml at 25°C (partial
	pressure CH ₃ Br - 108 torr)
Solubility(ies)	Infinitely soluble in most organic solvents.
Partition coefficient	Log Kow : ~ 1.92
Vapor pressure	1420 mmHg (20°C)
Relative density	No data available
Bulk density	No data available
Liquid Density	No data available
Vapor density	3.3 (20°C)
Particle characteristics	
Particle Size	No information available
Particle Size Distribution	No information available

Other information

Fire point	No information available
Liquid Density	No information available

10. STABILITY AND REACTIVITY

Reactivity	No reactive hazards known/expected.
Stability	Stable under recommended storage conditions.
<u>Explosion data</u>	
Sensitivity to mechanical impact	Yes.
Sensitivity to static discharge	None.
Possibility of hazardous reactions	Decomposes above 400°C.
Conditions to avoid	Excessive heat. Keep away from ignition sources. Avoid contamination by water.
Incompatible materials	Strong oxidizers, aluminum, tin, zinc and magnesium metals and their alloys, natural rubber and certain types of plastics.
Hazardous decomposition products	CO, HBr.

11. TOXICOLOGICAL INFORMATION

Information on the likely routes of exposure**Product Information**

Inhalation	Toxic by inhalation. May cause irritation of respiratory tract.
Eye contact	Causes serious eye irritation.
Skin contact	Causes skin irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Toxic if swallowed.
Symptoms	Redness. May cause redness and tearing of the eyes. Coughing and/ or wheezing. Difficulty in breathing. See section 4.

Numerical measures of toxicity**Acute toxicity**

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
METHYL BROMIDE	104 - 133 mg/kg (Rat)	= 135 mg/kg (Rat)	= 302 ppm (Rat) 8 h

Delayed and immediate effects and also chronic effects from short and long term exposure

Skin corrosion/irritation	Irritating to skin.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	Exposure in human resulted in redness, congestion, dermatitis, itching, swollen areas and blistering.
Germ cell mutagenicity	Contains a known or suspected mutagen Mutagenic by the Ames Test MBr induced DNA damage in rat tests, after being exposed to inhalation of a concentration of 250 ppm (6 hours daily for 5 consecutive days) In vivo, MBr induced sister chromatid exchanges in bone marrow cells and micronuclei in peripheral erythrocytes of female mice exposed by inhalation for 14 days.
Carcinogenicity	Studies conducted with MBr, exposing animals both by inhalation (rats & mice) and by oral route (fumigated feed, rats), showed that THERE WAS NO EVIDENCE OF CARCINOGENIC ACTIVITY.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	IARC	ACGIH	NTP
METHYL BROMIDE	Group 3	-	-

Reproductive toxicity	In a two generation reproductive study via inhalation in albino rats, the NOEL was 90 ppm.
Developmental toxicity	No information available.
STOT - single exposure	May cause respiratory irritation.
STOT - repeated exposure	Chronic exposure to low concentrations of methyl bromide may produce central nervous system effects. Signs include mental confusion, lethargy, inability to focus one's eye, incoordination and muscle weakness Repeated skin contact may cause dermatitis May cause damage to organs through prolonged or repeated exposure by inhalation.
Other adverse effects	Single exposure vapour inhalation neurotoxicity study in rats: NOEL - 100 ppm Acute oral toxicity (single dose) study in Beagle dogs: Lethal dose - 500 mg/kg. No clinical signs were observed at 1 mg/kg
Aspiration hazard	Not expected.

12. ECOLOGICAL INFORMATION**Toxicity**

Ecotoxicity Very toxic to aquatic life.

Component Information

Chemical name	Algae/aquatic plants	Fish	Crustacea	Toxicity to microorganisms
METHYL BROMIDE	5 mg/L (72h, Selenastrum)	3.9 mg/L (96h, Rainbow trout)	2.6 mg/L 48h	-

	capricornutum)	56.28 mg/L (96h, Zebrafish)		
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Persistence and degradability

- Hydrolysis

Under laboratory conditions (MBr)

Half-life at pH 5 - 256.7 hours

Half-life at pH 7 - 253.9 hours

Half-life at pH 9 - 357.3 hours.

Bioaccumulative potential

Not bioaccumulative.

Chemical name	Partition coefficient
METHYL BROMIDE	1.92

Mobility

Not relevant for inorganic substance.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS**Disposal methods****Waste from residues/unused products**

The recommended method is incineration. The recommended method is incineration. If a suitable designated combustion chamber is not available, return MARKED containers to supplier. Contact local and/or state environmental authorities to insure proper compliance. Observe all federal, state and local environmental regulations when disposing of this material.

Contaminated packaging

Dispose of contents/containers in accordance with local regulations.

14. TRANSPORT INFORMATION**IMDG**

UN number or ID number UN1062
UN proper shipping name Methyl bromide, Marine pollutant
Transport hazard class(es) 2
Packing group Not regulated
Description: UN1062, Methyl bromide, 2, Marine pollutant
Marine pollutant Yes
Special precautions None
EmS-No F-C, S-U
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

ADR/RID/ADN

UN number or ID number UN1062
UN proper shipping name Methyl bromide, Environmentally Hazardous
Transport hazard class(es) 2.3
Labels 2.3
Packing group Not regulated
Description: UN1062, Methyl bromide, 2.3, (C/D), Environmentally Hazardous
Environmental hazards Yes
Special precautions None
Classification code 2T

Tunnel restriction code (C/D)

IATA

UN number or ID number Not regulated
 Transport hazard class(es) Not regulated
 Packing group Not regulated
 Description: Forbidden
 Environmental hazards Yes
 Special precautions None

DOT

UN/ID no UN1062
 UN proper shipping name Methyl bromide, Marine pollutant
 Description: UN1062, Methyl bromide, 2.3, Marine pollutant
 Transport hazard class(es) 2.3

15. REGULATORY INFORMATION

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

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer

Chemical name	Ozone depletion potential (ODP)	Ozone-depleting substances (ODS)
METHYL BROMIDE - 74-83-9	0.6 ODP	E/I

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

GHS hazardous component CAS registry numbers appearing in section 3 may differ from substances appearing in section 15 due to country or regional chemical inventory coverage requirements, however, remain in compliance with the inventory
 Products that are used as food additives are exempt from listing in international chemical inventories

For further details on the regulatory status for this product in a specific country, please send your inquiry to the following email address: msdsinfo@icl-group.com

TSCA	Listed or exempted
DSL	Listed or exempted
ENCS	Listed or exempted
IECSC	Listed or exempted
KECL	Listed or exempted
PICCS	Listed or exempted
AIIC	Listed or exempted
NZIoC	Not Listed
TCSI	Listed or exempted
NCI	Listed or exempted
TECI	Listed or exempted
NSQ	Listed or exempted

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL - Canadian Domestic Substances List
ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals
NZIoC - New Zealand Inventory of Chemicals
TCSI - Taiwan Chemical Substance Inventory
NCI - Vietnam National Chemicals Inventory
TECI - Thailand Inventory FDA Existing Chemicals
NSQ - Mexico National Inventory of Chemical Substances

16. OTHER INFORMATION

Revision date 04-Sep-2022

Revision Note The symbol (***) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

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End of Safety Data Sheet