



# MATERIAL SAFETY DATA SHEET

Product name	<b>Methyl Bromide 98%</b>	
Product id	8326-98	
Revision date	16/04/2012	<b>Revision: 10</b>
Supersedes	04/05/2011	

## 1. Identification of the substance & the company

Chemical name	Methyl bromide
Synonym(s)	Bromomethane, MBr , Metafume 98
Chemical family	Halogenated alkane
Molecular weight	94.94
Type of product and use	A broad-spectrum pesticide widely used as a powerful fumigant.
Company	Bromine Compounds Ltd. P.O.B 180, Beer Sheva 84101, Israel Tel +972-8-6297830
Emergency telephone number:	
- For Europe	( +31) 115 689000
- For UK and Ireland	+44 (0) 1270 502891 (24 Hours)
- For USA	Chemtrec (800) 424-9300
- For Asia - Pacific	ALERT-SGS 24 hr Toll Free Number : +800 ALERTSGS (+800-2537-8747) 24 hr Singapore Exchange Number : +65 6542-9595

## 2. Hazards identification

**Adverse human health effects** Methyl bromide may be fatal if inhaled and harmful if swallowed or absorbed through the skin. It is a neurotoxin and a severe irritant to the upper and lower respiratory tract, skin and eyes.

This product contains 2% chloropicrin (trichloronitromethane), which is used as a lachrymatory warning agent, and at this level does not affect the properties of the product, except for its odour.

GHS

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**GHS classification**

Press. Gas  
Muta. 2 H341  
Acute Tox. 2 H330  
Acute Tox. 3 H301  
Eye Irrit. 2 H319  
Skin Irrit. 2 H315  
STOT SE 3 H335  
STOT RE 2 H373  
Aquatic Acute 1 H400  
Ozone 1 H420

**Label elements**



**Signal word** Danger

**Hazard statements**

H341 - Suspected of causing genetic defects  
H330 - Fatal if inhaled  
H301 - Toxic if swallowed  
H319 - Causes serious eye irritation  
H335- May cause respiratory irritation  
H315 - Causes skin irritation  
H373 - May cause damage to organs through prolonged or repeated exposure  
H400 - Very toxic to aquatic life  
H420- Harms public health and the environment by destroying ozone in the upper atmosphere

**Precautionary statements**

P202 - Do not handle until all safety precautions have been read and understood.  
P260 - Do not breathe fume/gas/mist/vapours/spray  
P284 + P280 - Wear respiratory protection/protective clothing/eye protection/face protection.  
P304 + P340- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
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.  
P310 - Immediately call a POISON CENTER or doctor/physician  
P330- Rinse mouth.



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**NFPA Ratings (Scale 0-4)**      Health = 3, Fire = 1, Reactivity = 0

**3. Composition / information on ingredients**

Components	Weight %	Index No.	EC No.	EU Classification
METHYL BROMIDE 74-83-9	98	# 602-002-00-2	200-813-2	Press. Gas Muta. 2 H341 Acute Tox. 3 H301 Acute Tox. 3 H331 STOT RE 2 H373 Eye Irrit. 2 H319 STOT SE H335 Skin Irrit 2 H315 Aquatic Acute 1 H400 Ozone 1 H420 (In accordance with CLP 1272/2008)  Muta. Cat.3; R68 N; R50 N; R59 T; R23/25 Xi; R36/37/38 Xn; R48/20 (In accordance with DSD 67/548/EEC)
TRICHLORONITRO METHANE 76-06-2	2	# 610-001-00-3	200-930-9	Acute Tox. 2 H330 Acute Tox. 4 H302 Eye Irrit 2 H319 STOT SE H335 Skin Irrit 2 H315 (In accordance with CLP 1272/2008)  T+; R26 Xi; R36/37/38 Xn; R22 (In accordance with DSD 67/548/EEC)



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## 4. First-aid measures

**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.**

**Eye contact** Holding the eyelids apart, flush eyes promptly with copious flowing water for at least 20 minutes. Get medical attention immediately.

**Skin contact** Wash skin thoroughly with mild soap and plenty of water for at least 15 minutes. Get medical attention immediately.  
All leather items should be discarded. Other contaminated clothing must either be discarded or thoroughly ventilated and washed before re-use.

**Inhalation** In case of inhalation, remove person to fresh air. Keep him quiet and warm. Apply artificial respiration if necessary and 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.**  
\*\*\*\*\*

**Notes to the physician** Intense vesicant.  
Signs and symptoms of toxicity are primarily referable to the CNS, respiratory tract and the cardiovascular system.  
No specific antidote.

## 5. Fire - fighting measures

**Suitable extinguishing media** Carbon dioxide, dry chemicals, foam, water spray (fog). In case of exothermic decomposition and appearance of smoke, water should be used to suppress it.

**Fire fighting procedure** 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.



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## Unusual fire and explosion hazards

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.  
When heated to decomposition, may release poisonous and corrosive fumes of CO and HBr.

## 6. Accidental release measures

### Personal precautions

Wear self-contained breathing apparatus in positive pressure mode.  
Evacuate area and keep personnel upwind.

### 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

### Handling

Avoid bodily contact.  
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.

### Storage

Store cylinders and cans upright, in a secure manner, either outdoors under ambient conditions, or indoors in a well ventilated area, away from seeds, foods/feed-stuffs and human and animal habitation.  
Post as a pesticide storage area. Test periodically for leaks by halide leak detector.

## 8. Exposure controls / personal protection

### Exposure Limits :

Components	ACGIH-TLV Data	OSHA (PEL) Data
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METHYL BROMIDE 74-83-9	1 ppm skin , A4	C 20 ppm (C 80 mg/m <sup>3</sup> ),skin
TRICHLORONITRO METHANE 76-06-2	0.1 ppm, A4	0.1 ppm (0.7 mg/m <sup>3</sup> )

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

**Personal protective equipment:**

- **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.
- **Hand protection** DO NOT WEAR GLOVES when working with MBr because of the danger that liquid or concentrated vapour may be trapped inside them.
- **Eye protection** Splash-proof safety glasses.  
CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH THIS CHEMICAL.
- **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.

**Hygiene measures** When using this material, do not eat, drink or smoke. Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking.

## 9. Physical and chemical properties

**Appearance** Colourless gas, with a sharp, penetrating odour. Clear, colourless to straw-coloured liquid under pressure or below 3.5°C.

**Boiling point/range** 3.5-4°C  
**Melting point/range** -94°C  
**Flash point** None

**Flammable/Explosion limits**  
- Lower (% vol) 10  
- Upper (% vol) 16  
**Auto-ignition temperature** 537°C



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## 9. Physical and chemical properties

Vapour pressure	1420 mmHg (20°C)
Vapor density	3.3 (20°C)
Viscosity	Not applicable
Solubility:	
- Solubility in water	0.132 gr/100ml at 25°C (partial pressure CH <sub>3</sub> Br - 73 torr) 0.138 gr/100ml at 25°C (partial pressure CH <sub>3</sub> Br - 108 torr)
- Solubility in other solvents	Infinitely soluble in most organic solvents
pH	Not available
Decomposition temperature	400°C
Partition coefficient (n-octanol/water)	Log Kow - ~1.92
Explosive properties	Not available
Oxidising properties	Not available

## 10. Stability and reactivity

Stability	Stable in sealed containers and under normal conditions
Materials to avoid	Strong oxidizers, aluminum, tin, zinc and magnesium metals and their alloys, natural rubber and certain types of plastics.
Conditions to avoid	Avoid contamination by water Keep away from ignition sources
Hazardous decomposition products	CO, HBr
Hazardous polymerization	Will not occur

## 11. Toxicological information

Acute toxicity:	
- Rat oral LD50	liquid MBr in corn oil - 104 mg/kg microencapsulated MBr in corn oil - 133 mg/kg
- Rat inhalation LC50	1175 mg/m <sup>3</sup> /8 hour
- Mouse inhalation LC50	1540 mg/m <sup>3</sup> /2 hour

Effects of overexposure :	
- Ocular	Severe irritant. Contact with liquid or high concentrations of gas with the eyes may cause severe but usually reversible injury involving temporary blindness.



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- Dermal** 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.
- 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.
- Ingestion** Severe irritant to mucous membranes and toxic poison if ingested, although ingestion is highly unlikely.
- Chronic toxicity** 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.
- Mutagenicity** Mutagenic by the Ames Test  
MBr induced DNA damage in rat testis following inhalation exposure at 250 ppm (6 hours/day 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.  
Not included in NTP 12th Report on Carcinogens  
IARC Group 3 (animal inadequate evidence, human no data available)
- Other** 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





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## 12. Ecological information

### Information on ecological effects

Methyl bromide is listed in the Montreal Protocol as a controlled substance with an ODP (Ozone Depleting Potential) of 0.6

### Aquatic toxicity :

- 96 Hour-LC50, Fish 3.9 mg/l (Rainbow Trout)  
56.28 mg/l (Zebrafish)
- 48 Hour-EC50, Daphnia magna 2.6 mg/l
- 72 Hour-EC50, Freshwater algae 5 mg/l (Selenastrum capricornutum)

### Avian toxicity:

- Oral LD50 ca. 73 mg/kg (Northern Bobwhite)

### 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

### Germany, water endangering classes (WGK)

3

## 13. Disposal considerations

### Waste disposal

Observe all federal, state and local environmental regulations when disposing of this material. 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.

## 14. Transportation information

UN No. 1062  
IMDG Proper shipping name: Methyl bromide  
Class: 2.3 Toxic Gases  
Label: TOXIC GAS (2)  
Marking: Marine Pollutant



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**ADR/RID** Proper shipping name: Methyl bromide  
Class 2 : Gases Classification Code: 2T  
Label No.: 2.3+13(RID)  
Hazard identification No. 26  
Marking: Environmentally hazardous substance

**ICAO/IATA** Proper shipping name: Methyl bromide  
Class: 2.3  
Cargo aircraft - Forbidden  
Passenger aircraft - Forbidden  
Marking: Environmentally hazardous substance

**DOT** Proper shipping name: Methyl bromide  
Hazard Class 2.3: Poisonous gas  
Label: POISON GAS (2.3)  
Shipping description: Inhalation Hazard; Hazard Zone C  
Emergency Guide No.123  
---RQ - 1000 lbs (MBr)  
Marking: Marine Pollutant

### 15. Regulatory information

**EU** Regulated under EC Directive no.2037/2000 on substances that deplete the ozone layer.

**EC No.** 200-813-2 (Methyl bromide), 200-930-9 (Chloropicrin)

**- Indication of danger** Very Toxic, symbol required (T+)  
Dangerous for the environment, symbol required (N)  
Mutagenic Cat. 3

**- R Phrases** R 25: Toxic if swallowed.  
R 26: Very toxic by inhalation.  
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 to the ozone layer  
R 68: Possible risk of irreversible effects



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### - S Phrases

S 1/2 :Keep locked up and out of reach of children.  
S 13 :Keep away from food, drink and animal feeding stuffs.  
S 15 :Keep away from heat.  
S 20/21: When using, do not eat, drink or smoke.  
S 23 :Do not breathe gas/fumes/vapour/spray  
S 27 :Take off immediately all contaminated clothing.  
S 36/39 :Wear suitable protective clothing and eye/face protection.  
S 38: In case of insufficient ventilation,wear suitable respiratory equipment.  
S45: In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).  
S 59 :Refer to manufacturer/supplier for information on recovery/recycling.  
S61: Avoid release to the environment. Refer to special instructions/Safety data sheets.

### For Italy

T - Toxic.  
Dangerous for the environment, symbol required (N)  
Mutagenic Cat. 3

R23/25 - Toxic by inhalation and if swallowed  
R36/37/38 - Irritating to eyes, respiratory system and skin  
R48/20 - Harmful:danger of serious damage to health by prolonged exposure through inhalation  
R50 - Very toxic to aquatic organisms  
R59 - Dangerous to the ozone layer  
R68 - Possible risk of irreversible effects

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### USA

Reported in the EPA TSCA Inventory.  
This product is subject to registration under FIFRA

### Australia

Listed in AICS



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<b>Canada</b>	Listed in DSL This substance is listed under Part 1, Group 1 Substances in the National Pollutant Release Inventory (NPRI) for 2008. Information about this substance must be reported to the Minister of the Environment in accordance with subsection 46(1) of the Canadian Environmental Protection Act, 1999. This chemical is included on the current phase-out schedule of ozone-depleting substances under the Canadian Environmental Protection Act, 1999.
<b>China inventory</b>	Listed in IECSC
<b>Japanese METI</b>	ENCS No. 2-39 (Methyl bromide), 2-199 (Chloropicrin)
<b>Hong Kong</b>	Dangerous Goods - Category 2 - Compressed Gases (MBr) Ozone Depleting Substances - Part 6 scheduled substance (MBr)
<b>Korea</b>	Listed in ECL (No.KE-03676 (Methyl bromide), KE-34085 (Chloropicrin)) Toxic chemical No.97-1-113, 1% or more in mixtures (MBr) Toxic chemical No.97-1-283, 1% or more in mixtures (CP) ; Prohibited Chemicals 99-4-30, 1% or more in mixtures (CP)
<b>New Zealand Inventory</b>	Listed in NZIoC
<b>Philippines</b>	Listed in PICCS
<b>Taiwan</b>	Harmful substances

## 16. Other information

**This data sheet contains changes from the previous version in section(s)**  
1, 2 , 3, 14, 16 (ANSI)

### Health, Safety & Environment Policy

We will strive to ensure that our operations and products meet the needs of the present global community without compromising the ability of future generations to meet their needs  
We accept that the success of our business is dependent on the supply of products and services that will benefit society whilst ensuring human safety and protection of the environment and natural resources  
Within the framework of our commitment to the Responsible Care program, we will provide a healthy and safe work environment for employees and will responsibly manage our products at all stages of their life cycle in order to protect human health and the environment whilst maintaining high production standards of operation



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**TO MEET THIS COMMITMENT WE WILL:**

Comply with or exceed applicable national and international regulatory requirements and other requirements to which we subscribe

Communicate openly and actively encourage dialogue with employees, customers and community concerning our products and operations

Implement documented management systems consistent with and for promotion of the Responsible Care ethics

Develop and supply products that can be manufactured, transported, used and disposed of safely whilst best meeting the needs of our customers

Regularly assess, continually improve and responsibly manage health, safety and environmental risks associated with products and processes throughout their life-cycles

Share knowledge and expertise with others and seek to learn from and incorporate improved practices into our own operations

Educate and train employees, contractors and customers to improve their HSE performance

Communicate up-to-date information to enable our workers, customers and other interested parties to handle our products in a safe and environmentally responsible manner

Endeavor to work with customers, suppliers, distributors and contractors to foster the safe use, transport and disposal of our chemicals

Support Product Stewardship programs in cooperation with customers, distributors and transporters

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Bromine Compounds Ltd. makes no representations as to the completeness or accuracy thereof.

Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use.

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*In an event of discrepancy between the contents of this MSDS and the English version of it, the English version shall prevail.*

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**End of safety data sheet**