

# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.1  
Creation Date: July 15, 2019  
Revision Date: May 08, 2024

## SECTION 1: Identification

### 1.1 GHS Product identifier

Product name Reference Material for Bromomethane in Methanol Solution

### 1.2 Other means of identification

Product number CPRM6561  
Other names -

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.  
Uses advised against no data available

### 1.4 Supplier's details

Company CATO Research Chemicals Inc.  
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou  
Telephone +86-20-81960175

### 1.5 Emergency phone number

Emergency phone number +86-20-81960175  
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

Gases under pressure: Compressed gas  
Acute toxicity - Category 3, Oral  
Skin irritation, Category 2  
Eye irritation, Category 2  
Acute toxicity - Category 3, Inhalation  
Specific target organ toxicity – single exposure, Category 3  
Germ cell mutagenicity, Category 2  
Specific target organ toxicity – repeated exposure, Category 2  
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1  
Hazardous to the ozone layer, Category 1

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

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  
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 statement(s)

|                   |                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prevention</b> | P264 Wash ... thoroughly after handling.                                                                                                                                                  |
|                   | P270 Do not eat, drink or smoke when using this product.                                                                                                                                  |
|                   | P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...                                                                                     |
|                   | P261 Avoid breathing dust/fume/gas/mist/vapours/spray.                                                                                                                                    |
|                   | P271 Use only outdoors or in a well-ventilated area.                                                                                                                                      |
|                   | P203 Obtain, read and follow all safety instructions before use.                                                                                                                          |
|                   | P260 Do not breathe dust/fume/gas/mist/vapours/spray.                                                                                                                                     |
| <b>Response</b>   | P273 Avoid release to the environment.                                                                                                                                                    |
|                   | P301+P316 IF SWALLOWED: Get emergency medical help immediately.                                                                                                                           |
|                   | P321 Specific treatment (see ... on this label).                                                                                                                                          |
|                   | P330 Rinse mouth.                                                                                                                                                                         |
|                   | P302+P352 IF ON SKIN: Wash with plenty of water/...                                                                                                                                       |
|                   | P332+P317 If skin irritation occurs: Get medical help.                                                                                                                                    |
|                   | P362+P364 Take off contaminated clothing and wash it before reuse.                                                                                                                        |
|                   | P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.                                           |
|                   | P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.                                                                                                      |
|                   | P316 Get emergency medical help immediately.                                                                                                                                              |
|                   | P319 Get medical help if you feel unwell.                                                                                                                                                 |
|                   | P318 IF exposed or concerned, get medical advice.                                                                                                                                         |
|                   | P391 Collect spillage.                                                                                                                                                                    |
| <b>Storage</b>    | P410+P403 Protect from sunlight. Store in a well-ventilated place.                                                                                                                        |
|                   | P405 Store locked up.                                                                                                                                                                     |
|                   | P403+P233 Store in a well-ventilated place. Keep container tightly closed.                                                                                                                |
| <b>Disposal</b>   | P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |
|                   | P502 Refer to manufacturer or supplier for information on recovery or recycling                                                                                                           |

## 2.3 Other hazards which do not result in classification

no data available

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

| Chemical name                                            | Common names and synonyms | CAS number | EC number | Concentration |
|----------------------------------------------------------|---------------------------|------------|-----------|---------------|
| Reference Material for Bromomethane in Methanol Solution | Bromomethane              | 74-83-9    | 200-813-2 | 100%          |

## SECTION 4: First-aid measures

### 4.1 Description of necessary first-aid measures

#### If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer immediately for medical attention.

#### Following skin contact

Rinse skin with plenty of water or shower. ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer immediately for medical attention.

#### Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.

#### Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### 4.2 Most important symptoms/effects, acute and delayed

Methyl bromide is a dangerous cumulative poison with delayed symptoms of central nervous system intoxication that may appear as long as several months after exposure. High concentrations can produce fatal pulmonary edema. Chronic exposure can cause central nervous system depression and kidney injury. It may cause severe and permanent brain damage. Severe neurological signs may appear when there is a sudden exposure to high concentrations following continuous slight exposure. Methyl bromide has practically no odor or irritating effects and therefore no warning, even at hazardous concentrations. (EPA, 1998)

### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

In a /methyl bromide/ poisoned man suffering from action myoclonus, the condition was controlled by diazepam (60 mg/day). However, because of severe somnolence, the treatment was changed to clonazepam at . This treatment was effective; the somnolence disappeared, & the myoclonus decreased conspicuously. Clonazepam produced mild improvement in another case with action myoclonus. Although /dimercaprol/ has been used for treating methyl bromide poisoning, there is no evidence that it was beneficial. Treatment of a poisoning case with acetylcysteine was concluded to be not harmful & possibly beneficial.

## SECTION 5: Fire-fighting measures

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## SECTION 5: Fire fighting measures

### 5.1 Suitable extinguishing media

Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Extinguish fire using agent suitable for surrounding fire. Use flooding quantities of water as fog. Use water spray to keep fire-exposed containers cool.

### 5.2 Specific hazards arising from the chemical

When heated to decomposition, it emits toxic fumes of bromides. Hazardous polymerization may not occur. (EPA, 1998)

### 5.3 Special protective actions for fire-fighters

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with appropriate extinguishing agent. In case of fire: keep cylinder cool by spraying with water.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. NEVER direct water jet on liquid.

### 6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. NEVER direct water jet on liquid.

### 6.3 Methods and materials for containment and cleaning up

1. remove all ignition sources. 2. ventilate area of spill or leak. 3. stop flow of gas. if source of leak is a cylinder & leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air, repair the leak or allow the cylinder to empty. 4. if in the liq form, allow to vaporize.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

NO open flames. NO contact with aluminium, zinc, magnesium or pure oxygen. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### 7.2 Conditions for safe storage, including any incompatibilities

Fireproof if in building. Separated from strong oxidants, aluminium and cylinders containing oxygen. Cool. Ventilation along the floor. Fireproof if in building. Separated from strong oxidants, aluminium and cylinders containing oxygen. Cool. Ventilation along the floor.

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limit values

TLV: 1 ppm as TWA; (skin); A4 (not classifiable as a human carcinogen). MAK: peak limitation category: I(2); carcinogen category: 3B; pregnancy risk group: C

#### Biological limit values

no data available

### 8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear safety goggles, face shield or eye protection in combination with breathing protection.

#### Skin protection

Cold-insulating gloves. Protective clothing.

#### Respiratory protection

Use ventilation, local exhaust or breathing protection.

#### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties and safety characteristics

|                                                                 |                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Physical state</b>                                           | Methyl bromide is a colorless highly toxic volatile liquid or a gas. Boiling point 3.56°C (38.41°F). Usually odorless, but has a sweetish chloroform-like odor at high concentrations. Used as an insecticide, a rodenticide, a fumigant, a nematocide, a chemical intermediate and as a fire extinguishing agent. (EPA, 1998) |
| <b>Colour</b>                                                   | Colorless, transparent, easily liquified gas or volatile liquid                                                                                                                                                                                                                                                                |
| <b>Odour</b>                                                    | Usually odorless; sweetish, chloroform-like odor at high concentrations                                                                                                                                                                                                                                                        |
| <b>Melting point/freezing point</b>                             | -93.7°C                                                                                                                                                                                                                                                                                                                        |
| <b>Boiling point or initial boiling point and boiling range</b> | 3.56°C                                                                                                                                                                                                                                                                                                                         |
| <b>Flammability</b>                                             | Flammable Gas, but only in presence of a high energy ignition source.                                                                                                                                                                                                                                                          |
| <b>Lower and upper explosion limit/flammability limit</b>       | Lower flammable limit: 10% by volume; Upper flammable limit: 16% by volume                                                                                                                                                                                                                                                     |
| <b>Flash point</b>                                              | -34°C                                                                                                                                                                                                                                                                                                                          |
| <b>Auto-ignition temperature</b>                                | 999° F (USCG, 1999)                                                                                                                                                                                                                                                                                                            |
| <b>Decomposition temperature</b>                                | no data available                                                                                                                                                                                                                                                                                                              |
| <b>pH</b>                                                       | no data available                                                                                                                                                                                                                                                                                                              |
| <b>Kinematic viscosity</b>                                      | 0.397 cP at 0 deg C                                                                                                                                                                                                                                                                                                            |
| <b>Solubility</b>                                               | 2 % (NIOSH, 2016)                                                                                                                                                                                                                                                                                                              |
| <b>Partition coefficient n-octanol/water</b>                    | log Kow = 1.19                                                                                                                                                                                                                                                                                                                 |
| <b>Vapour pressure</b>                                          | 1420 mm Hg ( 20 °C)                                                                                                                                                                                                                                                                                                            |
| <b>Density and/or relative density</b>                          | 1.732                                                                                                                                                                                                                                                                                                                          |
| <b>Relative vapour density</b>                                  | 3.3 (20 °C, vs air)                                                                                                                                                                                                                                                                                                            |
| <b>Particle characteristics</b>                                 | no data available                                                                                                                                                                                                                                                                                                              |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

NIOSH considers methyl bromide to be a potential occupational carcinogen. [250 ppm]  
Decomposes on heating. This produces toxic and corrosive fumes including hydrogen bromide, bromine and carbon oxybromide. Reacts with strong oxidants. Attacks many metals in the presence of water. Attacks aluminium, zinc and magnesium. This produces pyrophoric compounds. This generates fire and explosion hazard.

### 10.2 Chemical stability

Heat /contributes to instability/.

### 10.3 Possibility of hazardous reactions

Non-flammable in air, but burns in oxygen. The gas is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. METHYL BROMIDE is incompatible with metals, dimethyl sulfoxide, ethylene oxide. [Lewis]. Can give flammable products if mixed with potassium hydroxide, sodium hydroxide and other strong bases. Methyl bromide in a steel tank reacted with an aluminum tube (part of the level gauge) producing methyl aluminum bromide. When the latter was subsequently exposed to air, enough heat was produced to ignite the methyl bromide-compressed air mixture above the liquid layer. The ensuing explosion shattered the tank (also incompatible with zinc, magnesium, and alloys)[Chem. Eng. Pro. 58(8). 1962]. A reaction between methyl bromide and dimethyl sulfoxide resulted in an explosion that shattered the apparatus [NFPA 491M. 1991].

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Risk of fire and explosion on contact with aluminium, zinc, magnesium or oxygen.

### 10.6 Hazardous decomposition products

Decomposes on heating. This produces toxic and corrosive fumes including hydrogen bromide, bromine and carbon oxybromide. Reacts with strong oxidants. Attacks many metals in the presence of water. Attacks aluminium, zinc and magnesium. This produces pyrophoric compounds. This generates fire and explosion hazard.

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral 214 mg/kg
- Inhalation: LC100 Rat inhalation 0.63 mg/l air/6 hr
- Dermal: no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/irritation

no data available

#### Respiratory or skin sensitization

no data available

#### Germ cell mutagenicity

no data available

#### Carcinogenicity

Cancer Classification: Not Likely to be Carcinogenic to Humans

#### Reproductive toxicity

No information is available on the reproductive or developmental effects of methyl bromide in humans. Information from animal studies suggest that methyl bromide does not cause birth defects and does not interfere with normal reproduction except at high exposure levels. Chronic inhalation exposure of male animals has resulted in effects on the testes at high concentrations. Inhalation exposure of animals during gestation has not resulted in significant developmental effects, even when there was severe maternal toxicity.

#### STOT-single exposure

The substance, as a liquid, is severely irritating to the skin. The substance, as a liquid, is irritating to the eyes and respiratory tract. Inhalation may cause lung oedema. See Notes. Rapid evaporation of the liquid may cause frostbite. The substance may cause effects on the central nervous system and kidneys. The effects may be delayed up to 48 hours. Exposure at high levels could cause death. Medical observation is indicated.

#### STOT-repeated exposure

The substance may have effects on the nervous system, kidneys and liver. This may result in impaired functions. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

#### Aspiration hazard

A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

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## SECTION 12: Ecological information

### 12.1 Toxicity

- Toxicity to fish: LC50; Species: *Lepomis macrochirus* (bluegill); Conditions: static bioassay, freshwater, 23 deg C, mild aeration applied after 24 hr; Concentration: 11 ppm for 96 hr
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water Flea); Conditions: freshwater, static, 19 deg C, pH 8.2, hardness 209.43 mg/L CaCO<sub>3</sub>, dissolved oxygen >6.5 mg/L; Concentration: 1700 ug/L for 48 hr; Effect: behavioral changes, general >99.9% purity
- Toxicity to algae: EC50; Species: *Chlorella pyrenoidosa* (Green Algae) exponential growth phase, 10000 cells/mL; Conditions: freshwater, static, 24 deg C, pH 7.7, hardness 54.06 mg/L CaCO<sub>3</sub>; Concentration: 2100-6700 ug/L for 24 hr; Effect: growth, general >99.9% purity
- Toxicity to microorganisms: no data available

### 12.2 Persistence and degradability

ANAEROBIC: Methyl bromide was anaerobically degraded in salt marsh sediments after chemical reaction with abundant free sulfide. The product of this nucleophilic substitution reaction was methanethiol, which underwent further chemical and bacterial reactions to form dimethyl sulfide(1).

### 12.3 Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for methyl bromide(SRC), using a log Kow of 1.19(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### 12.4 Mobility in soil

Reported Koc values for methyl bromide range from 9 to 22(1). According to a classification scheme(2), these Koc values suggest that methyl bromide is expected to have very high mobility in soil(SRC). The adsorption coefficient, Kd, for methyl bromide was below measurable for Greenfield sandy loam, Linne clay loam, and Carsetas loamy sand soils; Kd was equal to 0.2 for potting mix soil(3).

### 12.5 Other adverse effects

no data available

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## SECTION 13: Disposal considerations

### 13.1 Disposal methods

#### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

## 14.1 UN Number

ADR/RID: UN1062 (For reference only, please check.) IMDG: UN1062 (For reference only, please check.) IATA: UN1062 (For reference only, please check.)

## 14.2 UN Proper Shipping Name

ADR/RID: METHYL BROMIDE with not more than 2% chloropicrin (For reference only, please check.) IMDG: METHYL BROMIDE with not more than 2% chloropicrin (For reference only, please check.) IATA: METHYL BROMIDE with not more than 2% chloropicrin (For reference only, please check.)

## 14.3 Transport hazard class(es)

ADR/RID: 2.3 (For reference only, please check.) IMDG: 2.3 (For reference only, please check.) IATA: 2.3 (For reference only, please check.)

## 14.4 Packing group, if applicable

ADR/RID: (For reference only, please check.) IMDG: (For reference only, please check.) IATA: (For reference only, please check.)

## 14.5 Environmental hazards

ADR/RID: Yes IMDG: Yes IATA: Yes

## 14.6 Special precautions for user

no data available

## 14.7 Transport in bulk according to IMO instruments

no data available

# SECTION 15: Regulatory information

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

| Chemical name                                                            | Common names and synonyms | CAS number | EC number |
|--------------------------------------------------------------------------|---------------------------|------------|-----------|
| Bromomethane                                                             | Bromomethane              | 74-83-9    | 200-813-2 |
| European Inventory of Existing Commercial Chemical Substances (EINECS)   |                           |            | Listed.   |
| EC Inventory                                                             |                           |            | Listed.   |
| United States Toxic Substances Control Act (TSCA) Inventory              |                           |            | Listed.   |
| China Catalog of Hazardous chemicals 2015                                |                           |            | Listed.   |
| New Zealand Inventory of Chemicals (NZIoC)                               |                           |            | Listed.   |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS)       |                           |            | Listed.   |
| Vietnam National Chemical Inventory                                      |                           |            | Listed.   |
| Chinese Chemical Inventory of Existing Chemical Substances (China IECSC) |                           |            | Listed.   |
| Korea Existing Chemicals List (KECL)                                     |                           |            | Listed.   |

# SECTION 16: Other information

### Information on revision

Creation Date July 15, 2019

Revision Date May 08, 2024

### Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

### References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>



CATO Research Chemicals Inc.

3/F, Building B, No. 179 BASIGO, Guangpu Rd East, Huangpu Dist, Guangzhou

Web: [www.cato-chem.com](http://www.cato-chem.com)

Tel: +86-20-81960175 Fax: +86-20-81717260 E-mail: [info@cato-chem.com](mailto:info@cato-chem.com)

- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

#### Other Information

Depending on the degree of exposure, periodic medical examination is suggested. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Toxic effects on the nervous system may be delayed for several hours. Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.

**Any questions regarding this SDS, Please send your inquiry to [info@cato-chem.com](mailto:info@cato-chem.com)**

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