# Material Safety Data Sheet

Methyl Bromide

## Section 1. Chemical product and company identification

**Product name** : Methyl Bromide

**Supplier** : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

**Product use** : Synthetic/Analytical chemistry.

**Synonym** : Methane, bromo-; Bromomethane; Curafume; Embafume; Halon 1001; Haltox; Iscobrome; Monobromomethane; Terabol; CH3Br; Bercema; Brom-methan; Brom-O-gas; Brom-O-gaz; Bromometano; Bromure de methyle; Bromuro di metile; Broommethaan; Celfume; Dawson 100; Detia gas ex-M; Dowfume; Dowfume mc-2; Dowfume mc-33; Dowfume mc-2 soil fumigant; Edco; Fumigant-1; Kayafume; MB; MBX; Mebr; Metafume; Methogas; Methylbromid; Metylu bromek; Pestmaster; Profume; R 40B1; Rcra waste number U029; Rotox; Terr-O-gas 67; Terr-O-gas 100; UN 1062; Zytox; Brom-O-sol; Merth-O-gas

**MSDS #** : 001035

**Date of Preparation/Revision** : **7/1/2013.**

**In case of emergency** : 1-866-734-3438

## Section 2. Hazards identification

**Physical state** : Gas. [Compressed gas.]

WARNING!

FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
HARMFUL IF INHALED OR SWALLOWED.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

Keep away from heat, sparks and flame. Do not puncture or incinerate container. Do not ingest. Avoid breathing gas. May cause target organ damage, based on animal data. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

Contact with rapidly expanding gases can cause frostbite.

**Target organs** : May cause damage to the following organs: blood, kidneys, the nervous system, liver, heart, digestive system, gastrointestinal tract, upper respiratory tract, skin, eyes, adrenal, central nervous system (CNS), testes.

**Routes of entry** : Inhalation

**Potential acute health effects**

**Eyes** : Contact with rapidly expanding gas may cause burns or frostbite.

**Skin** : Contact with rapidly expanding gas may cause burns or frostbite.

**Inhalation** : Toxic by inhalation.

**Ingestion** : Ingestion is not a normal route of exposure for gases

**Potential chronic health effects**

**Chronic effects** : May cause target organ damage, based on animal data.

**Target organs** : May cause damage to the following organs: blood, kidneys, the nervous system, liver, heart, digestive system, gastrointestinal tract, upper respiratory tract, skin, eyes, adrenal, central nervous system (CNS), testes.

**Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

**See toxicological information (Section 11)**

## Section 3. Composition, Information on Ingredients

| Name | CAS number | % Volume | Exposure limits |
|---|---|---|---|
| Methyl Bromide | 74-83-9 | 100 | **ACGIH TLV (United States, 3/2012).**<br>**Absorbed through skin.**<br>TWA: 3.9 mg/m³ 8 hour(s).<br>TWA: 1 ppm 8 hour(s).<br>**OSHA PEL (United States, 6/2010).**<br>**Absorbed through skin.**<br>CEIL: 80 mg/m³<br>CEIL: 20 ppm<br>**OSHA PEL 1989 (United States, 3/1989).**<br>**Absorbed through skin.**<br>TWA: 20 mg/m³ 8 hour(s).<br>TWA: 5 ppm 8 hour(s). |

## Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

**Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

**Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

**Frostbite** : Try to warm up the frozen tissues and seek medical attention.

**Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Ingestion** : As this product is a gas, refer to the inhalation section.

## Section 5. Fire-fighting measures

**Flammability of the product** : Flammable.

**Auto-ignition temperature** : 537°C (998.6°F)

**Flash point** : Closed cup: 536.85°C (998.3°F).

**Flammable limits** : Lower: 10% Upper: 15%

**Products of combustion** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
carbonyl halides

**Fire-fighting media and instructions** : In case of fire, use water spray (fog), foam or dry chemical.

In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion.

**Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

**Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

**Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Methods for cleaning up** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## Section 7. Handling and storage

**Handling** : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Do not ingest. Keep container closed. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

**Storage** : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

## Section 8. Exposure controls/personal protection

**Engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**Personal protection**

**Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

**Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

**Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Personal protection in case of a large spill** : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Full chemical-resistant suit and self-contained breathing apparatus should be worn only by trained and authorized persons.

**Product name**

bromomethane

**ACGIH TLV (United States, 3/2012). Absorbed through skin.**
TWA: 3.9 mg/m³ 8 hour(s).
TWA: 1 ppm 8 hour(s).
**OSHA PEL (United States, 6/2010). Absorbed through skin.**
CEIL: 80 mg/m³
CEIL: 20 ppm
**OSHA PEL 1989 (United States, 3/1989). Absorbed through skin.**
TWA: 20 mg/m³ 8 hour(s).
TWA: 5 ppm 8 hour(s).

**Consult local authorities for acceptable exposure limits.**

## Section 9. Physical and chemical properties

**Molecular weight** : 94.95 g/mole
**Molecular formula** : C-H3-Br
**Boiling/condensation point** : 3.5°C (38.3°F)
**Melting/freezing point** : -93.66°C (-136.6°F)
**Critical temperature** : 190.85°C (375.5°F)
**Vapor density** : 3.3 (Air = 1)
**Specific Volume (ft $^3$/lb)** : 4.0323
**Gas Density (lb/ft $^3$)** : 0.248

## Section 10. Stability and reactivity

**Stability and reactivity** : The product is stable.
**Incompatibility with various substances** : Highly reactive or incompatible with the following materials: oxidizing materials.
**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
**Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

**Toxicity data**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| bromomethane | LD50 Oral | Rat | 214 mg/kg | - |
| | LD50 Subcutaneous | Rat | 135 mg/kg | - |
| | LC50 Inhalation Vapor | Rat | 2250 mg/m3 | 2 hours |
| | LC50 Inhalation Gas. | Mouse | 1540 mg/m³ | 2 hours |
| | LC50 Inhalation Gas. | Rat | 2833 ppm | 30 minutes |
| | LC50 Inhalation Gas. | Rat | 850 ppm | 1 hours |
| | LC50 Inhalation Gas. | Rat | 302 ppm | 8 hours |

**IDLH** : 250 ppm
**Chronic effects on humans** : **CARCINOGENIC EFFECTS**: Classified + (Proven.) by NIOSH. A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.
**MUTAGENIC EFFECTS**: Classified 3 by European Union.
May cause damage to the following organs: blood, kidneys, the nervous system, liver, heart, digestive system, gastrointestinal tract, upper respiratory tract, skin, eyes, adrenal, central nervous system (CNS), testes.
**Other toxic effects on humans** : Hazardous by the following route of exposure: of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant).

**Specific effects**

**Carcinogenic effects** : No known significant effects or critical hazards.

**Mutagenic effects** : No known significant effects or critical hazards.

**Reproduction toxicity** : No known significant effects or critical hazards.

## Section 12. Ecological information

**Aquatic ecotoxicity**

| Product/ingredient name | Test | Result | Species | Exposure |
|---|---|---|---|---|
| bromomethane | - | Acute EC50 2.6 to 3.5 ppm Fresh water | Daphnia - Water flea - Daphnia magna - <24 hours | 48 hours |
| | - | Acute EC50 2000 ug/L Fresh water | Daphnia - Water flea - Daphnia magna | 48 hours |
| | - | Acute EC50 1700 ug/L Fresh water | Daphnia - Water flea - Daphnia magna | 48 hours |
| | - | Acute EC50 400 ug/L Fresh water | Fish - Medaka, high-eyes - Oryzias latipes - 28 to 35 days | 96 hours |
| | - | Acute EC50 300 ug/L Fresh water | Fish - Guppy - Poecilia reticulata - 21 to 28 days | 96 hours |
| | - | Acute EC50 0.6 ug/L Fresh water | Fish - Guppy - Poecilia reticulata - 21 to 28 days | 96 hours |
| | - | Acute LC50 2200 ug/L Fresh water | Daphnia - Water flea - Daphnia magna | 48 hours |
| | - | Acute LC50 700 ug/L Fresh water | Fish - Medaka, high-eyes - Oryzias latipes - 28 to 35 days | 96 hours |
| | - | Acute LC50 0.8 ug/L Fresh water | Fish - Guppy - Poecilia reticulata - 21 to 28 days | 96 hours |

**Products of degradation** : Products of degradation: carbon oxides (CO, $CO_2$) and water, halogenated compounds.

**Environmental fate** : Not available.

**Environmental hazards** : This product shows a low bioaccumulation potential. Water polluting material. May be harmful to the environment if released in large quantities.

**Toxicity to the environment** : Not available.

## Section 13. Disposal considerations

**Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.**

## Section 14. Transport information

| Regulatory information | UN number | Proper shipping name | Class | Packing group | Label | Additional information |
|---|---|---|---|---|---|---|
| **DOT Classification** | UN1062 | METHYL BROMIDE. Marine pollutant (bromomethane) | 2.3 | Not applicable (gas). |   | Inhalation hazard zone B<br><br>**Reportable quantity**<br>1000 lbs. (454 kg)<br><br>**Limited quantity** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | Yes.<br><br>**Packaging instruction**<br>**Passenger aircraft**<br>Quantity limitation: Forbidden.<br><br>**Cargo aircraft**<br>Quantity limitation: Forbidden.<br><br>**Special provisions**<br>3, B14, T50, 153 |
| **TDG Classification** | UN1062 | METHYL BROMIDE | 2.3 | Not applicable (gas). |  | **Explosive Limit and Limited Quantity Index**<br>0<br><br>**ERAP Index**<br>25<br><br>**Passenger Carrying Ship Index**<br>Forbidden |
| **Mexico Classification** | UN1062 | METHYL BROMIDE.<br>Marine pollutant (bromomethane) | 2.3 | Not applicable (gas). |  | - |

**"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."**

# Section 15. Regulatory information

## United States

**U.S. Federal regulations** : **TSCA 8(a) IUR**: Not determined
**United States inventory (TSCA 8b)**: This material is listed or exempted.

**SARA 302/304/311/312 extremely hazardous substances**: bromomethane
**SARA 302/304 emergency planning and notification**: bromomethane
**SARA 302/304/311/312 hazardous chemicals**: bromomethane
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: bromomethane: Fire hazard, Sudden release of pressure, Immediate (acute) health hazard, Delayed (chronic) health hazard

**Clean Water Act (CWA) 307**: bromomethane

## SARA 313

| | Product name | CAS number | Concentration |
|---|---|---|---|
| **Form R - Reporting requirements** : | Methyl Bromide | 74-83-9 | 100 |
| **Supplier notification** : | Methyl Bromide | 74-83-9 | 100 |

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations** : **Connecticut Carcinogen Reporting**: This material is not listed.
**Connecticut Hazardous Material Survey**: This material is not listed.
**Florida substances**: This material is not listed.
**Illinois Chemical Safety Act**: This material is not listed.
**Illinois Toxic Substances Disclosure to Employee Act**: This material is not listed.
**Louisiana Reporting**: This material is not listed.
**Louisiana Spill**: This material is not listed.
**Massachusetts Spill**: This material is not listed.
**Massachusetts Substances**: This material is listed.
**Michigan Critical Material**: This material is not listed.
**Minnesota Hazardous Substances**: This material is not listed.
**New Jersey Hazardous Substances**: This material is listed.
**New Jersey Spill**: This material is not listed.
**New Jersey Toxic Catastrophe Prevention Act**: This material is listed.
**New York Acutely Hazardous Substances**: This material is listed.
**New York Toxic Chemical Release Reporting**: This material is not listed.
**Pennsylvania RTK Hazardous Substances**: This material is listed.
**Rhode Island Hazardous Substances**: This material is not listed.

**California Prop. 65** : **WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

| Ingredient name | Cancer | Reproductive | No significant risk level | Maximum acceptable dosage level |
|---|---|---|---|---|
| Methyl Bromide | No. | Yes. | No. | 810 µg/day (inhalation) |

**Canada**

**WHMIS (Canada)** : Class A: Compressed gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive material

**CEPA Toxic substances**: This material is listed.
**Canadian ARET**: This material is not listed.
**Canadian NPRI**: This material is listed.
**Alberta Designated Substances**: This material is not listed.
**Ontario Designated Substances**: This material is not listed.
**Quebec Designated Substances**: This material is not listed.

# Section 16. Other information

**United States**

**Label requirements** : FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
HARMFUL IF INHALED OR SWALLOWED.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

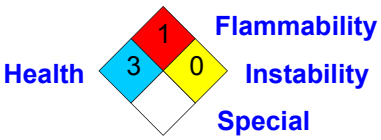
**Canada**

**Label requirements** : Class A: Compressed gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive material

**Hazardous Material Information System (U.S.A.)** :

| | | |
|---|---|---|
| Health | * | 3 |
| Flammability | | 1 |
| Physical hazards | | 0 |

**National Fire Protection Association (U.S.A.)** :




## Notice to reader

**To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.**
**Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.**