



SAFETY DATA SHEET in accordance with REACH regulation 1907/2006/EC

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Revised edition no : 3 - 02

Date : 30 / 9 / 2013

Supersedes : 20 / 9 / 2012

Bromomethane**009**

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

1.1. Product identifier

Trade name : Bromomethane
SDS Nr : 009
Chemical description : Bromomethane
CAS No : 74-83-9
EC No : 200-813-2
Index No : 602-002-00-2
Registration-No. : Registration deadline not expired.
Chemical formula : CH₃Br

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Test gas / Calibration gas.
Chemical reaction / Synthesis.
Contact supplier for more uses information.
Uses advised against : Consumer use

1.3. Details of the supplier of the safety data sheet

Company identification : AIR LIQUIDE Deutschland GmbH
Hans-Günther-Sohl-Straße 5
D-40235 Düsseldorf GERMANY
Telefon: +49 (0)211 6699-0 - Fax: +49 (0)211 6699-222
E-Mail address (competent person) : Info.SDB@AirLiquide.de

1.4. Emergency telephone number

Emergency telephone number : +49 (0)2151 398668
- Availability : (24 / 7)

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Hazard Class and Category Code(s), Regulation (EC) No 1272/2008 (CLP)

- Health hazards : Acute toxicity, Oral - Category 3 - Danger - (CLP : Acute Tox. 3) - H301
Acute toxicity, Inhalation - Category 2 - Danger - (CLP : Acute Tox. 2) - H330
Skin irritation - Category 2 - Warning - (CLP : Skin Irrit. 2) - H315
Eye irritation - Category 2 - Warning - (CLP : Eye Irrit. 2) - H319
Germ cell mutagenicity - Category 2 - Warning - (CLP : Muta. 2) - H341
Specific Target Organ Toxicity - Single exposure - Respiratory tract irritation - Category 3 - Warning - (CLP : STOT SE 3) - H335
Specific Target Organ Toxicity - Repeated exposure - Category 2 - Warning - (CLP : STOT RE 2) - H373
- Physical hazards : Flammable gases - Category 2 - Warning - (CLP : Flam. Gas 2) - H221
Gases under pressure - Liquefied gas - Warning - (CLP : Press. Gas) - H280
- Environmental hazards : Hazardous to the aquatic environment - Acute hazard - Category 1 - Warning - (CLP : Aquatic Acute 1) - H400
- Additional hazards : Dangerous for the ozone layer - Warning - (CLP : Ozone 1 - H420)

Classification EC 67/548 or EC 1999/45

Classification : Muta. Cat. 3; R68
T; R23/25
Xn; 48/20
Xi; R36/37/38
N; R50-R59

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SECTION 2. Hazards identification (continued)

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms



• Hazard pictograms code

: GHS06 - GHS08 - GHS04 - GHS09

• Signal words

: Danger

• Hazard statements

: H221 - Flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H330 - Fatal if inhaled.
H301 - Toxic if swallowed.
H341 - Suspected of causing genetic defects.
H319 - Causes serious eye irritation.
H315 - Causes skin irritation.
H335 - May cause respiratory 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

- Prevention

: P260 - Do not breathe gas, vapours.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P210 - Keep away from heat, sparks, open flames or hot surfaces. – No smoking.
P202 - Do not handle until all safety precautions have been read and understood.

- Response

: P304+P340+P315 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention.
P305+P351+P338+P315 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice / attention.
P308+P313 - If exposed or concerned : get medical advice.
P302+P352 - IF ON SKIN : Wash with plenty of soap and water.
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - Eliminate all ignition sources if safe to do so.
P332+P313 - If skin irritation occurs : Get medical advice.

- Storage

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

2.3. Other hazards

Other hazards : None.

SECTION 3. Composition/information on ingredients

3.1. Substance / 3.2. Mixture

Substance.

Substance name	Content [Vol-%]	CAS No EC No Index No Registration no.	Classification(DSD)	Classification(CLP)
Bromomethane	: 100 %	74-83-9 200-813-2 602-002-00-2 * 2	Muta. Cat. 3; R68 T; R23/25 Xn; R48/20 Xi; R36/37/38 N; R50-R59	Acute Tox. 2 (H330) Flam. Liq. 2 (H225) Acute Tox. 3 (H301) Muta. 2 (H341) Eye irrit. 2 (H319) Skin Irrit. 2 (H315) STOT SE 3 (H335)



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SECTION 3. Composition/information on ingredients (continued)

STOT RE 2 (H373)
Liq. Gas (H280)
Aquatic Acute 1 (H400)
Ozone 1

Contains no other components or impurities which will influence the classification of the product.

* 1: Listed in Annex IV / V REACH, exempted from registration.

* 2: Registration deadline not expired.

* 3: Registration not required: Substance manufactured or imported < 1t/y

Full text of R-phrases see chapter 16. Full text of H-statements see chapter 16

SECTION 4. First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact : Remove contaminated clothing.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

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

- : May act principally on the central nervous system, with death resulting from respiratory paralysis.
Prolonged exposure to small concentrations may result in pulmonary oedema.
Delayed adverse effects possible.
In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.
May cause stomach cramps and vomiting.
May cause irritation to the respiratory tract, sneezing, coughing, burning sensation of throat with constricting sensation of the larynx and difficulty in breathing.
May cause irritation to skin.
May cause irritation to cornea (with temporary disturbance to vision).
Refer to section 11.

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

- : Obtain medical assistance.

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Carbon dioxide.
Dry powder.
Water spray or fog.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : Carbon monoxide. Carbonyl bromide. Hydrogen bromide.

5.3. Advice for firefighters

- Specific methods : If possible, stop flow of product.
Use fire control measures appropriate to the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
Use water spray or fog to knock down fire fumes if possible.



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SECTION 5. Fire-fighting measures (continued)

Special protective equipment for fire fighters : Gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Ensure adequate air ventilation.
Evacuate area.
Gas tight chemically protective clothing in combination with self contained breathing apparatus.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Try to stop release.
Monitor concentration of released product.

6.2. Environmental precautions

: Try to stop release.
Reduce vapour with fog or fine water spray.

6.3. Methods and material for containment and cleaning up

: Wash contaminated equipment or sites of leaks with copious quantities of water.
Hose down area with water.
Ventilate area.

6.4. Reference to other sections

Reference to other sections : See also sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Safe use of the product

: Avoid contact with aluminium.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid exposure, obtain special instructions before use.
Do not smoke while handling product.
Avoid suck back of water, acid and alkalis.
Only experienced and properly instructed persons should handle gases under pressure.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Installation of a cross purge assembly between the cylinder and the regulator is recommended.
Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Consider pressure relief device(s) in gas installations.

Safe handling of the gas receptacle

: Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.)

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Bromomethane**009****SECTION 7. Handling and storage (continued)**

designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to repair or modify container valves or safety relief devices.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Damaged valves should be reported immediately to the supplier.

7.2. Conditions for safe storage, including any incompatibilities

Storage : Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Stored containers should be periodically checked for general condition and leakage.
Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. Container valve guards or caps should be in place. Keep away from combustible materials.

7.3. Specific end use(s)

: None.

SECTION 8. Exposure controls/personal protection**8.1. Control parameters**

Occupational Exposure Limits
Bromomethane : AGW (8h) - Germany [mg/m³] TRGS 900 : 3.9 07/13
: AGW (8h) - Germany [ppm] TRGS 900 : 1 07/13
: Exceeding factor AGW - Germany TRGS 900 : 2

DNEL: Derived no effect level (Workers) : None available.

PNEC: Predicted no effect concentration : None available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls : Provide adequate general and local exhaust ventilation.
Alarm detectors should be used when toxic gases may be released.
Systems under pressure should be regularly checked for leakages.
Product to be handled in a closed system and under strictly controlled conditions.
Ensure exposure is below occupational exposure limits (where available).
Consider work permit system e.g. for maintenance activities.
Preferably use only permanent leak-tight installations (e.g. welded pipes).

8.2.2. Individual protection measures, e.g. personal protective equipment : Protect eyes, face and skin from liquid splashes.
A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
The following recommendations should be considered.
PPE compliant to the recommended EN/ISO standards should be selected.

• **Eye/face protection** : Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections
Wear safety glasses with side shields
Provide readily accessible eye wash stations and safety showers.
Standard EN 166 - Personal eye-protection.

Bromomethane**009****SECTION 8. Exposure controls/personal protection (continued)**

- Hand protection : Standard EN 374 - Protective gloves against chemicals.
Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.
Wear chemically resistant protective gloves.
Consult glove manufacturer's product information on material suitability and material thickness.
The breakthrough time of the selected gloves must be greater than the intended use period.
Fluoroelastomer (FKM) /
- Other : Keep suitable chemically resistant protective clothing readily available for emergency use.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals.
- Respiratory protection : Keep self contained breathing apparatus readily available for emergency use.
Use gas filters and full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
Gas filters do not protect against oxygen deficiency.
Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136.
Consult respiratory device supplier's product information for the selection of the appropriate device.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
Recommended: Filter AX (brown).
- Thermal hazards : None necessary.
- 8.2.3. Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9. Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Appearance	
Physical state at 20°C / 101.3kPa	: Gas.
Colour	: Colourless.
Odour	: Sweetish. Poor warning properties at low concentrations.
Odour threshold	: Odour threshold is subjective and inadequate to warn for overexposure.
pH value	: If dissolved in water pH-value will be affected.
Molar mass [g/mol]	: 95
Melting point [°C]	: -93.6
Boiling point [°C]	: 4
Critical temperature [°C]	: 194
Flash point [°C]	: Not applicable for gases and gas-mixtures.
Evaporation rate (ether=1)	: Not applicable for gases and gas-mixtures.
Flammability range [vol% in air]	: 8.6 to 20
Vapour pressure [20°C]	: 1.9 bar
Relative density, gas (air=1)	: 3.1
Relative density, liquid (water=1)	: 1.7
Solubility in water [mg/l]	: 17250

Bromomethane**009****SECTION 9. Physical and chemical properties (continued)**

Partition coefficient n-octanol/water [log Pow] : 1.19

Auto-ignition temperature [°C] : 535

9.2. Other information

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

SECTION 10. Stability and reactivity**10.1. Reactivity**

: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: No reactivity hazard other than the effects described in sub-sections below.

10.4. Conditions to avoid

: Heat.

10.5. Incompatible materials: May react violently with alkalis.
May react with bases, copper, silver, mercury, magnesium, zinc and their alloys.
Reacts with water to form corrosive acids.
May react with aluminium.
For additional information on compatibility refer to ISO 11114**10.6. Hazardous decomposition products**

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11. Toxicological information**11.1. Information on toxicological effects**

Acute toxicity : Fatal intoxication possible with low concentrations.
Rat inhalation LC50 [ppm/4h] : 425
Skin corrosion/irritation : May cause dermatitis by skin contact.
Serious eye damage/irritation : Irritation to eyes.
Respiratory or skin sensitisation : No known effects from this product.
Carcinogenicity : May have carcinogenic effect.
Germ cell mutagenicity : No known effects from this product.
Reproductive toxicity : No known effects from this product.
STOT-single exposure : Damage to kidneys and liver.
STOT-repeated exposure : Damage to kidneys and liver.
Aspiration hazard : Not applicable for gases and gas-mixtures.

Bromomethane**009****SECTION 12. Ecological information****12.1. Toxicity**

: Very toxic to aquatic life.

12.2. Persistence and degradability

: No data available.

12.3. Bioaccumulative potential: Not expected to bioaccumulate due to the low log Kow (log Kow < 4).
Refer to section 9.**12.4. Mobility in soil**

: Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Results of PBT and vPvB assessment

: No data available.

12.6. Other adverse effects

- Effect on ozone layer : May cause pH changes in aqueous ecological systems.
: Ozone depletion potential [R11=1] : 0.6
Hazardous to the ozone layer.
- Effect on the global warming : Contains Fluorinated greenhouse gases covered by the Kyoto protocol.
Global warming potential [CO2=1] : 5

SECTION 13. Disposal considerations**13.1. Waste treatment methods**: Must not be discharged to atmosphere.
Refer to the code of practice of EIGA (Doc. 30/10 "Disposal of Gases, downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods

List of hazardous waste : 16 05 04: Gases in pressure containers (including halons) containing dangerous substances.

13.2. Additional information

: None.

SECTION 14. Transport information

UN number : 1062

Labelling ADR, IMDG, IATA

: Environmentally hazardous substance
2.3 : Toxic gas.**Land transport (ADR/RID)**

- H.I. nr : 26
UN proper shipping name : METHYL BROMIDE
Transport hazard class(es) : 2
Classification code : 2 T
Packing Instruction(s) : P200



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Bromomethane**009****SECTION 14. Transport information (continued)**

Tunnel Restriction : C/D : Passage forbidden through tunnels of category C when carried in tanks. Passage forbidden through tunnels of category D and E.

Environmental hazards : Environmentally hazardous substance / mixture.

Sea transport (IMDG)

Proper shipping name : METHYL BROMIDE

Class : 2.3

Emergency Schedule (EmS) - Fire : F-C

Emergency Schedule (EmS) - Spillage : S-U

Packing instruction : P200

IMDG-Marine pollutant : Yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not applicable.

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : METHYL BROMIDE

Class : 2.3

Passenger and Cargo Aircraft : DO NOT LOAD IN PASSENGER AIRCRAFT.

Cargo Aircraft only : FORBIDDEN.

Special precautions for user

- Ensure there is adequate ventilation.
- Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
- Before transporting product containers :
 - Ensure that containers are firmly secured.
 - Ensure cylinder valve is closed and not leaking.
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
 - Ensure valve protection device (where provided) is correctly fitted.
- Avoid transport on vehicles where the load space is not separated from the driver's compartment.

SECTION 15. Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU legislation**

Restrictions on use : Use of the substance may be subject to registration and authorisation (Regulation 1005/2009).
Authorised only to satisfy essential laboratory and analytical uses as per Commission Decision of 18 June 2010.

Seveso directive 96/82/EC : Covered

National legislation

- Ensure all national/local regulations are observed.
- 4. BlmschV (Germany) : Listed.
- Water hazard class (WGK) : WGK Germany: 3 - Severe hazard to waters.
- Other regulations and technical rules : [German regulations]
GefahrstoffV, BetriebssicherheitsV, BGR Regel 500 Teil 2.33: Umgang mit Gasen, Technische Regel Gase TRG 280, Technische Regeln Gefährliche Stoffe TRGS 400, 500, 510, 900.

15.2. Chemical safety assessment

- This product is either exempt from REACH, does not meet the minimum volume threshold for a CSR or the CSA has not yet been carried out.



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SECTION 15. Regulatory information (continued)

SECTION 16. Other information

- Indication of changes** : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010
- Training advice** : Users of breathing apparatus must be trained.
Ensure operators understand the toxicity hazard.
- List of full text of R-phrases in section 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 for the ozone layer.
R68 : Possible risks of irreversible effects.
- List of full text of H-statements in section 3.** : H225 - Highly flammable liquid and vapour.
H280 - Contains gas under pressure; may explode if heated.
H301 - Toxic if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H330 - Fatal 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
- Note** : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
- DISCLAIMER OF LIABILITY** : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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