SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006, Annex II

Product name	**Methyl Bromide**	
Product id	8326	
Revision date	02/01/2012	**Revision:** 11
Supersedes	14/11/2010	

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

1.1 Product identifier	Methyl bromide
Synonym(s)	Bromomethane, MBr
Chemical formula	CH_3Br
EC No.	200-813-2
REACH Registration No.	The transition time according to REACH Regulation, Article 23 is still not expired
Molecular weight	94.94
Chemical family	Halogenated alkane
CAS number	74-83-9
1.2. Relevant identified uses of the substance or mixture and uses advised against	For industrial use
1.3. Details of the supplier of the Safety Data Sheet	ICL-IP Europe B.V. P.O.Box 465 1000 AL Amsterdam, Netherlands Tel: +31 20 800 5 800 Fax:+31 20 800 5 805 e-mail:msdsinfo@icl-ip.com
Emergency telephone number:	
- For Europe	(+31) 115 689000
- For UK and Ireland	+44 (0) 1270 502891 (24 Hours)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 [CLP/GHS]

Press. Gas
Muta 2, H341 Suspected of causing genetic defects
Acute Tox. 3 H301 Toxic if swallowed
Acute Tox. 3 H331 Toxic if inhaled
STOT RE 2, H373 May cause damage to organs through prolonged or repeated exposure
Eye Irrit. 2 H319 Causes serious eye irritation
STOT SE 3, H335 May cause respiratory irritation
Skin Irrit. 2 H315 Causes skin irritation
Aquatic Acute 1, H400 Very toxic to aquatic life
Ozone 1 H420, Harms public health and the environment by destroying ozone in the upper atmosphere

Classification in accordance with Directive 67/548/EEC

Toxic (T), R 23/25 :Toxic by inhalation and if swallowed.
R 68: Possible risk of irreversible effects
Xi, R 36/37/38 :Irritating to eyes, respiratory system and skin.
Harmful (Xn); R 48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation
Dangerous for the Environment (N), R50: Very toxic to aquatic organisms
N, R59 :Dangerous to the ozone layer

2.2. Label elements

Labelling in accordance with the CLP Regulation EC (No) 1272/2008

Signal word

Danger

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Hazard statements

H341 - Suspected of causing genetic defects
H331 - Toxic if inhaled
H301 - Toxic if swallowed
H373 - May cause damage to organs through prolonged or repeated exposure by inhalation.
H319 - Causes serious eye irritation
H335- May cause respiratory irritation
H315 - Causes skin irritation
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
P280 - Wear 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.
P502- Refer to manufacturer/supplier for information on recovery/recycling

2.3. Other hazards

None

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SECTION 3: Composition/information on ingredients

Components	Weight %	Index No.	EC No.	EU Classification
METHYL BROMIDE 74-83-9	100	# 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)

SECTION 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.

4.1. Description of first aid measures

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.
****

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

- Ocular

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

- 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.

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

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

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Although it is considered practically nonflammable, methyl bromide can be ignited with a high energy source of ignition. Containers may rupture violently if exposed to fire or excessive heat for sufficient time.
In confined spaces such as buildings or sewers, there is a danger of vapour accumulation, which may result in explosion in the presence of an ignition source.
Will decompose from ca. 400°C releasing poisonous and corrosive fumes of carbon monoxide and hydrogen bromide.

5.3. Advice for fire-fighters

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.3. Methods and materials for containment and 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.

6.4 Reference to other sections

None

SECTION 7: Handling and storage

7.1. Precautions for safe 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.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s) Feedstock only

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components	Weight %	ACGIH-TLV Data	UK (WEL) - TWA	Germany MAK (TRGS 900) data
METHYL BROMIDE 74-83-9	100	1 ppm skin , A4	5 ppm (20 mg/m³) STEL - 15 ppm (59 mg/m³),10 min	1 ppm (3.9 mg/m³), 3B

8.2. Exposure controls

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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

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SECTION 9: Physical and chemical properties

Appearance	Colourless gas, odourless at low concentrations; sweetish odour at very high concentrations. Clear, colourless to straw-coloured liquid under pressure or below 3.5°C.
pH	Not available
Melting point/range	-94°C
Boiling point/range	3.5 - 4°C
Evaporation rate (ether=1)	>1
Vapour pressure	1420 mmHg (20°C)
Vapor density	3.3 (20°C)
Flash point	None
Flammable/Explosion limits	
- Lower (% vol)	10
- Upper (% vol)	16
Solubility:	
- Solubility in water	0.132 gr/100ml at 25°C (partial pressure CH3Br - 73 torr) 0.138 gr/100ml at 25°C (partial pressure CH3Br - 108 torr)
- Solubility in other solvents	Infinitely soluble in most organic solvents
Partition coefficient (n-octanol/water)	Log Kow - ~ 1.92
Auto-ignition temperature	537°C
Decomposition temperature	~ 400°C
Viscosity	Not applicable
Explosive properties	Not available
Oxidising properties	Not available

SECTION 10: Stability and reactivity

10.1 Reactivity	Decomposes above 400°C
10.2 Chemical stability	Stable in sealed containers and under normal conditions
10.3 Possibility of hazardous reactions	Hazardous polymerisation will not occur
10.4 Conditions to avoid	Keep away from ignition sources Avoid contamination by water
10.5 Incompatible materials	Strong oxidizers, aluminum, tin, zinc and magnesium metals and their alloys, natural rubber and certain types of plastics.
10.6 Hazardous decomposition products	CO, HBr

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

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^3/8 hour
- Mouse inhalation LC50	1540 mg/m^3/2 hour
Serious eye damage/ irritation	Severe irritant
Skin corrosion/irritation	Irritant
Respiratory or skin sensitisation	Exposure in human resulted in redness, congestion, dermatitis, itching, swollen areas and blistering.
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)
Reproductive toxicity	In a two generation reproductive study via inhalation in albino rats, the NOEL was 90 ppm.
Specific Target Organ Toxicity (STOT) - Single exposure	May cause respiratory irritation
Specific Target Organ Toxicity (STOT) - Repeat exposure	Chronic exposure to low concentrations of methyl bromide may produce central nervous system effects. Signs include mental confusion, lethargy, inability to focus one's eye, incoordination and muscle weakness. Repeated skin contact may cause dermatitis.
Aspiration hazard	Not expected to occur

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

SECTION 12: Ecological information

12.1 Toxicity

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)-(MBr)
Avian toxicity:	
- Oral LD50	~ 73 mg/kg (Northern Bobwhite)
12.2 Persistence and degradability	12.2 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
12.3 Bioaccumulative potential	Not bioaccumulative
12.4 Mobility in soil	There is no accumulation of methyl bromide per se, since it is rapidly degraded in the soil.
12.5 Results of PBT and vPvB assessment	Not considered to be PBT or vPvB
12.6 Other adverse effects	Germany, water endangering classes (WGK) 3 Methyl bromide is listed in the Montreal Protocol as a controlled substance with an ODP (Ozone Depleting Potential) of 0.6.

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste disposal

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

SECTION 14: Transport information

UN No.

1062

ADR/RID

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

IMO

Proper shipping name: Methyl bromide
Class: 2.3 Toxic Gases
Label: TOXIC GAS (2)
Mark: MARINE POLLUTANT

ICAO/IATA

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

SECTION 15: Regulatory information

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

EU

Regulated under Article 22 of EC Regulation No. 2037/2000 on substances that deplete the ozone layer.

USA	Reported in the EPA TSCA Inventory. This product is subject to registration under FIFRA
Australia	Listed in AICS
Canada	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.
China inventory	Listed in IECSC
Japan	ENCS no. 2-39 ISHL no. 2-39
Korea	Listed in ECL (KE-03676) Toxic chemical No.97-1-113, 1% or more in mixtures (MBr)
Philippines	Listed in PICCS
Hong Kong	Dangerous Goods - Category 2 - Compressed Gases (MBr) Ozone Depleting Substances - Part 6 scheduled substance (MBr)
Taiwan	Harmful substances
15.2 Chemical Safety Assessment	A Chemical Safety Assessment has not yet been carried out under the REACH Regulation.

SECTION 16: Other information

This data sheet contains changes from the previous version in section(s)
2, 3, 8 (REACH format) 14

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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

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

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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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Prepared by

HERA Division in ISRAEL
telephone: +/972-8-6297835
telefax: +/972-8-6297832
www.icl-ip.com
e-mail:msdsinfo@icl-ip.com

End of safety data sheet