

Section 1 - Identification of the Material and Supplier

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Chemical nature: Brominated hydrocarbon.
Trade Name: **EDT Methyl Bromide Fumigant**
Product Use: For use by professional and registered fumigators as shown on product label for control of weeds, nematodes, soil and insect pests and rodents.
Creation Date: **April, 2017**
This version issued: **April, 2017** and is valid for 5 years from this date.
Poisons Information Centre: Phone 13 1126 from anywhere in Australia

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Xi, Irritating. T, Toxic. N, Dangerous to the environment. Hazardous according to the criteria of SWA.

Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

SUSMP Classification: S7

ADG Classification: Class 2.3 (METHYL BROMIDE)

UN Number: 1062, METHYL BROMIDE



GHS Signal word: DANGER

Gases under pressure - Compressed gas
 Acute Toxicity Oral Category 3
 Skin Corrosion /Irritation Category 2
 Serious eye damage/eye irritation Category 2/2A
 Acute Toxicity Inhalation Category 3
 Specific Target Organ Toxicity - Single Exposure Category 3
 Germ cell mutagenicity Category 2
 Specific Target Organ toxicity - repeated exposure Category 2
 Hazardous to aquatic environment Short term/Acute Category 1

HAZARD STATEMENT:

H280: Contains gas under pressure; may explode if heated.
 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.

PREVENTION

P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P260: Do not breathe fumes, mists, vapours or spray.
 P262: Do not get in eyes, on skin, or on clothing.
 P264: Wash contacted areas thoroughly after handling.
 P270: Do not eat, drink or smoke when using this product.
 P271: Use only outdoors or in a well ventilated area.
 P273: Avoid release to the environment.
 P280: Wear protective gloves, protective clothing and eye or face protection.

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P281: Use personal protective equipment as required.

RESPONSE

P314: Get medical advice or attention if you feel unwell.

P362: Take off contaminated clothing and wash before reuse.

P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or doctor.

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

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.

P308+P313: If exposed or concerned: Get medical advice.

P332+P313: If skin irritation occurs: Get medical advice.

P337+P313: If eye irritation persists: Get medical advice.

STORAGE

P405: Store locked up.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

Emergency Overview

Physical Description & colour: Colourless gas at normal temperatures and pressures.

Odour: No odour.

Major Health Hazards: Since methyl bromide is a gas at ambient temperatures, the most significant route of exposure is inhalation. The reported 1-hour inhalation LC₅₀ in rats is 4.5 mg/L, and the 11-hour LC₅₀ in rabbits is 8 mg/L. Inhalation of 6 mg/L for 10 to 20 hours, or 30 mg/L for 1.5 hours is lethal to humans. The compound is readily absorbed through the lung alveoli (gas exchange regions). Methyl bromide can be highly irritating to the mucous membranes of the eyes, airways, and skin with contact. Toxic if inhaled, irritating to eyes, respiratory system and skin.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, g/kg	TWA (mg/m ³)	STEL (mg/m ³)
Methyl bromide	74-83-9	pure *	19	not set

* Commercially pure.

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

Inhalation: If inhalation occurs, contact a Poisons Information Centre. Urgent hospital treatment is likely to be needed. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

Skin Contact: Quickly and gently, blot or brush away excess chemical if found on skin. Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). Completely decontaminate clothing, shoes and leather goods before reuse or discard. If irritation persists, repeat flushing and obtain medical advice.

Eye Contact: Quickly and gently blot or brush away product. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water until the product is removed or until a few minutes after irritation has ceased, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical advice if irritation becomes painful or lasts more than a few minutes.

Ingestion: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

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Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Water fog or fine spray is the preferred medium for large fires. Try to contain spills, minimise spillage entering drains or water courses.

Fire Fighting:

Flash point:	No data
Upper Flammability Limit:	No data.
Lower Flammability Limit:	No data.
Autoignition temperature:	537°C
Flammability Class:	Not flammable.

Section 6 - Accidental Release Measures

Accidental release: Evacuate the spill area and deny entry to unnecessary and unprotected personnel.

Immediately call the Fire Brigade. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. It should be fitted with a type B1 cartridge, suitable for acid gases.

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. This material may be suitable for approved landfill. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this class of poison. Store in a cool, well ventilated area. Check containers and valves periodically for leaks. You probably require a license to store this product. If you have any doubts, we suggest you contact your licensing authority in order to clarify your obligations. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits	TWA (mg/m³)	STEL (mg/m³)
Methyl bromide	19	not set

The ADI for Methyl bromide is set at 0.0004mg/kg/day. The corresponding NOEL is set at 0.4mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, June 2014.

Ventilation: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

Skin Protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

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Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, PVC.

Respirator: If there is a significant chance that vapours or mists are likely to build up in the area where this product is being used, we recommend that you use a respirator. It should be fitted with a type MB cartridge, suitable for methyl bromide.

Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Colourless gas at normal temperatures and pressures.
Odour:	No odour at low concentrations.
Boiling Point:	3.6°C at 100kPa
Freezing/Melting Point:	No specific data.
Volatiles:	Completely volatile at 100°C.
Vapour Pressure:	188 kPa at 20°C.
Vapour Density:	3.3 at 20°C.
Specific Gravity:	1.73 approx
Water Solubility:	1.75% w/w
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	>1.
Coeff Oil/water distribution:	Log Kow -1.92 approx
Autoignition temp:	537°C

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: Containers should be kept dry. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: Strong oxidizers, aluminium, tin, zinc and magnesium metals and their alloys, natural rubber and certain types of plastics.

Fire Decomposition: Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Water. Bromine compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product is unlikely to undergo polymerisation processes.

Section 11 - Toxicological Information

Acute toxicity: Since methyl bromide is a gas at ambient temperatures, the most significant route of exposure is inhalation. The reported 1-hour inhalation LC₅₀ in rats is 4.5 mg/L, and the 11-hour LC₅₀ in rabbits is 8 mg/L. Inhalation of 6 mg/L for 10 to 20 hours, or 30 mg/L for 1.5 hours is lethal to humans. The compound is readily absorbed through the lung alveoli (gas exchange regions). Methyl bromide can be highly irritating to the mucous membranes of the eyes, airways, and skin with contact. About 1000 human poisoning incidents caused by methyl bromide exposure have been documented, with effects ranging from skin and eye irritation to death. Most fatalities and injuries occurred when methyl bromide was used as a fumigant. The lowest inhalation level found to cause toxicity in humans is 0.14 mg/L in air. A typical delay in onset of symptoms following exposure combined with an odour threshold (level at which most people can smell it) well-above the level at which toxic effects occur, means that the victim may not realize a harmful exposure is occurring until it is too late. Initial acute effects may include headache, dizziness, nausea or vomiting, chest and abdominal pain, and irritated eyes, nose, and throat. With sufficient exposure, symptoms of slurred speech, blurred vision, temporary blindness, mental confusion, and sweating may occur. More severe symptoms at even higher doses may include lung swelling; congestion; hemorrhaging of the brain, heart, and spleen; severe kidney damage; and numbness, tremors, and convulsions. The nervous effects observed in lab animals included degeneration of key nerve cells in various portions of the brain and peripheral nervous system. Death may occur from respiratory failure. The rat oral LD₅₀ (methyl bromide administered as a liquid, or in solution) is 214 mg/kg, also indicating moderate to high toxicity.

Chronic toxicity: Chronic exposure to methyl bromide can cause extensive damage to neurons (nerve cells) involved in cognitive processes and physical coordination or muscular control. These effects were seen in rats exposed to 0.51 to 1.3 mg/L 6 hours per day for 5 days. Rats exposed to 65 ppm over 4 weeks for an average of 7 hours per day for 4 to 5 days did not show neurological effects, but this level of exposure did result in severe, in some cases irreversible, neurological effects in rabbits over a similar time period. Exposure levels of 0.1 mg/L over 8 months (7.5 hours per

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day, 4 days/week) did not produce observable neurotoxicity. The symptoms of chronic exposure may include dizziness, vision and hearing disturbances, depression, confusion, hallucinations, euphoria, personality changes, and irritability. A chronic pneumonia-like syndrome may become apparent after repeated exposure to sufficient levels. Other targets of the fumigant identified through long-term animal studies are the heart, adrenal gland, and the testis.

Reproductive effects: No reproductive effects were seen in rats exposed to up to 0.3 mg/L for 7 hours/day, 5 days a week, for 3 weeks prior to mating and during gestation. This suggests that methyl bromide does not cause reproductive effects.

Teratogenic effects: No teratogenic effects were seen in rats exposed to up to 0.3 mg/L for 7 hours/day, 5 days a week, for 3 weeks prior to mating and during gestation. This evidence indicates that methyl bromide is unlikely to cause teratogenic effects.

Mutagenic effects: Mutagenic effects were seen in mouse cell cultures, mutagenicity assays with bacteria, and in human white blood cells. Rat liver cells did not display increased rates of mutation after exposure to methyl bromide. Methyl bromide is considered to be weakly mutagenic.

Carcinogenic effects: In one study of industrial workers exposed to various brominated compounds, exposure to methyl bromide was suggested as the possible common factor in two fatal cases of testicular cancer, but other exposures could not be ruled out. In a rat study, methyl bromide given at 50 mg/kg/day by stomach tube for 90 days (gavage) induced stomach tumor increases. It appeared that the cancerous growth was due to severe localized cellular injury, with subsequent increased cell reproduction to repair tissue damage amplifying the natural incidence of mutant or abnormal cells. This is not likely to occur at low doses. Thus, the data are inconclusive.

Organ toxicity: Acute exposure primarily damages the lung and results in nervous system effects; chronic exposure may cause damage to the central nervous system, kidneys, and lungs. Other targets of the fumigant are the heart, nasal cavities, adrenal gland, and the testis.

Fate in humans and animals: The major route of absorption of methyl bromide vapors is through the lungs. Some of the compound is excreted through the lungs as unchanged methyl bromide, but a significant amount also undergoes metabolic decomposition. The primary breakdown products are the bromide ion and methanol, which are detectable in the blood and tissues and are excreted in the urine. Organic bromides (formed by reaction of bromide ion with molecular carbon centers in biomolecules) also appear in stomach fluids and mucus. In humans, methyl bromide's half-life in blood is about 12 days. As a result, the toxic effects of methyl bromide can be delayed or prolonged. Additionally, once in a cell, this chemical inactivates many enzyme systems, so prolonged small doses can cause severe toxicity.

Classification of Hazardous Ingredients

Methyl Bromide is a SWA Class 3 Mutagen, possibly mutagenic to humans.

Ingredient	Risk Phrases
Methyl Bromide	Conc>=5%: T; R68; R23/25; R48/20; R36/37/38
<ul style="list-style-type: none"> • Gas under pressure • Germ cell mutagenicity - category 2 • Acute toxicity - category 3 • Specific target organ toxicity (repeated exposure) - category 2 • Eye irritation - category 2 • Specific target organ toxicity (single exposure) - category 3 • Skin irritation - category 2 • Hazardous to the aquatic environment (acute) - category 1 • Hazardous to the ozone layer - category 1 	

Potential Health Effects

See section 11 for Chronic exposure studies.

Inhalation

Short term exposure: Available data shows that this product is toxic, see symptoms above. In addition product is an inhalation irritant. Symptoms may include headache, irritation of nose and throat and increased secretion of mucous in the nose and throat. Other symptoms may also become evident.

Skin Contact:

Short term exposure: Available data indicates that this product is strongly irritating to skin. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Eye Contact:

Short term exposure: This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms

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Poisons Information Centre: 13 1126 from anywhere in Australia, (0800 764 766 in New Zealand)

should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

Ingestion:

Short term exposure: Significant oral exposure is considered to be unlikely as this product is a gas at room temperatures.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: Methyl Bromide is Class 3 - unclassifiable as to carcinogenicity to humans.

Section 12 - Ecological Information

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

Effects on birds: Methyl bromide is most likely to be in vapor form, and unless birds are in the fumigation area, during the fumigation, they are unlikely to be exposed.

Effects on aquatic organisms: Methyl bromide is moderately toxic to aquatic organisms. Acute toxicity in freshwater fish (bluegill sunfish) occurs at concentrations of 11 mg/L and in saltwater fish (tidewater silversides) at about 12 mg/L.

Effects on other organisms: It is not toxic to bees.

Environmental Fate:

Breakdown in soil and groundwater: Methyl bromide quickly evaporates at temperatures ordinarily encountered in fumigating, but some may be entrapped in soil micropores following application. Methyl bromide is moderately persistent in the soil environment, with a field half-life of between 30 and 60 days; a representative half-life is estimated to be about 55 days. Transformation of methyl bromide into bromide increases as the amount of organic matter in the soil increases. It is soluble in water and very poorly sorbed by soils. Some leaching may occur if methyl bromide is entrapped in soil micropores following fumigation; the rate of degradation for retained methyl bromide in fumigated soil is 6 to 14% per day at 20°C.

Breakdown in water: Methyl bromide quickly evaporates at temperatures ordinarily encountered in fumigating; therefore run-off from fields into surface waters is very rare.

Under laboratory conditions (MeBr): Half-life at pH 5 - 256.7 hours

Half-life at pH 7 - 253.9 hours

Half-life at pH 9 - 357.3 hours

Breakdown in vegetation: The amount of bromide ion (the metabolite of methyl bromide) taken up from the soil, is proportional to the protein content of the crop. Higher levels of the bromide ion will most likely be found in high-protein plants.

Section 13 - Disposal Considerations

Disposal: Containers should be emptied as completely as practical before disposal. If possible, recycle containers either in-house or send to recycle company. If this is not practical, send to a commercial waste disposal site. Please do NOT dispose into sewers or waterways.

Section 14 - Transport Information

Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

UN Number: 1062, METHYL BROMIDE

Hazchem Code: 2XE

Special Provisions: 23

Limited quantities: ADG 7 specifies a Limited Quantity value of NONE for this class of product.

Dangerous Goods Class: Class 2.3, Poisonous gases.

Packaging Group: No packaging group for this class of product

Packaging Method: P200

Class 2.3 Toxic Gases shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 3 (Flammable Liquids), 4.2 (Spontaneously Combustible Substances), 5.1 (Oxidising Agents), 5.2 (Organic Peroxides), Foodstuffs and foodstuff empties. They may however be loaded in the same vehicle or packed in the same freight container with Classes 2.1 (Flammable Gases), 2.2 (Non-Flammable, Non-Toxic Gases), 4.1 (Flammable Solids), 4.3 (Dangerous When Wet Substances), 6 (Toxic Substances), 7 (Radioactive Substances), 8 (Corrosive Substances) 9 (Miscellaneous Dangerous Goods).

Section 15 - Regulatory Information

AICS: This product was found in the public AICS Database.

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The following ingredient: Methyl bromide, is mentioned in the SUSMP.

Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

In a transport emergency call 000

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition
AICS	Australian Inventory of Chemical Substances
CAS number	Chemical Abstracts Service Registry Number
Hazchem Number	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
SWA	Safe Work Australia, formerly ASCC and NOHSC
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document "Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice" (December 2011)
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