

Section 1 - Identification of Chemical Product and Company

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Chemical nature: Methomyl is an oxime carbamate derivative. It is present in methanol solution.**Trade Name:** **Cheminova Methomyl 225 Insecticide****Product Use:** Agricultural insecticide for use as described on the product label.**APVMA Number:** 62160**Section 2 - Hazards Identification****Statement of Hazardous Nature**

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

Dangerous according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R11, R28, R23/24, R36/37/38, R39/23/24/25, R50/53. Highly flammable. Very toxic if swallowed.

Toxic by inhalation and in contact with skin. Irritating to eyes, respiratory system and skin. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment.

Safety Phrases: S7, S16, S20, S23, S33, S38, S45, S60, S61, S1/2, S24/25, S36/37. Keep container tightly closed. Keep away from sources of ignition - No smoking. When using, do not eat or drink. Do not breathe vapours or spray mists. Take precautionary measures against static discharges. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show this MSDS where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Keep locked up and out of reach of children. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.**SUSDP Classification:** S7**ADG Classification:** Class 3: Flammable liquids. Sub Risk: Class 6.1: Toxic substances.**UN Number:** 2758, CARBAMATE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash point less than 23 °C**Emergency Overview****Physical Description & Colour:** Clear, amber coloured liquid**Odour:** Characteristic alcohol odour.**Major Health Hazards:** Symptoms of Methomyl exposure are similar to those caused by other carbamates and cholinesterase inhibitors. These may include weakness, blurred vision, headache, nausea, abdominal cramps, chest discomfort, constriction of pupils, sweating, muscle tremors, and decreased pulse. If there is severe poisoning, symptoms of twitching, giddiness, confusion, muscle incoordination, slurred speech, low blood pressure, heart irregularities, and loss of reflexes may also be experienced. Death can result from discontinued breathing, paralysis of muscles of the respiratory system, intense constriction of the openings of the lung, or all three. very toxic if swallowed, toxic by inhalation and in contact with skin, irritating to eyes, respiratory system and skin. Signs and symptoms associated with mild exposures to organophosphate and carbamate pesticides include: headache, fatigue, dizziness, loss of appetite with nausea, stomach cramps and diarrhoea; blurred vision associated with excessive tearing; contracted pupils of the eye; excessive sweating and salivation; slowed heartbeat, often fewer than 50 per minute; rippling of surface muscles just under the skin. These symptoms may be mistaken for those of flu, heat stroke or heat exhaustion, or upset stomach. Moderately severe organophosphate and carbamate insecticide poisoning cases exhibit all the signs and symptoms found in mild poisonings, but in addition, the victim: is unable to walk; often complains of chest discomfort and tightness; exhibits marked constriction of the pupils (pinpoint pupils); exhibits muscle twitching; has involuntary urination and bowel movement. Severe poisonings are indicated by incontinence, unconsciousness and seizures. This product is a cumulative poison. Minor exposures over a period of time may lead to serious health problems. Methanol is also toxic; may cause blindness.

Potential Health Effects

Inhalation:**Short Term Exposure:** Symptoms are described fully above.**Long Term Exposure:** Believed to be cumulative by inhalation route.**Skin Contact:****Short Term Exposure:** Symptoms are described fully above.**Long Term Exposure:** Believed to be cumulative by dermal exposure.**Eye Contact:****Short Term Exposure:** This product may be absorbed through the eyes in toxic quantities. Symptoms are similar to those via other exposure routes. In addition 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 should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.**Long Term Exposure:** No data for health effects associated with long term eye exposure.**Ingestion:****Short Term Exposure:** Symptoms are described fully above.**Long Term Exposure:** Long term minor exposures to this product may cause serious health effects. Believed to be cumulative by ingestion.**Carcinogen Status:****SWA:** No significant ingredient is classified as carcinogenic by SWA.**NTP:** No significant ingredient is classified as carcinogenic by NTP.**IARC:** No significant ingredient is classified as carcinogenic by IARC.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m ³)	STEL (mg/m ³)
Methomyl	16752-77-5	225g/L	2.5	not set
Methanol	67-56-1	644g/L	262	328
Other non hazardous ingredients	secret	to 100%	not set	not set

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

The SWA 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 may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated 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 MSDS with you when you call.

If swallowed, splashed on skin or inhaled, contact a Poisons Information Centre or a doctor at once. Remove any contaminated clothing and wash skin thoroughly. If swallowed, use of activated charcoal may be advised.

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 away excess liquid. Flush contaminated area with lukewarm, gently flowing water for at least 20-30 minutes, by the clock. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting (show paramedics this MSDS and take their advice). Under running water, remove contaminated

clothing, shoes and leather goods (eg watchbands and belts). If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20-30 minutes, by the clock, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting (show paramedics this MSDS and take their advice). Take care not to rinse contaminated water into the unaffected eye or onto face. If irritation persists, repeat flushing. Call a Poisons Information Centre or a doctor urgently. Take special care if exposed person is wearing contact lenses.

Ingestion: If swallowed, do NOT induce vomiting; rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: This product is classified as flammable. There is a moderate risk of an explosion from this product if commercial quantities are involved in a fire. Firefighters should take care and appropriate precautions. Any explosion will likely spread the fire to surrounding materials. Water spray may be used to cool drums involved in a fire, reducing the chances of an explosion. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances.

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

Extinguishing Media: Alcohol resistant foam is the preferred firefighting medium but, if it is not available, normal foam can be used. Try to contain spills, minimise spillage entering drains or water courses.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. There is a danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is liquid-tight chemical protective clothing and breathing apparatus.

Flash point: 11°C (methanol)

Upper Flammability Limit: 36%

Lower Flammability Limit: 6% (methanol)

Autoignition temperature: 464°C (methanol)

Flammability Class: Flammable

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. 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 below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include PVC, butyl rubber, Teflon, PE/EVAL. 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 G cartridge, suitable for agricultural chemicals.

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. Avoid using sawdust or other combustible material. Any electrical equipment should be non-sparking. Any equipment capable of building an electrostatic charge should be electrically grounded. Because of the toxicity of this product, special personal care should be taken in any cleanup operation. 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. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. 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 MSDS 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 schedule of poison. Store in a cool, well ventilated area, and make sure that surrounding electrical devices and switches are suitable. Check containers periodically for leaks. Containers should be kept closed in order to minimise contamination and possible evaporation. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. If you keep more than 2500kg or L of Dangerous Goods of Packaging Group II, you may be required to license the premises or notify your Dangerous Goods authority. If you have any doubts, we suggest you contact your Dangerous Goods 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**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits	TWA (mg/m³)	STEL (mg/m³)
Methomyl	2.5	not set
Methanol	262	328

The ADI for Methomyl is set at 0.01mg/kg/day. The corresponding NOEL is set at 1.25mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2006.

Ventilation: This product should only be used where there is ventilation that is adequate to keep exposure below the TWA levels. If necessary, use a fan.

Eye Protection: Your eyes must be completely protected from this product by splash resistant goggles with face shield. All surrounding skin areas must be covered. Emergency eye wash facilities must also be available in an area close to where this product is being used.

Skin Protection: It is essential that all skin areas are adequately covered by impermeable gloves, overalls, hair covering, apron and face shield. See below for suitable material types.

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

Respirator: Where there is a risk of exposure to this product, we recommend that you use a respirator. It should be fitted with a type G cartridge, suitable for agricultural chemicals.

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:	Clear, amber coloured liquid
Odour:	Characteristic alcohol odour.
Boiling Point:	Methanol boils about 64°C.
Freezing/Melting Point:	No specific data. Liquid at normal temperatures.
Volatiles:	Methanol content.
Vapour Pressure:	Methanol: 10kPa at 15°C
Vapour Density:	No data.
Specific Gravity:	No data.
Water Solubility:	Soluble.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.

Coeff Oil/water Distribution: No data
Autoignition temp: 464°C (methanol)

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: Keep away from sources of sparks or ignition. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: strong acids, strong bases, strong oxidising agents.

Fire Decomposition: Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. Oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour. Water. 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 will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Toxicity: An information profile for Methomyl is available at <http://extoxnet.orst.edu/pips/ghindex.html>

Acute toxicity: Methomyl is highly toxic orally, with reported oral LD₅₀ values of 17 to 24 mg/kg in rats, 10 mg/kg in mice, and 15 mg/kg in guinea pigs. It is moderately toxic via inhalation with a reported 4-hour inhalation LC₅₀ in male rats of 0.3 mg/L. It is slightly toxic via the dermal route, with a reported dermal LD₅₀ of 5880 mg/kg in rabbits, and is absorbed only slowly through the skin. However, if sufficient amounts are absorbed through the skin, symptoms similar to those induced by ingestion or inhalation will develop.

Chronic toxicity: Prolonged or repeated exposure to Methomyl may cause symptoms similar to the pesticide's acute effects. Repeated exposure to small amounts of Methomyl may cause an unsuspected inhibition of cholinesterase, resulting in flu-like symptoms, such as weakness, lack of appetite, and muscle aches. Cholinesterase-inhibition may persist for two to six weeks. This condition is reversible if exposure is discontinued. It is not likely that chronic effects would be seen in humans unless exposures were unexpectedly high, as with chronic misuse.

Reproductive effects: Methomyl fed to rats at dietary doses of 2.5 or 5 mg/kg for three generations caused no adverse effect on reproduction, nor was there any evidence of congenital abnormalities. Based on these data it appears unlikely that Methomyl will have reproductive effects.

Teratogenic effects: No teratogenic effects were found in the foetuses of female rabbits that were fed approximately 15 to 30 mg/kg/day during the 8th to 16th day of gestation. Thus, Methomyl does not appear to be teratogenic.

Mutagenic effects: There is no evidence, despite numerous studies, that Methomyl is a mutagenic or genotoxic.

Carcinogenic effects: There was no evidence of carcinogenicity in either rats or dogs that ingested high doses of Methomyl in 2-year feeding studies. The evidence suggests that Methomyl is not carcinogenic.

Organ toxicity: Lungs, skin, eyes, gastrointestinal tract, kidneys, spleen, and blood-forming organs have been affected in various experiments, depending on route of entry, duration of exposure, and dosage.

Fate in humans and animals: Methomyl is quickly absorbed through the skin, lungs, and gastrointestinal tract and are broken down in the liver. Breakdown products are readily excreted via respiration and urine. Although they do not appear to accumulate in any particular body tissue, they may alter many other enzymes besides the cholinesterases.

Methanol, also is toxic by all exposure routes.

Section 12 - Ecological Information

Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

Effects on birds: Methomyl is highly toxic to birds. The acute oral LD₅₀ in bobwhite quail is 24.2 mg/kg. The oral LD₅₀ of Methomyl is 28 mg/kg in hens. All deaths occurred within ten minutes of dosing. The clinical signs of toxicity included tearing of the eyes, salivation, occasional convulsions, and respiratory disorders. In Japanese quail, the LD₅₀ is 34 mg/kg. The LD₅₀ of a 90% pure formulation is 15.9 mg/kg in eight-month-old mallards, and 15.4 mg/kg in three- to four-month-old male pheasants. The LD₅₀ for starlings is 42 mg/kg and for red winged blackbirds is 10 mg/kg.

Effects on aquatic organisms: Methomyl is moderately to highly toxic to fish and highly toxic to aquatic invertebrates. A 28-day fish residue study indicated that Methomyl did not accumulate in fish tissue. Methomyl is unlikely to bioconcentrate in aquatic systems.

Effects on other organisms: Methomyl is highly toxic to bees both by direct contact and through ingestion. The LD₅₀ for a 90% pure formulation of Methomyl is 11.0 to 22.0 mg/kg in mule deer. Symptoms of acute poisoning in these animals included drowsiness, drooling, diarrhoea, and tremors.

Environmental Fate:

Breakdown in soil and groundwater: Methomyl has low persistence in the soil environment, with a reported half-life of approximately 14 days. Because of its high solubility in water, and low affinity for soil binding Methomyl may have potential for groundwater contamination. It is very mobile in sandy loam and silty clay loam soils, but only slight leaching was observed in a silt loam and in a sandy soil. Methomyl is rapidly degraded by soil microbes. Methomyl residues are not expected to be found in treated soil after the growing season in which it is applied.

Breakdown in water: Aqueous solutions of Methomyl have been reported to decompose more rapidly on aeration, in sunlight, or in alkaline media. The estimated aqueous half-life for the insecticide is 6 days in surface water and over 25 weeks in groundwater. In one experiment, the hydrolysis half-lives of Methomyl in solutions at pHs of 6.0, 7.0 and 8.0 were 54, 38, and 20 weeks respectively. In pure water, the hydrolysis half-life has been estimated to be 262 days.

Breakdown in vegetation: Following soil treatment, plants take up Methomyl through their roots and move it throughout the plant by a process called "translocation." When Methomyl is applied to plants, its residues are short-lived. After it is applied to leaves, it has a 3 to 5 day half-life. Less than 3% Methomyl remained in cabbage plants 1 week after they were given foliar treatment with the insecticide.

Section 13 - Disposal Considerations

Disposal: There are many pieces of legislation covering waste disposal and they differ in each state and territory, so each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. The Hierarchy of Controls seems to be common - the user should investigate: Reduce, Reuse, and Recycle and only if all else fails should disposal be considered. Note that properties of a product may change in use, so that the following suggestions may not always be appropriate. The following may help you in properly addressing this matter for this product. Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 <http://www.chemclear.com.au/> and for help with the disposal of empty drums, contact DrumMuster <http://www.drummuster.com.au/> where you will find contact details for your area.

Section 14 - Transport Information

ADG Code: 2758, CARBAMATE PESTICIDE, LIQUID, FLAMMABLE, TOXIC, flash point less than 23 °C

Hazchem Code: 3WE

Special Provisions: 274

Limited quantities: ADG 7 specifies a Limited Quantity value of 1 L for this class of product.

Dangerous Goods Class: Class 3, Flammable liquids.

Sub Risk: Class 6.1, Toxic Substances.

Packaging Group: II

Packaging Method: P001, IBC02

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

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.

The following ingredients: Methomyl, Methanol, are mentioned in the SUSDP.

Section 16 - Other Information

This Material Safety Data Sheet 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 should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

DISCLAIMER

This product must be used, stored and handled strictly as directed in accordance with this Safety Data Sheet, the label, packaging and other reference material ("Directions"). To the extent permitted by law Cheminova Pty Ltd and its related companies will have no liability for any injury, loss or damage arising from a failure to follow the Directions.