

# MATERIAL SAFETY DATA SHEET

## Bayer Nemacur® Granular Nematicide

Date of Issue: May 2<sup>nd</sup>, 2007

### 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND SUPPLIER

**Product name:** Bayer Nemacur® Granular Nematicide  
**Other names:** None  
**Product code:** 4953656 (300 g)  
**Recommended use:** For the control of nematodes  
**Supplier:** Bayer Environmental Science – A Business Group of Bayer CropScience Pty Ltd  
ABN 87 000 226 022  
**Address:** 391 - 393 Tooronga Road, East Hawthorn  
Victoria 3123, Australia  
**Telephone:** (03) 9248 6888  
**Facsimile:** (03) 9248 6800  
**Website:** [www.bayercropscience.com.au](http://www.bayercropscience.com.au)  
**Contact:** Technical Manager (03) 9248 6888  
**Emergency Telephone Number:** 1800 033 111 – Orica SH&E Shared Services

### 2. HAZARDS IDENTIFICATION

**HAZARDOUS SUBSTANCE - DANGEROUS GOOD**  
Very poisonous. Cholinesterase inhibitor. Toxic to fish and wildlife.

**Hazard designation:** Hazardous according to criteria of Worksafe Australia  
**Risk phrases:** R25 Toxic if swallowed  
R21 Harmful in contact with skin  
**Safety phrases:** See Sections 4, 5, 6, 7, 8, 9, 13  
**ADG classification:** "Dangerous good" for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail – ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC (contains fenamiphos), Class 6.1, Packing Group II, UN 2783.  
**SUSDP classification:** Schedule 6 (Standard for the Uniform Scheduling of Drugs and Poisons)

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients:	CAS Number:	Concentration (g/kg):
Fenamiphos	[22224-92-6]	50
Ethylene glycol	[107-21-1]	~110
Other ingredients (Non-hazardous)	-	840

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### 4. FIRST AID MEASURES

**If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to a doctor.**

- Inhalation:** If inhaled, remove to fresh air and keep at rest. Obtain urgent medical advice. If breathing stops or shows signs of failing, start artificial respiration. If advised by doctor or Poisons Information Centre, atropine tablets may be administered.
- Skin contact:** Immediately remove contaminated clothing. Wash skin with soap and water. Seek medical attention if irritation develops or persists. If signs of poisoning occur get medical attention immediately. Persons assisting the patient should protect themselves from contamination. If advised by doctor or Poisons Information Centre, atropine tablets may be administered.
- Eye contact:** Rinse eyes immediately with clean water for at least 15 minutes and obtain urgent medical aid, preferably from an eye specialist.
- Ingestion:** Wash out mouth with water. Keep patient at rest and seek urgent medical advice as above. Transport patient to doctor or hospital quickly. If advised by doctor or Poisons Information Centre, atropine tablets may be administered. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- First Aid Facilities:** Provide eyewash and safety shower facilities in the workplace. Obtain an emergency supply of atropine tablets 0.6 mg.
- Medical attention:** Nemacur Turf Nematicide Liquid contains fenamiphos, which is an organophosphorus compound, and as such it is a cholinesterase inhibitor.

#### Symptoms of poisoning

Mild intoxication causes headache, blurred vision, weakness, sweating, mild chest pain, nausea and vomiting. Severe intoxication causes cyanosis (blueness of the skin, as from lack of oxygen), muscular twitching, spasms, miosis (pinpoint pupils) and respiratory paralysis.

#### Treatment

Basic aid, decontamination, symptomatic treatment and if necessary administration of antidote.

#### Note for physicians

*Antidote:* Atropine sulphate. Monitor respiratory, cardiac and central nervous system function. Monitor red blood cell and plasma cholinesterase levels. Administer oxygen if necessary. Watch for pulmonary oedema and delayed neurological symptoms.

*Contraindications:* Adrenergic derivatives.

2 regimens for initial atropine treatment are currently suggested, in both cases the cessation of the cholinergic symptoms salivation, bronchial secretion, sweating and bradycardia indicates sufficient atropinization. The skin should be dry, the lungs should be clear on auscultation and the heart rate should be in a range of 80 to 100/minute.

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### 4. FIRST AID MEASURES CONTINUED.

Overdoses of atropine have to be strictly avoided, as these can promote heart rhythm disturbances.

Regimen 1: (2-10 mg atropine i.v. , followed every 15 minutes by 2 mg atropine i.v. until cessation of the symptoms.

Regimen 2:

- 2 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
- 4 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
- 8 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
- 16 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
- 32 mg atropine i.v.

No higher doses of atropine should be given nor are necessary.

It is mandatory to allow 5 minutes after each dose for atropine to become fully effective, the next higher dose must not be given earlier and only if the above symptoms are persisting. Regimen 2 currently is advisable. If further atropine treatment is required, it should be done by continuous application of 1 – 2 mg/hour. Atropine treatment can be stopped, when the plasma cholinesterase level has returned to above 30% of normal.

Survival of patients after severe organophosphorous insecticide poisoning is strongly dependent on effective intensive care treatment, as aspiration pneumonia and multi-organ failure are typically the final causes of death in such cases. Thus in severe cases with cardiorespiratory failure and resuscitation the above regimens, though doubtlessly effective against the cholinesterase inhibition, may not improve the outcome, because adequate ICU therapy is critical.

### 5. FIRE FIGHTING MEASURES

**Extinguishing media:** Waterspray, carbon dioxide, dry chemical, foam.

**Hazards from combustion products:** In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.

**Precautions for fire fighters:** Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away and move all other personnel to windward side of fire. Isolate hazard area and deny entry. Consider evacuation, taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency services assistance. Use water spray to cool fire-exposed containers. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later.

**Hazchem code** 2X

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### 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Do not smoke, eat or drink during the cleanup process. Personnel involved in cleanup should wear full body protective clothing and equipment as described in Section 8 – PERSONAL PROTECTION. Keep people and animals away. Consider evacuation and obtain assistance from emergency services if needed. Prevent spilled material from entering drains or watercourses. Contain spill and sweep up carefully. Avoid creating dust. Collect and store in recovery drums. Clean floor with detergent and water, absorbing wash water with clay granules and transfer this to the drum. Seal and label drums for safe disposal. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority. Decontaminate tools, equipment and clothing used in the cleanup. Dispose of any heavily soiled clothing, placing it in disposal drum.

### 7. HANDLING AND STORAGE

- |                     |   |
|---------------------|---|
| <b>Handling:</b>    | Keep out of reach of children. Very dangerous. Poisonous if absorbed by skin contact, inhaled or swallowed. Repeated minor exposures may have a cumulative poisoning effect. Avoid contact with eyes and skin. Do not inhale dust. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and contaminated clothing with detergent and warm water. |
| <b>Storage:</b>     | Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilisers.   |
| <b>Flammability</b> | Not flammable   |

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### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure standards** NOHSC Exposure standard for fenamiphos: TWA: 0.1 mg/m<sup>3</sup>. Skin notation.

Definitions:

*Exposure standard – Time Weighted Average (TWA)* means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.

*Skin notation* – Absorption through the skin may be a significant source of exposure.

**Biological limit values** Production workers and agricultural workers handling this product should be monitored for cholinesterase levels. A baseline level should be established prior to any potential exposure. See Guidelines for Health Surveillance [NOHSC:7039(1995)]

**Engineering controls** Control process conditions to avoid contact. Use local exhaust ventilation during manufacture. Use this product in a well-ventilated area only.

**Personal Protective Equipment** Product is very dangerous – poisonous if absorbed by skin contact, inhaled or swallowed.

- Wear full-face respirator with combined dust and gas cartridge - AS/NZS 1715/1716 approved. In enclosed spaces a respirator or hood with an independent air supply should be worn.
- Wear cotton overalls buttoned to the neck and wrist, a washable hat and impervious footwear.
- Wear elbow-length PVC gloves.
- Keep working clothes separate. Remove soiled clothing immediately and wash separately from other laundry.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Grey granule  
**Odour:** Weak characteristic odour  
**Vapour pressure:** 1.2 x 10<sup>-6</sup> hPa at 20° C (fenamiphos)  
**Vapour density:** Not available  
**Boiling point:** Not available  
**Freezing/melting point:** 42 - 45° C (fenamiphos)  
**Solubility:** Practically insoluble in water  
**Density:** 155 – 144 mL/100 g  
**pH:** Not available  
**Flash Point:** Not established  
**Flammability (explosive) limits:** Not available  
**Auto-ignition temperature:** Not available  
**Octanol/water partition coefficient:** Fenamiphos: Log P<sub>ow</sub> = 3.30 at 20° C  
**Formulation:** Granule

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### 10. STABILITY AND REACTIVITY

<b>Chemical stability:</b>	Stable under normal conditions of use.
<b>Conditions to avoid:</b>	Extreme heat
<b>Incompatible materials:</b>	Avoid strong oxidising agents.
<b>Hazardous decomposition products:</b>	In a fire, phosphorus pentoxide, sulphur dioxide, carbon monoxide, and nitrogen oxides may be formed.

### 11. TOXICOLOGICAL INFORMATION

#### POTENTIAL HEALTH EFFECTS

<b>Inhalation:</b>	Very poisonous by inhalation.
<b>Skin contact:</b>	Poisonous if absorbed by skin contact.
<b>Eye contact:</b>	May irritate the eyes.
<b>Ingestion:</b>	Very poisonous if swallowed.

#### ANIMAL TOXICITY DATA – ACTIVE INGREDIENT:

##### Acute:

<b>Oral toxicity:</b>	LD <sub>50</sub> rat: 10 - 20 mg/kg, i.e. very toxic
<b>Dermal toxicity:</b>	LD <sub>50</sub> rat: 500 mg/kg, i.e. harmful
<b>Inhalation toxicity:</b>	LC <sub>50</sub> (4 h) rat: 44 mg/m <sup>3</sup> (similar product with 10% active ingredient)
<b>Skin irritation:</b>	Non-irritant (Similar product 10% active ingredient)
<b>Eye irritation:</b>	Not available
<b>Sensitisation:</b>	Fenamiphos is not a skin sensitiser

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### 11. TOXICOLOGICAL INFORMATION CONTINUED

#### Chronic:

The main health effects from repeated exposure would be toxic symptoms of cholinesterase inhibition as described above. Fenamiphos was not carcinogenic in animal studies. Fenamiphos is not mutagenic, not a reproductive toxin and not teratogenic. Fenamiphos gave no evidence of delayed neurotoxicity. The carrier in this product contains a small amount of naturally occurring crystalline silica, which is classified as a human carcinogen. Prolonged or repeated exposure to crystalline silica by inhalation of dust may cause pulmonary fibrosis.

### 12. ECOLOGICAL INFORMATION

Do NOT contaminate ponds, waterways and drains with the chemical or used containers. Do NOT apply under windy conditions. Do NOT apply to turf which may be grazed or fed to animals. HIGHLY TOXIC TO BIRDS. To reduce the hazard to birds, it is essential to wash Nemaicur by irrigation (or rainfall) from the grass immediately after spraying, ie while the grass is still wet after spraying. Avoid runoff and the formation of pools or puddles.

<b>Fish toxicity:</b>	Fenamiphos: LC <sub>50</sub> bluegill sunfish: 0.0096 mg/L LC <sub>50</sub> rainbow trout: 0.0721 mg/L
<b>Daphnia toxicity:</b>	LC <sub>50</sub> (48h): 0.0019 mg/L
<b>Toxicity to algae:</b>	E <sub>r</sub> C <sub>50</sub> : 11 mg/L
<b>Bird toxicity:</b>	LD <sub>50</sub> bobwhite quail: 0.7 – 1.6 mg/kg LD <sub>50</sub> mallard ducks: 0.9 – 1.2 mg/kg
<b>Bee toxicity:</b>	Not available
<b>Other:</b>	None
<b>Environmental fate, persistence and degradation:</b>	Readily degradable in water and on soil surfaces.

### 13. DISPOSAL CONSIDERATIONS

Dispose of empty container by wrapping in paper, placing in plastic bag and putting in garbage.

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### 14. TRANSPORT INFORMATION

UN number:	2783
Proper shipping name:	ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC (contains fenamiphos)
Class and Subsidiary Risk:	6.1
Packing Group:	II
EPG:	Guide 35 – Dangerous Goods Initial Emergency Response Guide
Hazchem code:	2X
Marine Pollutant	Yes

### 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988

Australian Pesticides and Veterinary Medicines Authority Approval Number: 33291

### 16. OTHER INFORMATION

**Trademark information:** Nematicur® is a Registered Trademark of Bayer.

**Preparation information:** Replaces February 18, 2004 edition.  
Reason for update: Risk phrases, Formulation composition, Ecological information.

**Data sources:** Bayer CropScience Pty Ltd product safety data and published data

This MSDS 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 MSDS 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.

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.

END OF MSDS