

VILLA NEMACUR® 400 EC

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF PRODUCT AND COMPANY

Product Name: NEMACUR® 400 EC
 Insecticide / Nematoicide

UN No. 3018

Supplier: Villa Crop Protection (Pty) Ltd.
 PO Box 10413
 Aston Manor, 1630, South Africa

Telephone: (011) 3962233
Fax: (011) 3964666
Website: www.villacrop.co.za

Emergency telephone numbers:

24 Hr Transport / Spill emergency no:

Envirosure. +27 31 205 4918
 (Hazcall24) +27 86 044 4411

(Client: Villa Crop Protection)

Griffon Poison Information Centre +27 82 446 8946

(Client: Villa Crop Protection)

Poisoning Emergency telephone numbers:

Griffon Poison Information Centre +27 82 446 8946

Poisons Information Centre +27 861 555 777

Villa Crop Protection Emergency number:

National Safety, Health and Environmental Manager:

+27 63 698 0668

2. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name: Fenamiphos
Chemical Name: ethyl 4-methylthio-m-tolyl isopropylphosphoramidate (IUPAC)

Chemical Nature: Emulsifiable concentrate (EC)
Fenamiphos 400 g/l

Chemical family: Organophosphate

Hazardous components: Fenamiphos
CAS N°: 22224-92-6
 244-848-1

Hazardous components: Solvent Naphtha (petroleum), heavy aromatic 230 to 231 g/l
CAS N°: 64742-94-5

Hazchem code: T+, N, Xi
Indication of Danger: Very toxic substance, Environmentally dangerous substance, Irritating substance
R-phrases(s): R 24/25, R26/27/28, R 36/38, R50/53, R 65, R 68

3. HAZARD IDENTIFICATION

Toxicity class:

WHO Ib; EPA (formulation): I

ADI: 0.0003 mg/kg

Main Hazard: This compound inhibits cholinesterase enzyme activity in the nervous tissue. It is highly toxic. Contact with skin, inhalation of spray, or swallowing may be fatal.

Fire and explosion hazard: Product is non-flammable.

Likely routes of exposure: Skin and eye contact, ingestion and inhalation.

Ingestion: Highly toxic by ingestion. If large amounts are swallowed and aspiration occurs, chemical pneumonitis may develop. Small amounts of product aspirated into the respiratory system during ingestion or vomiting, due to the solvent in product, may cause mild to severe pulmonary injury.

Inhalation: Highly toxic by inhalation depends on volatility of compound.

Skin contact: Classified as highly toxic and a mild irritant. May cause dermatitis through defatting of tissue.

Eye contact: Mild irritant to the eyes and may cause damage.

4. FIRST AID MEASURES AND PRECAUTIONS

Symptoms of exposure to the product include: nausea, headache, tiredness, giddiness, faintness, fatigue, and tightness of the chest, anxiety, blurred vision, pupillary constriction and muscle twitching.

If swallowed and aspirated into the lungs, chemical pneumonia can occur.

Depending on severity of poisoning these symptoms become worse with the onset of vomiting, abdominal pain, diarrhoea, sweating and salivation. Confusion, ataxia, slurred speech, loss of reflexes are some of the central nervous system effects that may lead to misdiagnosis of acute alcoholism.

In extreme cases unconsciousness, convulsions, severe respiratory depression and death may occur.

FIRST AID: The airway should be kept clear to maintain respiration, particularly when the patient is unconscious or has vomited. The mouth and pharynx should be cleared and denatures removed. The jaw should be supported and the patient placed in a face down position with the head down and turned to one side, with the tongue drawn forward. First aid should include, if necessary, mouth-to-nose respiration, cardiac massage and avoidance of injury in patients with trauma.

Inhalation: Immediately remove source of contamination or move victim to fresh air. Keep affected person warm and at rest. If breathing has stopped, perform artificial respiration and administer oxygen. Avoid mouth-to-mouth resuscitation. **Seek medical advice immediately.**

Skin contact: Remove contaminated clothing, shoes and leather goods immediately. Gently wipe of excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap or mild detergent and large amounts of

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water until no evidence of chemical remains (approximately 15 to 20 minutes). Persons who become sensitised may require specialised medical management with anti-inflammatory agents. Seek medical advice if necessary.

Eye contact: Flush eyes immediately with large amounts of gently flowing cold water or normal saline solution, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15 to 20 minutes). If irritation persists, get medical attention.

Ingestion: Have victim rinse mouth thoroughly with water.

Do not induce vomiting, due to the aromatic solvent.

Seek medical advice immediately. If the person is alert and respiration is not depressed, give large quantity of water to drink. Do not give saltwater or any other emetic. Never give anything by mouth to an unconscious person.

Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen. Qualified medical personnel must perform administration of oxygen and lavage.

Advice to physician: This product contains

Fenamiphos, an organophosphate nematicide/insecticide. Atropine and 2-PAM are antidotal for most organophosphate insecticides. Administer in large, therapeutic doses. Patients with organophosphate poisoning require amounts of atropine far in excess of doses usually employed in medical practice. The therapeutic objective is to achieve atropinisation, as evidenced by dilation of the pupils, drying secretion, pulse rate of over 120/minute, and flushing skin.

Over dosage with atropine is rarely serious, but under dosage may be fatal in poisoning with organophosphorous compounds.

An aqueous suspension of activated charcoal can be administered to absorb remaining toxicant.

To prevent gastrointestinal absorption in unconscious that have swallowed this product, perform stomach lavage using bicarbonate solution and activated charcoal.

Important Note: Because of their respiratory-depressant effects, **morphine** and similar drugs are **contra-indicated** for patients poisoned with organophosphorous compounds. **Avoid aminoglycosides** and **succinylcholine**, which have a blocking effect on the neuromuscular junction. **Phenothiazines, reserpine and theophylline** are **contraindicated** in organophosphorous poisoning.

Risks: This product is a cholinesterase inhibiting organophosphorous pesticide. **Treatment:** In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable.

The following antidotes are generally accepted: atropin and oximes.

Before antidote is administered, either clear symptoms

of poisoning have to be present or the cholinesterase activity is inhibited to below 30% of normal.

5. FIRE FIGHTING MEASURES

Flashpoint: 69 °C

Suitable Extinguishing Media: Water spray Carbon dioxide (CO₂) Foam Sand.

Specific hazards during fire fighting:

In the event of fire the following may be released:

Hydrogen cyanide (hydrocyanic acid)

Carbon monoxide (CO)

Oxides of phosphorus

Sulphur oxides

Nitrogen oxides (NO_x)

Special protective equipment for fire-fighters:

In the event of fire and/or explosion do not breathe fumes.

In the event of fire, wear self-contained breathing apparatus.

Further Information: Contain the spread of the fire-fighting media.

Do not allow run-off from fire fighting to enter drains or water courses.

6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions: Do not inhale fumes. Avoid contact with skin, eyes or clothes. Ventilate area of spill or leak, especially confined areas. For personal protection see Section 8.

Environmental precautions: Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

Occupational spill: Keep out unprotected persons and animals. Do not touch-spilled material; stop leak if you can do it without risk.

Earth all equipment used when handling the product. Do not touch or walk through spilled material. Stop leak if possible without risk. Avoid runoff of product into sewers, water systems, basements or confined areas as it may cause fire/explosion. Vapour-suppressing foam could be used to reduce vapours. Thoroughly wash body areas, which come into contact with the product.

For spills: Use clean, non-sparking tools to collect absorbed material. Soak up with absorptive material such as damp earth or sand or other suitable non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal. In situations where product comes in contact with water, contain contaminated water for later disposal. Prevent material from spreading by damming in with absorptive material.

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Do not flush spilled material into drains. Keep spectators away and upwind.

To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e. organic solvent, detergent bleach or caustic). Add the solution to the drums already collected. Label drums with its content and dispose it in accordance with local regulations.

Open burning or dumping of this material is prohibited.

Personal precautions: Avoid contact with spilled product or contaminated surfaces.

Use personal protective equipment.

Environmental precautions: Do not allow to get into surface water, drains and ground water.

Methods for cleaning up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

Clean contaminated floors and objects thoroughly, observing environmental regulations.

Keep in suitable, closed containers for disposal.

Additional Advice: Information regarding safe handling refer section 7.

Information regarding personal protective equipment refer section 8.

Information regarding waste disposal, see section 13.

7. HANDLING AND STORAGE REQUIREMENTS

Handling: Operator should not be alone during handling and application of product. Remove sources of naked flame or sparks. Very toxic by inhalation or if swallowed. Avoid contact with eyes and skin and inhalation of fumes. Avoid exposure to spray. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage: Store in its original container in isolated, dry, cool (avoid temperatures above 32 °C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilisers. Keep under lock and key out of reach of unauthorised persons, children and animals. Store away from incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

Keep away from naked flames and other sources of ignition.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering control measures: It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. Only spark-resistant equipment should be used. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal equipment including approved respiratory protection.

Respirator: An approved full-face air-purifying respirator, equipped with organic vapour cartridges or canisters, suitable for protection from mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing: Employee must wear appropriate protective (impervious) clothing (long sleeved cotton overalls, apron, rubber boots, face shield and hat or cap) and equipment to prevent skin contact with the substance.

Gloves: Employee must wear appropriate chemical resistant protective gloves (PVC or neoprene gloves) to prevent contact with this substance.

Eye protection: Employee must wear splash-proof safety goggles and face-shield to prevent contact with this substance.

Emergency eyewash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Form: Liquid, clear
 Colour: Yellow
 Odour: Aromatic

Safety data: pH: 5.5 to 7.5
 Water solubility: Forms an emulsion in water.

Flash point: 69 °C

Density: ca. 1.04 g/cm³ at 20 °C

10. STABILITY AND REACTIVITY

Thermal decomposition: from 150 °C
Storage stability: Stable for up to two (2) years under normal warehouse and field conditions. Product hydrolysed rapidly in aqueous alkaline solutions. Avoid heat and sources of ignition.

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Stability: The product is stable. Subjected to hydrolysis and unstable in alkaline media.

Incompatibility: The product is incompatible with strong oxidizers and alkaline materials.

Hazardous decomposition: Product undergoes decomposition at high temperatures and will cause emission of acrid smoke and toxic fumes of phosphorous oxides, carbon oxides and amines.

Polymerisation: This product will not polymerise.

11. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀: Ca 15.5 mg/kg in rats

The toxicological data were determined according to the calculation rules of the WHO.

Acute inhalation LC₅₀: (4hour). 0,074 mg/l in rats

Determined in the form of a respirable aerosol.

The value mentioned relates to the active ingredient

Acute dermal LD₅₀: 178 mg/kg in rats

The toxicological data were determined according to the calculation rules of the WHO.

Skin irritation: Mild skin irritation in rabbit.

The value mentioned relates to the active ingredient.

Eye irritation: Slight irritant effect - does not require labeling in rabbits.

Sensitization: Non-sensitizing. **Carcinogenicity:** Studies indicated that **Fenamiphos** is not carcinogenic.

Teratogenicity / Reproductive hazard: Studies suggest that teratogenic effects in humans are unlikely. It is unlikely that **Fenamiphos** would cause reproductive effects in humans.

Mutagenicity: A number of studies evaluating the mutagenic potential of **Fenamiphos** have all shown the compound to be non-mutagenic.

12. ECOLOGICAL INFORMATION

ECOTOXICITY EFFECTS:

Degradability: **Fenamiphos** is moderately persistent in the soil, with a reported soil half-life of about 50 days.

Fenamiphos is not strongly absorbed to soils and classified as compound with low mobility. The major degradation products are **Fenamiphos sulfoxide** and **Fenamiphos sulfone** and their phenols.

Readily degradable in water. In neutral solution, half of the initial amount of the compound degraded within 4 hours.

Fenamiphos disappears quickly from water in acidic and alkaline water, but stable in neutral water when held in the dark.

Accumulation: In mammals, following oral administration, there is a rapid metabolism involving oxidation to sulfoxide and sulfone analogues, followed by subsequent hydrolysis, conjugation and excretion via the urine; some N-dealkylation also occurs.

ECOTOXICOLOGY:

Fenamiphos is not expected to bio-accumulate in aquatic organisms.

Birds: Very highly toxic to birds.

Oral LD₅₀: mallard ducks: 0.9 to 1.2 mg/kg

Bobwhite quail: 0.7 to 1.6 mg/kg

Fish: Moderately to highly toxic to fish.

LC₅₀ (96 hours): rainbow trout: 0.0721 mg/l

bluegill sunfish: 0.0096 mg/l

Daphnia: Highly toxic to Daphnia.

LC₅₀ (48 hours): *Daphnia magna* 0.0019 mg/l

Bees: practically non-toxic to honeybees.

LD₅₀: 0.027 µg/bee

Soil organisms:

No effect on soil bacteria.

Algae:

E_rC₅₀ *Scenedesmus subspicatus* 11 mg/l

13. DISPOSAL CONSIDERATION

Pesticide disposal: Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed should be disposed of in a landfill approved for pesticide disposal. Do not contaminate rivers, dams or any other water sources with the product or used containers. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.

Package product wastes: Emptied containers retain vapour and product residues. Observe all labelled safeguards. **TRIPLE RINSE** empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow draining for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of a third of that of the container. Add the rinsing to the contents of the spray tank before destroying the container.

Destroy the emptied containers by perforation and flattening. Bury in an approved dumpsite. Do not re-use the empty container for any other purpose.

Comply with any local legislation applying to disposal.

14. TRANSPORT INFORMATION

ADR/RID/ADNR

UN NUMBER: 3018

LABELS: 6.1

PACKAGING GROUP: I

DESCRIPTION OF GOODS: Organophosphorus Pesticide, Liquid, Toxic (**Fenamiphos** Solution)

IMDG:

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UN NUMBER: 3018
 LABELS: 6.1
 PACKAGING GROUP: II
 MARINE POLLUTANT: Marine pollutant
 DESCRIPTION OF GOODS: Organophosphorus
 Pesticide, Liquid, Toxic
(Fenamiphos Solution)

IATA:
 UN NUMBER: 3018
 LABELS: 6.1
 PACKAGING GROUP: II
 DESCRIPTION OF GOODS: Organophosphorus
 Pesticide, Liquid, Toxic
(Fenamiphos Solution)

15. REGULATORY INFORMATION

Symbol: T+, N, Xi
Indication of Danger: Very toxic substance,
 Environmentally dangerous
 substance, Irritating substance

Risk phrases:
R26/27/28 Very toxic by inhalation, in contact with
 skin and if swallow.
R 24/25 Avoid contact with skin and eyes.
R 36/38 Irritating to eyes.
R 50/53 Very toxic to aquatic organisms.
R 65 Harmful: may cause lung damage if
 swallowed.
R 68 Possible risk off irreversible effects.

Safety phrases:
S 1/2 Keep locked up and out of reach of children.
S 3/9/14 Keep in a cool, well-ventilated place away
 from open flames and sparks.
S 23 Do not breathe fumes or vapour.
S 24/25 Avoid contact with skin and eyes.
S 27/28 After contact with skin takes off immediately
 all contaminated clothing, and wash
 immediately with plenty of water and non-
 abrasive soap.
S 36/37/39 Wear suitable protective clothing, gloves
 and eye/face protection.
S 45 In case of accident or if you feel unwell,
 seek medical advice immediately (show the
 label where possible).
S 61 Avoid release to the environment. Refer to
 special instructions / Safety data sheets.
S62 If swallowed, do not induce vomiting; seek
 medical advice immediately and show this
 container or label.

16. OTHER INFORMATION

Packing and Labelling: Packed in 5, 10, 20 & 25 litres
 fluorinated plastic containers and labelled according to the
 South African regulations and guidelines.

Disclaimer: The information on this sheet is not a
 specification; it does not guarantee specific properties.
 The information is intended to provide general guidance as
 to health and safety based upon our knowledge of the
 handling, storage use of the product. It is not applicable to
 unusual or non-standard uses of the product nor where
 instructions or recommendations are not followed.
 All information is given in good faith but without guarantee
 in respect of accuracy, and no responsibility is accepted
 for errors and omissions or the consequence thereof.
 Text of R phrases mentioned in Section 3:

END OF DOCUMENT

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For detailed information on revisions, contact the
 Registration holder.



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