

HERBIFUME 510SL

Reg. No.: 19-E-12-14

FUMIGANT

A soil fumigant for the control of certain soil fungi, nematodes and germinating weed seeds in agricultural soils, seedbeds and planting media as indicated.

COMPOSITION

Metam sodium
Inert ingredients

mass/vol.

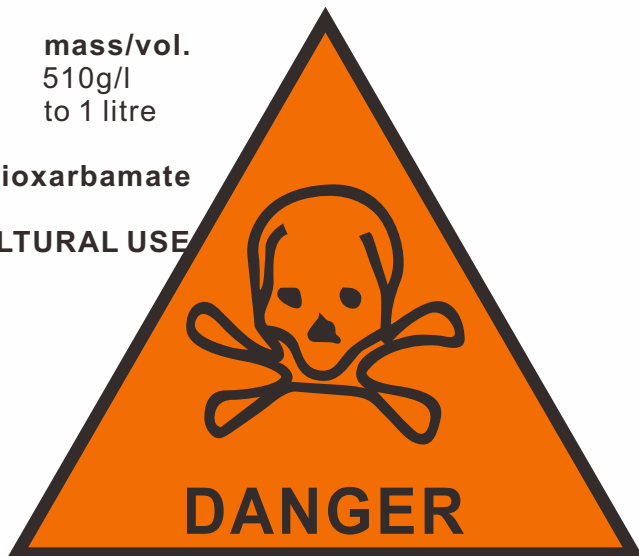
510g/l
to 1 litre

Chemical group: Thioxarbamate

FUMIGANT FOR AGRICULTURAL USE

20Litres NET

PPRI Reg.: 11-E-12-4



POISON

**TO CAUSE A HAZARD IN THE USE, STORAGE OR
DISPOSAL OF THIS SUBSTANCE IS AN OFFENCE.**

Manufactured by:

NOVA AGRO (HK) LTD
6TH FLOOR, WYNDHAM PLACE,
44 WYNDHAM STREET,
CENTRAL HONG KONG

Registration held by:

MAGCHEM (PVT) LIMITED
2274 TILBURY ROAD,
WORKINGTON, HARARE,
ZIMBABWE

WARNINGS:

Harmful if inhaled or swallowed, causes irritation of skin, eyes, nose and throat. Handle with care and close container properly after use. Toxic to fish and other animals. Leave the immediate area after soil is treated. Do not use in confined areas without adequate ventilation or where fumes may penetrate adjoining premises with growing plants. Do not treat within 5 metres of existing trees and field crops. Do not use in greenhouse where desirable plants are present. Store away from food, feedstuff and seed. Keep out of reach of children, uninformed persons and animals.

PRECAUTIONS:

Do not inhale fumes. Use rubber boots and gloves when handling. Use a respirator when working in a confined area. Ventilate confined area thoroughly during use. Wash immediately with water after accidental skin contact. Use a soothing ointment such as petroleum jelly should severe skin irritation occur. Do not smoke, eat or drink during use or before washing. Corrosive-clean spray apparatus thoroughly after use and dispose of wash water in a safe manner. Under no circumstances must empty container be re-used for any other purpose. Avoid contamination of food, feedstuff, drinking water and eating utensils. If swallowed, call a physician. **DO NOT INDUCE VOMITING.** Rinse mouth with copious amounts of water or milk.

SAFETY PRECAUTIONS**Empty container disposal**

Invert the empty container over the spray tank or mixing tank and allow to drain 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 10% of the container. Add the rinsings to the contents of the spray tank. Destroy the empty container by perforation and flattening. Return to supplier for recycling. **DO NOT** use for any other purpose. Dispose of the wash water at a site for the disposal of pesticides.

Decontamination of sprayer

Clean applicator thoroughly after use and ensure that all traces of HERBIFUME are removed. Make use of the following method:

- (a) Drain and rinse tank, spray boom and hoses with clean water for at least 10 minutes
- (b) Fill tank with clean water and add it to 1 litre household bleach (5%) or 1.5 Litres of household bleach (3.5%) per 200 Litres of water. Rinse hoses and spray boom and leave in tank for 15 minutes whilst agitating. Drain through nozzle outlets.
- (c) Repeat step (b) and thereafter, rinse thoroughly with clean water and dispose of the wash water at a site designated for the disposal of pesticides.

Date of Manufacture: Mar. 2019

Manufactured by:

NOVAAGRO (HK) LTD
6TH FLOOR, WYNDHAM PLACE,
44 WYNDHAM STREET,
CENTRAL HONG KONG

DIRECTIONS FOR USE:**Use only as indicated**

HERBIFUME is a water miscible soil fumigant and can be easily applied by drenching infected soils. Do not apply HERBIFUME when soil temperatures are below 10°C. For optimal efficacy, apply when soil temperatures are between 10 and 25°C. Sub-optimal efficacy of HERBIFUME may occur on turf soils due to insufficient water penetration and soils with high organic matter content (high absorption coefficient).

SEEDBEDS**PRE-APPLICATION PROCEDURE:**

Prepare the soil up to a depth of 50cm to ensure a well-prepared, fine tilth surface. Remove undecayed vegetable matter.

Bring soil moisture up to just below field capacity 1 week prior to application. Keep soil moist prior to application.

POST APPLICATION PROCEDURE:

To prevent excessive evaporation from treated areas, seal treated areas with plastic sheet. Remove the plastic sheet after 7 days.

Aerate treated area thoroughly 21 days after application by cultivating soil.

RATE OF APPLICATION

CROP	DOSAGE
Tobacco and horticultural crops	100mls/m ² Drench with 8 litres water

LANDS**RATE OF APPLICATION**

CROP	DOSAGE
Tobacco and horticultural crops	660mls/m ridge

IMPORTANT: Herbifume must be applied using Nova Agro's patented application equipment.

Batch Number:

Registration held by:

MAGCHEM (PVT) LIMITED
2274 TILBURY ROAD,
WORKINGTON, HARARE,
ZIMBABWE



MATERIAL SAFETY DATA SHEET

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SUPPLIER NOVA AGRO (HK) LTD
(Reg. No. 1023146)
6th Floor Wyndham Place
44 Wyndham Street
CENTRAL HONG KONG.

EMERGENCY TELEPHONE NUMBERS:

POISONINGS :
National Poison Centre : (+27) 21-938 6084 (office hours).
(South Africa) (+27) 21-931 6129 (after hours).
UFS Pharmacology/Toxicology information centre:
(+27) 82 491 0160

1. IDENTIFICATION OF THE SUBSTANCE

Product Name: HERBIFUME 510SL
Common Name: Metam-sodium
Chemical Name: Sodium methylthiocarbamate
(IUPAC)
CAS No.: [137-42-8]
Chemical Family: thiocarbamate
Chemical Formula: $C_2H_4NNaS_2$ (Mol. wt.: 129.2)
Formulation: Metam-sodium: 510 g/l
Soluble Concentrate
Use / Mode of Action: Soil fumigant, acting by decomposition to methylisothiocyanate.

Hazardous ingredients of toxicological concern:

<u>Ingredients:</u>	<u>concern</u>	<u>% present</u>
Metam-sodium,	Harmful if swallowed	42 %
Other non-hazardous inerts,	not of concern	58 %

Symbol: Xn, C; N

Indication of danger: Harmful, Corrosive,
Environmentally Hazardous
Substance.

Risk-Phrases: R22, R31, R34, R43, R50, R53

2. HAZARD IDENTIFICATION

Toxicity class:

WHO (a.i) II; EPA (formulation): II

Likely routes of exposure:

Skin and eye contact, inhalation, ingestion.

Eye contact:

Not harmful. Mild irritant to the eyes. The product may be mildly irritating, but is unlikely to cause more than mild discomfort, which should disappear once contact ceases.

Skin contact:

Moderate irritant to skin. Harmful if absorbed through the skin. Prolonged or frequent repeated skin contact may cause allergic reactions in some individuals.

Decomposition products may be corrosive.

Ingestion:

Harmful if swallowed.

Inhalation:

Harmful by inhalation.

3. FIRST AID MEASURES AND PRECAUTIONS

Inhalation:

Immediately remove source of contamination or move victim to fresh air. If breathing has ceased, clear the person's airway and start mouth-to-mouth artificial respiration. If breathing is laboured, give oxygen. Keep person warm and at rest. Treat symptomatically and supportively as and when required. Seek medical advice immediately.

Skin contact:

Remove contaminated clothing, shoes and leather goods immediately. Gently wipe off excess chemical. Wash skin gently and thoroughly with large amounts of water until no evidence of chemical remains (approximately 15 to 20 minutes). Do not attempt to neutralize with chemical agents. If irritation persists, seek medical advice immediately.

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Eye contact:

Immediately flush the contaminated eyes with gently flowing water for 15 minutes, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15 minutes). Severe contamination may require medical attention.

Ingestion:

Have victim rinse mouth thoroughly with water.

Immediately dilute the swallowed product by giving large quantities of water. Do not induce vomiting. If vomiting occurs, give fluids again. In serious cases, seek medical advice immediately. Treat respiratory difficulty with artificial respiration and oxygen. Do not give anything by mouth to an unconscious person.

Advice to physician:

No specific antidote for Metam-sodium. Treat symptomatically and supportively.

4. FIRE FIGHTING MEASURES**Fire/Explosion hazard:**

Flash point: > 93.3 OC.

This material is not flammable. Combustible under fire conditions.

Special Hazards:

Combustion or exposure to water produces toxic fumes of hydrogen sulphide, methyl isocyanate (MITC) and carbon disulfide, monomethylamine, and oxides of carbon, sulphur and nitrogen.

Extinguishing agents:

Extinguish fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Use as little water as possible.

Use spray or fog. Solid stream may cause spreading.

Contain water used for fire fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

Fire fighting:

Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Use a recommended extinguishing agent for the type of surrounding fire.

Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind.

Remove container from fire area if possible and without risk. Water can be used to cool unaffected containers but must be contained for later disposal.

Dyke fire control water for later disposal. Do not scatter the material. Avoid pollution of waterways.

Do not use high volume water jet, due to contamination risk. Contain water used for fire fighting for later disposal.

Avoid the accumulation of polluted run-off from the site.

Personal protective equipment:

Fire may produce irritating or poisonous vapours or gases (carbon dioxide, carbon monoxide and under some circumstances, oxides of nitrogen) or other products of combustion. Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

**5. 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:

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

For spills: 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. 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. Do not get water inside containers.

6. HANDLING AND STORAGE REQUIREMENTS

Handling:

Operator should not be alone during handling and application of product. Remove sources of naked flame or sparks. Harmful 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.

Do not contaminate other pesticides and fertilizers.

Storage stability:

Stable for a period of 2 years under normal warehouse conditions.

7. EXPOSURE CONTROL/PERSONAL PROTECTION

It is essential to provide adequate ventilation. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:

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; boots, hat and equipment to prevent repeated or prolonged skin contact with this substance. Do not wear leather clothing.

Gloves:

Employee must wear appropriate chemical resistant protective gloves to prevent contact with this substance.

Eye protection:

The use of chemical resistant goggles or a face shield.

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.

8. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Orange to light yellow-green liquid.

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Odour: Essentially odourless to fairly strong odour of amine or sulphur.
Flammability: Not Flammable.
Flash point: > 93.3^oC.
Specific gravity: 1.21 g/ml @ 20^oC/4^oC.
Solubility in water: Miscible in water.
Boiling point: 112^oC
Vapour pressure: 24 mmHg @ 25^oC.
pH: 9.5 – 11.0

9. STABILITY AND REACTIVITY

Stability:

Metam-sodium decomposes, when diluted with water, to methyl isothiocyanate (MITC, a lachrymator and moderate poison) and/or to hydrogen sulphide (a highly poisonous gas). It can also decompose to carbon disulfide and monomethylamine (both highly flammable) if contacted with a strong acid. Use the solution promptly after mixing.

Do not allow the solution to stand. As originally packaged, Metam-sodium solutions are stable under normal storage conditions for up to 2 years.

Incompatibility:

This product is incompatible with additional water and strong aqueous acids. In addition, it is corrosive to copper, brass and zinc and may soften and/or discolour iron.

Hazardous decomposition:

When treated with water or heated to decomposition, this product will give off toxic fumes of methyl isothiocyanate (MITC), hydrogen sulphide and nitrogen oxides. If treated with strong acids, fumes or carbon disulfide and monomethylamine will be given off.

Polymerisation:

This product will not polymerize.

10. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀:

Technical: 1700mg/kg in rats

Formulation: 812 mg/kg

Acute dermal LD₅₀:

Technical: 1300 mg/kg in rabbits

Formulation: > 2020 mg/kg

Inhalation:

Technical = > 4.7 mg/l (4 hours, rats)

Formulation: 2.28 mg/l (rats)

Acute skin irritation:

The product may cause moderate irritation to the skin.

Decomposition product may be corrosive.

Acute eye irritation:

Not harmful. Mild irritant to the eyes.

Sensitization:

May cause mild skin sensitization.

Teratogenicity/Development:

Studies on product have shown some developmental effects in laboratory animals.

Mutagenicity:

Studies have shown some evidence of mutagenicity *in vitro* but no conclusive evidence *in vivo*.

Carcinogenicity:

Studies on product have shown some carcinogenic effects in laboratory animals.

Reproductivity:

Studies did not detect reproductivity activity.

11. ECOLOGICAL INFORMATION

Degradation:

In soil, rapidly decomposes to methyl isothiocyanate. 14C Metam Sodium degraded in moist sandy loam soil with a half-life of 23 minutes. The major product is MITC (methyl isothiocyanate), which was lost by volatilization leaving a total of 8.5% of applied radioactivity as extractable and bound. N,N-dimethylurea was the only other identifiable degradate reaching a maximum concentration (0.4 ppm) after 1 day. The total bound and extractable radioactivity was mineralized to carbon dioxide after 127 days. This product is not used in water in case of if accidental exposure a half-life of ~ 15 minutes can be expected.

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ECOTOXICOLOGY:

Birds: Slightly toxic to birds.

LC₅₀: Bobwhite quail: ~5 00 mg/kg

LC₅₀ diet: Mallard ducks: > 5000 mg/kg

Bobwhite quail: > 5000 mg/kg

Fish: Moderately toxic to fish.

LC₅₀ (96 hours): Rainbow trout: 40 mg/l

Daphnia: Very toxic to Daphnia.

Daphnia magna: 48-hour EC₅₀: 6.34 mg/l

12. DISPOSAL CONSIDERATION**Pesticide disposal:**

Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product cannot be reused or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers. This product is considered a marine pollutant.

Comply with local legislation applying to waste disposal.

Container disposal:

Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed.

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 10% of that of the container. Add the rinsing to the contents of the spray tank before destroying the container in the prescribed manner.

Do not re-use the empty container for any other purpose but destroy it by perforation and flattening and bury in an approved dumpsite. Prevent contamination of food, feedstuffs, drinking water and eating utensils.

Comply with local legislation applying to waste disposal.

13. TRANSPORT INFORMATION

UN No.: 3266

Road Transport ADR/IRD:

Class: 6.1

Packing group: III

Shipping name: Corrosive Liquid, Basic, Organic, N.O.S.
(Metam-sodium 510 g/l)

Maritime Transport IMDG/IMO:

Class: 6.1

Packing group: III

Shipping name: Corrosive Liquid, Basic, Organic, N.O.S.
(Metam-sodium 510 g/l)

Considered a MARINE POLLUTANT

14. REGULATORY INFORMATION

Symbol: Xn, C; N

Indication of danger: Harmful, Corrosive, Environmentally Hazardous Substance.

Risk phrases:

R 22 Harmful if swallowed.

R 31 Contact with acids liberates toxic gas.

R 34 Causes burns.

R 43 May cause sensitization by skin contact.

R 50 Very toxic to aquatic organisms.

R 53 May cause long-term adverse effect in the aquatic environment.

Safety phrases:

S 1/2 Keep locked up and out of reach children.

S 8 Keep container dry.

S 13 Keep away from food, drink and animal feeding stuffs.

S 23 Do not breathe vapour/spray.

S 24/25 Avoid contact with skin and eyes.

S 27/28 After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and nonabrasive soap.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.



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S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

S 62 If swallowed do not induce vomiting: seek medical advice immediately and show this container or label.

15. OTHER INFORMATION

Packing and Labelling:

Packed in 1, 5, 10, 20, 25 and 200 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 nonstandard 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.
