

BEFORE USING THIS PRODUCT READ THE LABEL CAREFULLY!

Herbicide



VAPAM

Reg. No. L 7858 Act/Wet No. 36 of/van 1947

2: 15/03/10 – March2017

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

'n Grondberokingsmiddel vir die beheer van sekere grondswamme, aalwurms en ontkiemende onkruidse in saadbeddings, in landbou- en tuinbougronde en plantmedia soos aangedui.

ACTIVE INGREDIENT / AKTIEWE BESTANDDEEL

metham-sodium (thiocarbamate) 510 g/L metamnatrium (tiokarbamaat)

HRAC HERBICIDE GROUP CODE	Z	HRAC ONKRUIDDODER GROEPKODE
FRAC FUNGICIDE GROUP CODE	M3	FRAC SWAMDODER GROEPKODE
IRAC INSECTICIDE GROUP CODE	1A	IRAC INSEKDODER GROEPKODE

208 ℓ

1000 ℓ

villa

Registration holder / Registrasiehouer:
Universal Crop Protection (Pty) Ltd.
Co. Reg. No. / Mpy. Reg. Nr. 1983/008184/07
PO Box / Posbus 801, Kempton Park, 1620
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UN Number: 3266

Willow Set & Print 011 394-4486



HARMFUL
SKADELIK



GEbruiksAANwysINGS INGESLUIT

VERwys NA BESONDERHEDE
GEDruk OP HOUEr/SAK

Date formulated:

Formuleringsdatum:

DIRECTIONS FOR USE ENCLOSED

REFER TO DETAILS PRINTED
ON CONTAINER/BAG

Batch number:

Lotnummer:

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UNIVERSAL CROP PROTECTION (PTY) LTD.

Co. Reg. No.1983/008184/07 Mpy. Reg. Nr.

P.O. Box / Posbus 801, KEMPTON PARK, 1620

Tel. (011) 396 2233

HARMFUL**SKADELIK****WARNINGS**

- Handle with care.
- Harmful if inhaled or swallowed.
- Causes irritation of skin, eyes, nose and throat.
- Toxic to fish and wildlife.
- Vacate the area immediately after treatment of soil.
- Do not use in confined areas without adequate ventilation, where fumes may enter adjoining premises containing growing plants.
- Do not use in greenhouses where desirable plants are present.
- Do not treat within 5 metres of existing trees and field crops.
- Store under lock and key in a cool, dry, well-ventilated place in the original container, tightly closed and secured.
- Store away from food, feeds, seed, fertilizers and other agricultural remedies.
- Keep out of reach of children, uninformed persons and animals.
- Re-entry: Do not enter treated area within 1 day after treatment unless wearing protective clothing.
- **In case of poisoning, take the patient immediately to a doctor and make this label available to him/her.**

Although this remedy has been extensively tested under a large variety of conditions, the registration holder does not warrant that it will be efficacious under all conditions, because the action and effect thereof may be affected by factors such as abnormal climatic and storage conditions, quality of dilution water, compatibility with other substances not indicated on the label and the occurrence of resistance of the pests to the remedy concerned, as well as by the method, time and accuracy of application. The registration holder further does not accept responsibility for damage to crops, vegetation, the environment or harm to man or animal or for lack of performance of the remedy concerned, due to failure of the user to follow the label instructions or to the occurrence of conditions, which could not have been foreseen in terms of the registration. Consult the supplier in event of any uncertainty.

PRECAUTIONS

- Avoid inhalation of the spray mist or fumes.
- Wear full protective clothing, a face shield, rubber gloves and boots when handling the product, preparing the spray mixture and during application.
- Ventilate a confined area thoroughly during use.
- Wash with soap and water after use and after accidental skin contact.
- Wash contaminated clothing after use.
- Do not eat, drink or smoke whilst mixing or applying the product, or before washing hands and face and change of clothing.
- Prevent contamination of food, feeds, drinking water and eating utensils.
- Prevent drift of spray mist onto other crops, grazing, rivers, dams and areas not under treatment or to nearby water sources.
- To prevent corrosion, clean spray equipment thoroughly after use or before using with other remedies.

- Thoroughly clean spraying equipment directly after use and dispose of wash water where it will not contaminate food, grazing, boreholes, rivers or dams.
- **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 in the prescribed manner.
- Destroy the empty container by perforation and flattening and dispose of it in a safe way.
- Never **re-use** the empty container for any other purpose.

SYMPTOMS OF HUMAN POISONING

Skin and eye irritation. May cause irritation to the respiratory tract. The solvent in the formulation may cause pulmonary injury.

FIRST AID TREATMENT

- Remove the patient immediately from the source of poisoning to a cool, well-ventilated area and keep him/her calm and reassured.
- **Skin:** In case of accidental skin contact wash contaminated area immediately with plenty of soap and cold water. Do not rub the skin. Do not use a soothing ointment, such as petroleum jelly in case of severe irritation. Should skin irritation persists consult a physician.
- **Eyes:** In case of accidental eye contact, flush immediately with clean, cool water or a normal saline solution for at least 15 minutes. If irritation occurs and persists, obtain medical attention.
- **Inhalation:** If exposure by inhalation is suspected, immediately move the exposed person to fresh air. If the person experiences nausea, headache and dizziness or has difficulty breathing, seek medical assistance immediately.
- **Ingestion:** If swallowed, call a physician immediately. **Do not induce vomiting.** Rinse mouth with copious amounts of water or milk. The patient should drink 1 to 2 glasses of water or milk. This will irrigate the oesophagus and dilute stomach contents. If vomiting occurs, keep head below hips to prevent aspiration. **Do not** apply mouth-to-mouth respiration. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-conscious, unconscious or convulsing, **do not give fluids by mouth. Never** give anything by mouth to an unconscious person.
- **Take the patient to the nearest physician immediately.**

NOTE TO PHYSICIAN

No product specific antidote is known. Probable mucosal damage may contra-indicate the use of gastric lavage. Treat symptomatically.

RESISTANCE WARNING

VAPAM is a group code Z herbicide, a group code M3 fungicide and a group code 1A insecticide. Any weed/fungus/insect population may contain individuals naturally resistant to **VAPAM** and other group code Z herbicides/group code M3 fungicides/group code 1A insecticides. The resistant individuals can eventually dominate the weed/fungus/insect population if these herbicides/fungicides/insecticides are used repeatedly. These resistant weeds/fungi/insects may not be controlled by **VAPAM** or any other group code Z herbicide/group code M3 fungicide/group code 1A insecticide.

To delay herbicide resistance:

- avoid exclusive repeated use of herbicides/fungicides/insecticides from the same herbicide/fungicide/insecticide group code. Alternate or tank mix with products from different herbicide/fungicide/insecticide group codes,
- for tank mixing or alternation with products in fungicide group code M, refer to applicable individual product labels,
- integrate other control methods (chemical, cultural, biological) into weeds control programmes.

For specific information on resistance management contact the registration holder of this product.

DIRECTIONS FOR USE: Use only as directed.

- **VAPAM** is a water-soluble soil fumigant and can be easily applied by drenching infected soils.
- Small areas and planting media can be treated by using a watering can, while large areas can be treated using sprinkler irrigation or soil injection.

SOIL PREPARATION: PRE-APPLICATION PROCEDURE

- Cultivate the soil thoroughly to a depth of 50 cm, breaking up all large clods, to ensure a well-prepared, fine tilth surface.
- Remove plant matter that is not decomposed.
- Application should be performed under “good seedbed moisture conditions”, i.e. the soil moisture should be about 60 to 80 % of field capacity.
- Bring soil moisture up to just below field capacity (60 to 80 %), 2 to 3 weeks prior to application. Keep soil moist prior to application.
- This increases the sensitivity of weed seeds and improves penetration.

APPLICATION: USES**Rate of application:**

- Use 500 to 1000 litres **VAPAM** per hectare depending on crop target, pest and soil type.
- Soil properties to consider when determining the application rate, include the depth of soil to be treated, soil texture and percentage organic matter.
- To ensure good penetration of **VAPAM**, apply with sufficient water, to moisten the soil to the required depth.

Target pest and depth of treatment:

- For control of **weeds and fungi** causing seed or seedling diseases, treatment of only the top 5 to 10 cm of soil may be required.
- For control of **nematodes and fungi**, which occur throughout the rhizosphere, treatment to depths greater than 10 cm may be required.
- For a given soil type, the required application rate will increase proportionally with the depth of the treatment.

NOTE

VAPAM will only control those pests in the fumigation zone at treatment. Recontamination may occur subsequent to the dissipation of the fumigant from the soil.

Organic matter in the soil:

Except in the case of cover crops, plant material below the soil surface should be thoroughly decomposed, before **VAPAM** is applied. Because of the absorbing effect of humus, soils with high level of organic matter below the surface, require higher than usual doses of **VAPAM**.

Time of application:

- **VAPAM** is applied after harvest and 14 to 21 days before a new crop is planted (refer to “**PRE-PLANT PROCEDURE**”).
- Do not apply **VAPAM** at soil temperatures lower than 10 °C (at 10 to 15 cm depth).
- For best results apply at soil temperatures between 10 to 25 °C.
- Sub-optimal efficacy of **VAPAM** may occur on turf soils, due to insufficient water penetration and soils with high organic matter content (high absorption coefficient).

METHODS OF APPLICATION**A. Sprinkler system:**

Refer to “**PRE-APPLICATION PROCEDURE**” to prepare the soil.

- Inject the required amount of **VAPAM** into the system via a metering pump.
- Sufficient water should be applied with **VAPAM** to ensure that the product reaches the desired treatment level and distribution is even.
- Application should only be performed directly from the hydrant, and non-return valves must be used.
- Ensure injection of **VAPAM** occurs over the full irrigation period.
- Only apply under conditions that ensure even distribution over the treated area.
- Careful supervision is essential throughout the entire application period.
- Keep the treated area moist by applying follow-up irrigation for 1 week after treatment.
- Plastic sheeting is recommended on light sandy soils (< 5 % clay) where surface sealing with follow-up irrigation is difficult to obtain and sub-optimal efficacy may result.
- After application, flush the entire system for 10 to 15 minutes with clean fresh water.
- Refer to “**POST APPLICATION PROCEDURE**” and “**PRE-PLANT PROCEDURE**”.

B. Soil injection:

Refer to “PRE-APPLICATION PROCEDURE” to prepare the soil.

- Soil injection can be used to treat entire fields in a broadcast type application, or it can be used to treat fields in bands.
- **VAPAM** can be injected into prepared plant beds using chisel or shank-type injections.
- The soil must be sealed immediately after use.
- Refer to “POST APPLICATION PROCEDURE” and “PRE-PLANT PROCEDURE”.

C. Small surfaces and planting media (e.g. seedbeds):

Refer to “PRE-APPLICATION PROCEDURE” to prepare the soil.

- Small surfaces and seedbeds can best be treated by means of a watering can.
- Make up seedbeds prior to treatment. Drench the soil thoroughly with the required amount of **VAPAM** in a minimum of 10 litres water per 10 m².
- **Preferably treat the total area to minimize contamination from untreated areas. Adhere strictly to “DIRECTIONS FOR USE” on soil preparation.**
- Planting media should be moistened with the **VAPAM** solution using a watering can whilst mixing continuously.
- Refer to “POST APPLICATION PROCEDURE” and “PRE-PLANT PROCEDURE”.

D. Planting hole treatment:

Refer to “PRE-APPLICATION PROCEDURE”.

- Prepare a dam around the plant hole (approx. 1 m x 1 m), with a wall of 10 cm in height.
- Half fill the dam with water and then apply the required amount of **VAPAM** over the surface.
- Fill up immediately to full capacity with water.
- Refer to “POST APPLICATION PROCEDURE” and “PRE-PLANT PROCEDURE”.

E. Growing media and potting soil:

- Media should be moistened with the **VAPAM** solution using a watering can whilst mixing continuously.
- The use of a cement mixer is ideal for this purpose.
- Apply 700 to 900 ml **VAPAM** per m³ soil, in 30 to 50 litres water.
- Cover the treated soil with a plastic sheet to prevent gasses from escaping.
- Remove the cover after 3 days.
- Refer to “PRE-PLANT PROCEDURE”.

POST APPLICATION PROCEDURE

To obtain optimum efficacy, the surface of the treated area must be sealed, to prevent the gas from escaping either by:

- (i) **Drench:** Irrigate the treated surface with 4 to 5 mm of water approximately two hours after treatment. Repeat in dry conditions. Keep the area moist with follow-up irrigation for 1 week after treatment.
- (ii) **Cover:** On smaller areas, tarpaulins or a plastic sheet can be used to seal the soil surface, which can be removed. The cover need not be tented. Remove cover after 3 days.

PRE-PLANT PROCEDURE

- Because **VAPAM** is harmful to living plants, a minimum interval must be observed between soil fumigation and planting.
- Soil temperatures influence the evaporation rate of **VAPAM**. On light soils at temperatures of 15 °C and above, planting can begin at 14 to 21 days after treatment. At temperatures below 15 °C, a waiting period of 21 to 28 days is recommended.
- Soils with a high clay content and/or high organic fraction or those that are saturated, will retain the fumigant and require a longer waiting period.
- Cultivate the soil prior to planting in order to aerate the soil thoroughly.
- In order to ensure that the complete escape of **VAPAM** has taken place, transplant a radish or tomato seedling into the treated soil. If the plant develops normally without signs of chemical injury, crop planting can begin. Refer to “Germination Test”.

Germination Test:

1. Take soil samples from both fumigated and untreated areas at depths of 10 cm and 15 cm. Remove and discard top surface soil. Half fill a transparent container with the soil and close immediately.

2. Place cress seeds on moist filter paper or cotton pads and place on top of the soil in the container. Close the container and place near a window at room temperature.
 3. Check 24 to 48 hours later for germination. Only if seeds have germinated on both untreated as well as fumigated soils, is the area ready for use.
- **Ensure that the treated area is ready for use by conducting the germination test.**
 - Prevent re-infestation of treated soil by using clean uninfected plant material, irrigation water and equipment.

APPLICATION RATES

Use	Dosage	Pests controlled
<u>Fungicide</u>	650 to 900 ℓ / ha (65 to 90 $m\ell$ / m^2) Rate is dependent on infestation level and target spectrum	<u>Soil fungi:</u> <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> (Damping off), <i>Sclerotium cepivorum</i> (White bulb rot), <i>Pyrenochaeta terrestris</i> (Pink root).
<u>Nematicide / Insecticide</u>	650 to 900 ℓ / ha (65 to 90 $m\ell$ / m^2) Rate is dependent on infestation level and target spectrum	<u>Nematodes:</u> <i>Meloidogyne</i> spp. (Root knot), <i>Pratylenchus</i> spp. (Lesion), <i>Heterodera</i> spp. (Cyst), <i>Trichodorus</i> spp. (Stubby). <u>NOTE</u> <i>Meloidogyne chitwoodi</i> and <i>Meloidogyne fallax</i> will not be controlled.
<u>Herbicide</u>	650 to 900 ℓ / ha (65 to 90 $m\ell$ / m^2) Rate is dependent on infestation level and target spectrum	<u>Weeds:</u> <u>Broadleaf:</u> <i>Amaranthus</i> spp. (Pigweed), <i>Portulaca</i> spp. (Purslane), <i>Datura stramonium</i> and <i>D. ferox</i> , (Thorn apple), <i>Capsella bursa-pastoris</i> (Shepherd's purse), <i>Oxalis latifolia</i> (Red garden sorrel), <i>Stellaria media</i> (Chickweed), <i>Tagetes minuta</i> (Khaki weed), <u>Grasses:</u> Including Annual grasses: <i>Eleusine indica</i> (Goose grass), <i>Panicum schinzii</i> (Buffalo grass), <i>Cyperus esculentus</i> (Yellow nutsedge) <u>Lawns and Turf renovation:</u> VAPAM will also control <i>Cynodon dactylon</i> (Common couch) and <i>Pennisetum clandestinum</i> (Kikuyu).