



# MATERIAL SAFETY DATA SHEET

## SLUGGEM

**Date Issued:** April 2011 and is valid for 3 years from this date.

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**Print Date:** 3/10/14

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### 1. PRODUCT AND COMPANY IDENTIFICATION

**TRADE NAME:** SLUGGEM

**SUPPLIER:** EFEKTO

PO BOX 652147

BENMORE

2010

**TEL No.** 011 287 5700

**EMERGENCY TELEPHONE NUMBERS:**

**SPILLAGES:** 083 1233 911

**Fax:** 086 685 3129

**POISONINGS:**

**National Poison Centre** 021-9386084 (office hours).

021-9316129 (after hours).

082 446 8946

**Use:** A ready for use granular bait for the control of Snails and Slugs.

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### 2. HAZARDS IDENTIFICATION

- Toxic to aquatic organisms.

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

Poisoning is unlikely to occur due to the low concentration of the molluscicides. However, Carbaryl is a carbamate compound which inhibits cholinesterase and it is of moderate toxicity. Contact with skin, inhalation of dust, or swallowing may be hazardous. Toxic to fish and bees.

**Eye contact:**

Tests indicate the product is minimally toxic; however caution should be practiced when handling the product. The product was found to be non-irritating.

**Skin contact:**

Tests indicate the product is minimally toxic; however caution should be practiced when handling the product. The product was found to be non-irritating.

**Ingestion:** Harmful by ingestion.

**Inhalation:** Not possible to inhale.

**Carcinogenicity/ Mutagenicity/ Neurotoxicity/ Reproductive /Teragenicity:** See section 11



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**Symbol:** Xn;N  
**Indication of danger:** Harmful, Dangerous to the environment.  
**Risk phrases:** R 22, R40, R50  
**UN No:** 2757  
**Class:** 6.1

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Active ingredients:**

Active ingredients.	CAS No.:	EC No.:
Carbaryl 20g/kg	63-25-2	200-555-0
Captan 0.05 g/kg	133-06-2	205-087-0
Metaldehyde 30.0 g/kg	9002-91-9	-
Inerts	-	-

**Chemical Name:**

**Carbaryl:** 1-Naphthyl-methylcarbamate(IUPAC).

**Captan:** N-trichloromethylthio-4-cyclohexene-1, 2-dicarboximide(IUPAC)

**Metaldehyde:** 2,4,6,8-tetramethyl-1,3,5,7-tetraoxocane(IUPAC)

**Chemical Family:**

**Carbaryl:** Carbamate

**Captan:** Dicarboximide

**Metaldehyde:** Polymer of Acetaldehyde.

**Chemical Formula:**

**Carbaryl:**  $C_{12}H_{11}NO_2$

**Captan:**  $C_9H_8C_3NO_2S$

**Metaldehyde:**  $C_8H_{16}O_4$

**NIOSH/RTECS No.:** -

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### 4. FIRST-AID MEASURES

Proper care should be taken during occupational use to prevent accidental contamination of food products and water. Carbaryl is a Carbamate: Cholinesterase inhibitor.

**Inhalation:**

Symptoms may include nausea, vomiting, diarrhoea, abdominal cramps, headache, vertigo, ocular pain, ciliary muscle spasm, blurring or dimness of vision, miosis, or in some cases mydriasis, lacrimation, salivation, sweating, and confusion. In severe cases, there may also be involuntary defecation and urination, bradycardia, hypotension, pulmonary oedema, convulsions, coma, and death from respiratory failure or cardiac arrest. Carbaryl does not accumulate in mammalian tissue and the cholinesterase inhibition reverses rather rapidly. In non-fatal cases, the illness generally lasts less than 24 hours.



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**Skin contact:**

The product may cause irritation.

Remove contaminated clothing immediately. Wash contaminated areas with soap and water followed by alcohol. Emergency personnel should wear gloves and avoid contamination. Treat respiratory difficulty with mechanical artificial respiration. Get medical attention immediately.

**Eye contact:**

Irrigate eyes with water or saline solution. If symptoms of poisoning occur, treat respiratory difficulty with mechanical artificial respiration and oxygen. Observe patient for at least 24-36 hours. Get medical attention immediately. Oxygen should be administered by qualified medical personnel.

**Ingestion:**

Rinse mouth with water. If swallowed, do not induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Contact physician, Poison Center or emergency clinic before inducing vomiting. Keep at rest. Do not induce vomiting or give anything by mouth to an unconscious person. Get prompt medical attention.

**Advice to physician:**

The following antidote has been recommended for Carbamate poisoning: atropine sulphate.

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**5. FIRE-FIGHTING MEASURES****Fire and explosion hazard:**

Slight fire hazard when exposed to heat or flame. Dust-air mixtures may ignite or explode.

**Extinguishing agents:**

Extinguish small fires with carbon dioxide, dry powder, Halon, water spray, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Contain water used for fire fighting for later disposal

**Firefighting:**

Move containers from fire area if possible. Fight fire from maximum distance. Stay away from storage tank ends. Contain fire control water for later disposal. Do not scatter material, extinguish only if flow can be stopped. Use flooding amounts of water as a fog, solid streams may be ineffective. Cool containers with flooding amounts of water as far a distance as possible. Use water spray to absorb toxic vapours. Avoid breathing toxic vapours. Keep upwind. Consider evacuation of downwind area if material is leaking.

**Special Hazards:**

Fire may produce irritating or poisonous vapours (carbon monoxide, formic acid and nitrogen oxides), mists or other products of combustion.

**Personal protective equipment:**

Carbaryl dust may be transported in the smoke from a fire. Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

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**6. ACCIDENTAL RELEASE MEASURES****Personal precautions:**

Avoid contact with skin and eyes. Do not breathe in dust or fumes. For personal protection see Section 8.

**Environmental precautions:**

Do not allow entering drains or watercourses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.

**Occupational spill:**



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Do not touch spilled material. Stop leak if you can do so without risk. Neutralise with sodium hydroxide and allow to stand for 4 hours. For **small spills**, sweep up and place into containers for later disposal. Move containers from spill area. For **larger spills**, contain material far ahead of spill for later disposal. Keep spectators away. Isolate hazard area and deny entry. Ventilate closed spaces before entering.

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### 7. HANDLING AND STORAGE

**Handling:**

Toxic by inhalation or if swallowed. Avoid contact with eyes, prolonged contact with skin. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. 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:**

The product must be kept under lock and key. Keep out of reach of unauthorised persons, children and animals. Store in its original labeled container in shaded, well-ventilated area, away from heat, sparks and other sources of ignition. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

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### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Occupational Exposure Limit:**

**ACGIH** 5 mg/m<sup>3</sup> Carbaryl

10 mg/m<sup>3</sup> Nuisance dust

**STEL** 15 mins 10 mg/m<sup>3</sup>

**TWA** 8 hours 5 mg/m<sup>3</sup>

**Engineering control measures:**

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:**

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

**Respirator:**

An approved respirator suitable for protection from dusts and mists of pesticides is adequate. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

**Clothing:**

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with the substance.

**Gloves:**

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

**Eye protection:**

The use of full-face protection is recommended.



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**Emergency eye wash:** 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.

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Pellets
<b>Colour:</b>	Blue or red
<b>Odour:</b>	None
<b>Flammability:</b>	Not Flammable.
<b>Explosive properties:</b>	No data.
<b>Bulk Density:</b>	No data.
<b>pH:</b>	Not applicable.
<b>Solubility at 20°C (g/L):</b>	Insoluble.

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### 10. STABILITY AND REACTIVITY

**Stability:**

Stable up to 2 years under normal storage conditions. Stable in neutral and acidic media, but hydrolysed by concentrated alkalis to form 1-naphthol. Half life is 12 days (pH 7) and 3.2 days (pH 9). The rate of decomposition increases at higher temperatures. Carbaryl is stable to light and heat.

**Incompatibility:**

Alkaline substances such as lime and Bordeaux mixture may reduce the activity of the product. The product should therefore not be used if the soil have high pH values.

Hazardous decomposition:

Toxic oxides of Carbon and nitrogen and formic acid are released when the product decomposes on heating.

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### 11. TOXICOLOGICAL INFORMATION

Although tests indicate high LD50 values, caution should be practiced when handling the product.

**Carbaryl.technical**

**Acute oral LD<sub>50</sub> :** 850 mg/kg in male rats.

**Acute dermal LD<sub>50</sub> :** > 4000 mg/kg in rats.

**Acute inhalation LC<sub>50</sub> :** >206.1 mg/l of air (4h rats).

**Acute skin irritation:**

The product was found to be non-irritating to skin (rabbit).

**Acute eye irritation:**

The product was found to be non-irritating to eyes (rabbit).

**Dermal sensitisation:** Not a skin sensitiser.

**Carcinogenicity:** Studies did not detect carcinogenic activity.

**Teratogenicity:**

Carbaryl administered orally during organogenesis was teratogenic in Guinea pigs at a dose of 300mg/Kg and in Dogs at a dose of 25mg/kg



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A three year study on the effect of chronic ingestion of Metaldehyde in rats, resulted in adverse effects on male and female reproduction and the survival of the offspring. Mutagenicity: Studies did not detect any mutagenic effects .

**Captan technical:**

**Oral LD<sub>50</sub> (rat):** > 5 000 mg/kg

**Dermal LD<sub>50</sub> (rat):** > 2 000 mg/kg

**Dermal LD<sub>50</sub> (rabbit)** > 4 500 mg/kg

**Inhalation LC<sub>50</sub> (rat):** > 0,72 mg/l for 4 hours.

**Dermal sensitization:** Moderate dermal sensitization by skin contact (guinea pigs).

**Skin irritation:** Mild irritant (rabbit).

**Eye irritation:** Irritating to eyes of rabbits. Risk of serious damage to eyes.

**Metaldehyde technical**

**Acute oral LD<sub>50</sub> :** 227 to 690 mg/kg in rats.

**Acute dermal LD<sub>50</sub> :** 2275 mg/kg to greater than 5000 mg/kg

**Acute inhalation LC<sub>50</sub> :** 0.2 mg/l air(4h rats).

**Acute skin irritation:** Slightly irritating to skin (rabbit).

**Acute eye irritation:** Slightly irritating to eyes (rabbit).

**Dermal sensitisation:** Not a skin sensitiser.

**Reproductive effects:** Data suggest that metaldehyde is likely to cause reproductive effects only at high levels.

**Teratogenic effects:** Evidence suggests that metaldehyde is unlikely to cause teratogenic effects.

**Mutagenic effects:** The evidence regarding mutagenicity of metaldehyde is inconclusive.

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## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGY:**

**Carbaryl:**

**Birds:**

Minimally toxic to birds.

**Acute oral LD<sub>50</sub>:** > 2179 mg/kg (young mallard ducks).

> 2230 mg/kg (Japanese quail).

>2000 mg/kg (young pheasants).

1000-3000 mg/kg (pigeons).

**Fish**

Toxic to fish.

LC<sub>50</sub> (96 hr): 1.3 mg/l (rainbow trout).

10.0 mg/l (bluegill sunfish).

2.2 mg/l (sheepshead minnow).

**Daphnia**

Very toxic to Daphnia.

Acute toxicity to Daphnia magna: The 48-hour EC50 was 6 µg /l.

Earthworms: Toxic for earthworms.

**Beneficial insects:**

Toxic for beneficial insects.

**Bees:** Toxic to bees.

LD<sub>50</sub> (topical): 1 µ/bee



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**Soil micro-organisms:**

No data available for Carbaryl.

**Degradability:**

In soil, the active ingredient is metabolized to form 1-naphthol. The half life of the product is 7-14 days in sandy loam soils and 14-28 days in clay loam. Soils with high organic matter content retain residues for longer periods than do mineral soils.

**Mobility:**

The product is adsorbed on soil and is unlikely to leach into water sources.

**Accumulation:**

The product adsorbs to soil but shows little or no tendency to bio-accumulate. Carbaryl has very limited persistence in the environment.

**Metaldehyde:****Effects on birds:**

Death of birds feeding in metaldehyde-treated areas has been reported, although the precise acute oral LD50 values or subchronic dietary LC50 values were unavailable .

**Aquatic organisms:**

Effects on aquatic organisms: Metaldehyde is reported to be practically nontoxic to aquatic organisms .

Bees: When used as directed, bait agents with 6% active ingredient are not toxic to bees.

**Effects on other organisms:**

The 4% pelleted bait is reported to be toxic to wildlife.

Bait pellets containing metaldehyde are attractive to dogs . Pets should be confined during application, and kept away from application and storage sites.

**Breakdown in soil and groundwater:** Metaldehyde is of low persistence in the soil environment, with a half-life on the order of several days]. It is weakly sorbed by soil organic matter and clay particles, and is soluble in water. Due to its low persistence, it is not a significant risk to groundwater. Aerobic and anaerobic micro-organisms in soil decompose metaldehyde to CO<sub>2</sub> and water.

**Captan****Birds:**

Captan is practically nontoxic to birds.

The LD<sub>50</sub> is greater than 5000 mg/kg in mallard ducks and pheasants.

The LD<sub>50</sub> is 2000 to 4000 mg/kg in bobwhite quail.

High doses administered for 90 days to chickens caused an 80% reduction in the number of eggs produced, but had no effect on the fertility or hatchability of the eggs produced.

Effects on aquatic organisms:

Captan is very highly toxic to fish.

The LC<sub>50</sub> (96-hour) for technical Captan ranges from 0.056 mg/l in cutthroat trout and chinook salmon to 0.072 mg/l in bluegill.

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**13. DISPOSAL CONSIDERATIONS****Pesticide disposal:**

Contaminated surplus product, etc., should be burned at 1000°C in a high-temperature incinerator with effluent gas scrubbing. Where no incinerator is available, hydrolysis under alkaline conditions (pH 12 or above) is a suitable method to dispose of small quantities of the product. Before disposal of the resultant waste, the material must be analysed to ensure that the active ingredient has been degraded to a safe level. Never dispose of untreated waste



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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:**

If container is broken, handle with rubber gloves. Emptied containers retain product residues. Observe all labeled safeguards until container is destroyed. Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must be punctured and transported to a scrap metal facility for recycling or disposal.

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### 14. TRANSPORT INFORMATION

UN NUMBER 2757

**ADR/IRD**

Shipping name: Carbamate pesticide, solid, toxic. (Carbaryl and Metaldehyde)

Hazard ID no. 60

Label: 6.1

Packaging group: III

Label of class: 6.1

**IMDG**

Shipping name: Carbamate pesticide, solid, toxic. (Carbaryl and Metaldehyde)

Label: 6.1

Packaging group: III

Label of class: 6.1 Marine pollutant

**AIR/IATA**

Shipping name: Carbamate, pesticide, solid, toxic (Carbaryl and Metaldehyde)

Class: 6.1

Hazard Label: Toxic

Packaging Group: III

Passenger Aircraft: Y619 (10 kg), 619 (max 100 kg)

Cargo Aircraft: 619 (max 200 kg)

**Tremcard no:** 61GT7-III

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### 15. REGULATORY INFORMATION

**Symbol:** Xn; N

**Indication of danger:** Harmful, Dangerous for the environment.

**Risk phrases:**

**R 22** Harmful if swallowed.

**R40** Limited evidence of carcinogenic effect.

**R50** Very toxic to aquatic organisms.

**Safety phrases:**

**S 2** Keep out of reach of children





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<b>S22</b>	Do not breathe dust.
<b>S24</b>	Avoid skin contact

**National legislation:** In accordance with the South African National Road Traffic Act, 1996 (Act 93 of 1996), the Fire Brigade Act, 1987 (Act 99 of 1987) and the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).

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### 16. OTHER INFORMATION

Compiled by: Danie Fourie

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the PRODUCT AS SUCH. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.

It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulations(s) containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

### REFERENCES

- Orchard Suppliers CC, Sluggem MSDS; 09/09/2002
- Similar product MSDS.
- EINECS.
- ADR 2011, Part 3.
- IMDG Code, 2005 Edition, Vol. 2.
- IATA Dangerous goods regulations, Effective 1 January 2011

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**END OF MSDS.**