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SECTION 1. IDENTIFICATION**GHS product identifier:****Identification as on the label/Trade name:** INVADER-b-LOK**Other means of identification:****Additional information/Alternative name:** Methyl eugenol & malathion impregnated fibre block.**Recommended use of the chemical and restrictions on use:****Identified uses:** Ready to use fruit fly bait station for the attraction and control male oriental fruit fly (*Bactrocera dorsalis*) on various crops.**Uses advised against:** Use only as directed.**Supplier's details:**

River Bioscience (Pty) Ltd
5th Floor, Fairview House, Fairview Office Building
66 Ring Road,
Greenacres,
Gqeberha,
6045,
South Africa

Emergency phone number:

+27 41 492 4216 (office hours)

SECTION 2. HAZARD IDENTIFICATION**Classification of the substance or mixture:****The mixture is classified according to:** United Nations, Globally Harmonized System of Classification, 9th Edition, published 2021.

Hazard classes	Hazard classification category
Acute oral toxicity	Category 4
Skin sensitization	Category 1
Mutagenicity	Category 2
Carcinogenicity	Category 2
Hazardous to the aquatic environment (Acute)	Category 1

Hazardous to the aquatic environment (Chronic)	Category 1
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GHS label elements, including precautionary statements:**Signal Word:** Warning.**Hazard Statements:**

Harmful if swallowed.

May cause allergic reaction.

Suspected of causing genetic defects.

Suspected of causing cancer.

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

Hazard pictograms:

Health hazard.

Environment hazard.

Precautionary statements:

Keep out of reach of children.

Wash thoroughly after handling.

Do not eat, drink, or smoke when using this product.

Avoid release into the environment.

Wear protective gloves.

IF ON SKIN: If skin irritation or rash occurs: Get medical advice/attention.

IF exposed or concerned: Call a POISON CENTER or doctor/ physician.

Dispose of contents and container (according to the description in the related regulation).

Special labelling of certain mixtures:

Store away from and prevent contamination of food, animal feed, drinking water and eating utensils. Keen in a cool, dark, and dry place until use. Use within 12 months of manufacture or before the expiry date as indicated.

Other hazards which do not result in classification:

None.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS
Substance/Mixture:

Mixture.

Chemical identity of the ingredients (IUPAC)	CAS -No.	Concentration (% v/v)	Classification
	EC-No.		GHS 9 th Edition
Methyl eugenol (98%)	93-15-2	60-70%	Acute toxicity oral (Category 4) Mutagenicity (Category 2) Carcinogenicity (Category 2)
	202-233-0		
Malathion / Mercaptothion	121-75-5	20%	Acute toxicity oral (Category 4) Skin sensitizer (Category 1) Aquatic acute (Category 1) Aquatic chronic (Category 1)
	204-497-7		

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4. FIRST AID MEASURES
Description of necessary first aid measures:

In case of inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. In case of discomfort seek medical attention if you feel unwell.

In case of skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation persists.

In case of eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. Seek medical advice if symptoms persist.

In case of ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention if you feel unwell.

Most important symptoms/effects, acute and delayed:

Inhalation: Harmful if inhaled.

Ingestions: May be harmful if swallowed.

Skin contact: May cause an allergic skin reaction or irritation.

Eye contact: May cause eye irritation.

Indication of immediate medical attention and special treatment needed, if necessary:

Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURE

Extinguishing media:

Suitable extinguisher media: Carbon dioxide, dry powder or alcohol resistant foam.

Unsuitable extinguishing media: Do not use high volume water jet, due to contamination risk.

Special hazards arising from the mixture:

Nature of decomposition products not known for the mixture.

Special protective actions for fire-fighters:

Isolate the fire area and evacuate downwind. Avoid inhaling hazardous vapours, fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Be sure to use an approved/certified respirator or equivalent. Dyke fire control water for later disposal. Avoid pollution of waterways. Contain water used for firefighting for later disposal, avoid the accumulation of polluted run-off from the site.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

For non-emergency personnel: Isolate area. Remove possible causes of ignition-do not smoke. Keep unnecessary and unprotected personnel from entering the area. Avoid inhalation and contact with skin. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

For emergency responders: Use an approved/certified respirator or equivalent, isolate the spill area and limit the access to emergency responders only. Avoid any contact with spilled material, use adequate protective clothes and gloves.

Environmental precautions:

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

Methods for containment and cleaning up:

For small spills: Pick up with suitable protection. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

For large spills: Pick up with suitable protection. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

Reference to other sections:

See section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See section 13 for information on disposal.

Additional information:

None know.

SECTION 7. HANDLING AND STORAGE**Precautions for safe handling:**

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing

Protective measures: Observe directions on label and instructions for use.

Advice on general occupational hygiene: Do not eat drink or smoke when handling this product.

Conditions for safe storage, including incompatibilities:

Store in the closed, original container in a dry, cool well-ventilated area out of direct sunlight. Segregate from foods and animal feeds.

Specific storage requirements: Use as directed

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Control parameters:**

Occupational exposure limits (OEL): Malathion (CAS 121-75-5) OEL-RL TWA 2 mg/m³ (IFV), IFV- Inhalable fraction and vapour. Carcinogen.

Biological exposure indices (BEI): None known.

Additional exposure limits under the specific conditions of use: None known.

Exposure control:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective OEL's if applicable. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Appropriate engineering controls:

Provide exhaust ventilation or other engineering controls. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Individual protection measures, such as personal protective equipment (PPE):

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Use safety glasses. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Hand protection: Use chemical resistant gloves. Examples of preferred glove barrier materials include Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, Polyvinyl alcohol, Polyvinyl chloride.

Body protection: Is required, overall or dust coat.

Respiratory protection: For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines.

Environmental exposure controls:

None.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties:**

Physical state: Solid, fibre block.

Colour: Brown.

Odour: Malathion like odour.

Melting point/Freezing point (°C): Not applicable.

Boiling point/range (°C): Not applicable.

Flammability: Not applicable.

Upper/lower flammability/explosive limits: Not applicable.

Flash point (°C): Not applicable.

Auto-ignition temperature (°C): Not applicable.

Decomposition temperature: Not applicable.

pH (at concentration): Not applicable.

Viscosity (dynamic) (cP): Not applicable.

Water solubility (g/l) at 20°C: Fixed oils, alcohol, ether and ethanol.

n-Octanol / Water partition coefficient: Not applicable.

Vapour pressure (20°C): Not applicable.

Density / relative density (20°C) (g/ml): Not applicable.

Relative vapour density: Not applicable.

Particle characteristics (nm): Not applicable.

Physical hazards:

None known

SECTION 10. STABILITY AND RELIABILITY**Reactivity:**

No specific test data related to reactivity available for this product or its ingredients.

Chemical stability:

Minimum 12 months shelf life if stored under recommended conditions.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid:

Avoid contact with iron and strong alkali.

Incompatible materials:

Materials to avoid, strong oxidisers and alkaline materials.

Hazardous decomposition products:

Carbon monoxide, carbon dioxide.

SECTION 11. TOXICOLOGICAL INFORMATION**Information on toxicological health effects:**

Non-human toxicological data: No information available.

Excretion:

Mercaptothion / Malathion - In mammals, following oral administration, a major part of the dose is excreted in the urine and faeces within 24 hours. Degradation is by oxidative desulfuration by liver microsomal enzymes, leading to the formation of malaoxon; malathion and malaoxon are hydrolysed and thus detoxified by carboxylesterases. In insects, metabolism involves hydrolysis of the carboxylate and phosphorodithioate esters, and oxidation to malaoxon.

Acute toxicity:

Invader-b-Lok - Acute oral LD₅₀ for rats 797 mg/kg (calculated).

Methyl Eugenol - Acute oral LD₅₀ for rat 810 mg/kg.

Mercaptothion / Malathion - Acute oral LD₅₀ for rat 1375-5500 mg/kg (pure).
Acute oral LD₅₀ for mice LD₅₀ 775-3320 mg/kg.
Acute inhalation for rats (4 h) LC₅₀ >5.2 mg/l air.
Acute dermal for rabbit LD₅₀ (24 h) 4100-8800 mg/kg.
Acute dermal for rats LD₅₀ >2000 mg/kg.

Skin corrosion/irritation: No information available.

Serious eye damage/irritation: No information available.

Respiratory or skin sensitization: No information available.

Germ cell mutagenicity: No information available.

Carcinogenicity: No information available.

Reproductive toxicity: No information available.

STOT-single exposure: No information available.

STOT-repeated exposure: No information available.

Aspiration hazard: No information available.

SECTION 12. ECOLOGICAL INFORMATION

Information on ecotoxicological effects:

Toxicity:

Mercaptothion / Malathion:

Birds: Acute oral LD₅₀ for bobwhite quail 359 mg/kg. Dietary LC₅₀ (5 d) for bobwhite quail 3500, ring-necked pheasants 4320 mg/kg diet.

Fish: LC₅₀ (96 h) for bluegill sunfish 54, rainbow trout 180 µg/l; LC₅₀ for three-spined stickleback 21.7 µg/l.

Algae: EC₅₀ (72 h) 13 mg/l.

Bees: Toxic to bees.

Persistence and degradability:

Mercaptothion / Malathion: Under normal conditions, it is 99% degraded by hydrolysis within 7 d.

Bio-accumulative potential: Low bioaccumulation potential.

Mobility in soil: Not mobile and does not leach.

Other adverse effects: No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods:

Consider suitable waste recycling, re-use or recovery options. Dispose of in accordance with municipal, provincial, and national regulations. Waste Classification and Management Regulations (GN 634 of 2013). Dispose and or manage in accordance with the requirements contained in R634 Waste Classification & Management Regulations, R635 National Norms & Standards for the Assessment of Waste for Landfill Disposal and R636 National Norms & Standards for Disposal of Waste to Landfill.

Product/ packaging disposal:

Prevent contamination of food, feedstock and drinking water. Treat as hazardous waste and dispose of in accordance with municipal, provincial and national regulations.

SECTION 14. TRANSPORT INFORMATION

Transporting/Shipping information:

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO/IATA)
UN-Number	3077	3077	3077
UN Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S, (Malathion)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S, (Malathion)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S, (Malathion)
Transport hazard class:	9	9	9
Packaging group:	III	III	III
Environmental hazards:	Yes	Yes	Yes
Special precautions for user:	None	None	None
Transport in bulk according to IMO instruments:	Not applicable	Not applicable	Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, health, and environmental regulations specific for the product in question:

Regulatory status of the substance/mixture: Registered under the "Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No 36 of 1947), regulating agricultural remedies in South Africa.

Relevant safety/health/environmental regulations: The labels and SDS of this product complies with the Occupational Health and Safety Act, 1993 (Act N 85 of 1993), and the Regulations for Hazardous Chemical Agents, 2021, in South Africa.

SECTION 16. OTHER INFORMATION

Preparation date and revision number:

Current version date:	Current version:
2022/07/01	1.0 / 2022
2023/07/01	1.0 / 2023

Revision changes: Section 1: Update of supplier details and emergency phone number

Further information:

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

Notice to readers:

Employers should use this information only as a supplement to other information gathered by them and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees.

This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.