SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product identifier: REAL METARHIZIUM 78
Identification as on the label/Trade name: REAL METARHIZIUM 78
Additional information:

Relevant identification uses of the substance and uses advised against:
Identified uses: Biological insecticide
Uses advised against: Use only as directed.

Details of the supplier of the Safety Data Sheet:
Company name: Real IPM South Africa (Pty) Ltd
Address: P.O. Box 130, Grabouw, 7160
Phone number: +27 021 849 8691
Email: info@realipm.co.za

Emergency telephone numbers: +27 86 155 5777 (National Poison Centre)

SECTION 2. HAZARD IDENTIFICATION

Classification of the substances or mixture
The mixture is classified according to Regulation EC 1272/2008 [EU-GHS/CLP]
This product is not classified as hazardous according to the Regulation (EC) 1270/2008
For full text of H statements see section 16
The most important adverse effects
The most important adverse physiochemical effects: None.

The most important adverse human health effects: Harmful if inhaled, irritating to skin causes eye irritation.

Label elements
Hazard pictograms: No pictograms
Signal Word: No Signal word
Hazard Statements:
Precautionary Statements:
Special labelling of certain mixtures: None
Other hazards: None

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture
Ingredients:

Contains a mixture of *Metarhzium anisopliae* strain ICIPE 78 spores in an inert oil formulation. There are no components classified as hazardous according to Regulation (EC) No 1272/2008 [CLP]. Occupational exposure limits, if available, are listed in Section 8.
For full text of H statements see section 16.

SECTION 4. FIRST AID MEASURES

Description of first aid measures:

In case of inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial breathing. If breathing is difficult, give oxygen. Get medical attention immediately.

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 immediately.

In case of eye contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

In case of ingestion:
Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed:
Inhalation: No known significant effects or critical hazards.
Ingestions: No known significant effects or critical hazards.
Skin contact: No known significant effects or critical hazards.
Eye contact: No known significant effects or critical hazards.

Indication of any immediate medical attention and special treatment needed:
No known significant effects or critical hazards.

SECTION 5. FIRE - FIGHTING MEASURES

Extinguisher media:
Suitable extinguisher media: Use dry chemical, CO2, water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire.
SMALL FIRE: See above.
LARGE FIRE: See above.
Unsuitable extinguishing media: Do not use high volume water jet, due to contamination risk.

Specific hazards arising from the mixture:
Decomposing products may include the following materials: carbon dioxide; carbon monoxide.
Specific extinguishing methods:
Remove spectators from surrounding area. Isolate the fire area and evacuate all personnel downwind of the fire. Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Keep upwind. Avoid inhaling hazardous vapours and fumes from burning materials. Remove container from fire area if possible and without risk. Do not use high volume water jet, due to contamination risk. Do not scatter the burning material. Water can be used to cool unaffected containers but must be contained for later disposal. Contain fire control agents for later disposal. Avoid pollution of waterways by run-off from the site
Advice for fire-fighters:
Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective gear. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6. ACCIDENTAL RELEASE

Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel: Keep all personal from entering and avoid contact with spilled material.

For emergency responders: Wear appropriate personal protective equipment. Avoid contact and ventilate area of the spill or leakage.

Protective equipment:
Refer to Section 8 for personal protective equipment to be worn during containment and clean-up of a spill.

Emergency procedures:
Alert fire-fighting personnel, evacuate unprotected personal and animals.

Environmental precautions:
Prevent spilled product from entering sewers, waterways or ground water.

Methods and materials for containment and cleaning up:
Material for containment and cleaning up:
Contain spilled product by diking area with sand or earth. Cover contained spill with an inert absorbent material such as sand, vermiculite, earth or other appropriate material. Vacuum, scoop, or sweep up material and place the material into a clean, dry, sealable container.

Label the containers with the contents and dispose of according to local regulations. Do not place spilled material back in original container. Do not re-use spill material. Collect washings and add to the drums already collected. Do not flush spilled material or washings into drains or waterways. To decontaminate the spill area, tools and equipment, wash with water and suitable detergent. See section 13 for disposal considerations.

For small spills Clean and place in appropriate waste disposal container. Follow local and regional authority requirements.
For large spills Clean and place in appropriate waste disposal container. Follow local and regional authority requirements.

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.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling:
Do not handle broken packages without proper protective equipment. Immediately clean up spills that occur during handling. Keep containers closed when not in use. Use with adequate ventilation. Avoid contact with skin and eyes. Do not inhale. Use suitable respiratory equipment. Wash hands and skin with soap after contact. Keep away from oxidizing agents and acids.

Protective measures: Observe directions on label and instructions for use.
Advice on general occupational hygiene: practice good hygiene when using this material. Wash hands before eating, drinking, chewing gum, smoking, using the toilet, or applying cosmetics. Worker should shower at the end of each workday. Launder all clothing before it is re-used. Do not eat, drink or smoke when handling this product.

Conditions for safe storage, including incompatibilities:
Keep under lock and key and out of reach of unauthorised persons, children and animals. Store in original container, labelled container, tightly closed, in an isolated, dry cool and well- ventilated area. Store product in a segregated and approved area.

Incompatible substances:
Store away from incompatible materials, heat, sun and source of ignition. Keep away from oxidizing agents and acids.

Specific end uses:
No specific end uses.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Control parameters:
Occupational exposure limits (OEL): None known

Biological exposure indices (BEI): None known.

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

Exposure control:
Appropriate engineering controls: Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Hygiene measures:
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Where there is 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
Respiratory protection:
If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.
Hand protection:
It is a good industrial hygiene practice to prevent skin contact. Use rubber gloves.
Eye/face protection:
Risk of contact: Wear approved safety goggles. Contact lenses is not protective eye devices.
Skin and body protection:
Employee must wear appropriate proactive impervious clothing: rubber boots, hat and equipment to prevent repeated or prolonged skin contact when working with chemicals. Do not wear leather clothing. Apron and long sleeves are recommended.

Environmental exposure controls: Environmental manager must be informed of all major spillages.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
Appearance (form): Liquid
Colour: Green
Odour: Earthy odour
pH: Not determined
Melting point/range (°C): Not determined
Boiling point/range (°C): Not determined
Flash point (°C): Not determined
Upper/lower flammability/explosive limits: Not determined
Vapour pressure (°C): Not determined
Vapour density: Not determined
Density/ relative density: Not determined
Solubility(ies): Not determined
n-Octanol/Water partition coefficient: Not determined
Auto-ignition temperature: Not determined
Decomposition temperature: Not determined

Physical hazards:
Explosive properties: Not determined
Oxidising properties: Not determined

Other information:
Fat solubility (solvent-oil to be specified): Not determined
Bulk density: Not determined
Dissociation constant in water (p Ka): Not determined
Oxidation-reduction potential: Not determined

SECTION 10. STABILITY AND REACTIVITY

Reactivity:
The product is stable under normal warehouse conditions.
Chemical stability:
Avoid storage under extreme temperatures and conditions. Store in a cool, dark place between 8- 20°C, to maintain oil viscosity and miscibility of spores in suspension. Stable under recommended storage conditions and handling for 12 months.
Possibility of hazardous reactions:
Will not occur
Conditions to avoid:
Incompatible material. High temperature. Poor ventilation. Contamination. Moisture/high humidity.
Incompatible materials:
Store away from incompatible materials, heat, sun and source of ignition. Keep away from oxidizing agents and acids.
Hazardous decomposition products:
Not applicable

SECTION 11. TOXILOGICAL INFORMATION

Information on toxicological effects:

Acute toxicity	
Acute Oral LD_{50} (rat)	> 5.0 x 10^{10} cfu/kg bw
Acute Dermal LD_{50} (rats):	
Acute Inhalation LC_{50} 4h 20 ºC (rats)	> 5.0 mg/L air
Skin irritation/ corrosion (rabbits)	No known significant effects
Eye damage / irritation (rabbits)	No known significant effects
Respiratory or skin sensitization	No known significant effects
Germ cell mutagenicity	No known significant effects
Carcinogenicity	No known significant effects
Reproductive toxicity	No known significant effects
Specific Target Organ Toxicity STOT single exposure	No known significant effects
Specific Target Organ Toxicity STOT repeated exposure	No known significant effects
Aspiration hazard	No known significant effects

SECTION 12. ECOLOGICAL INFORMATION

Anticipated behaviour of the chemical product in the environment /possible environmental impact/ecotoxicity:

Acute toxicity	
Birds: LD_{50} for bobwhite quail and mallard ducks Dietary LC_{50} (8 d) for bobwhite quail and mallard ducks	No known significant effects
Fish: LC_{50} (96 h) for rainbow trout >73 LC_{50} (96 h) for carp LC_{50} (96 h) for bluegill sunfish LC_{50} (96 h) for catfish	No known significant effects
Daphnia – toxic to Daphnia EC_{50} (48 h)	No known significant effects
Algae EC_{50} (72 h) for green algae	No known significant effects
Bees: LC_{50} (oral) LD_{50} (topical)	No known significant effects
Worms Acute LC_{50} (14 d)	No known significant effects

Persistence and degradability: No data available
Bioaccumulative potential: No data available
Mobility in soil: No data available
Other adverse effects: No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods:

General Information: Do not discharge into drains, water courses or onto the ground. Discharge, treatment or disposal may be subject to national, state, or local laws. Empty containers may contain product residues. Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product cannot be reused or re-processed. Never pour untreated waste or surplus product 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. Comply with local legislation applying to waste disposal. The product may be taken to a registered waste disposal site or incineration plant.

Disposal Methods: Destroy the container by perforating and flattening and dispose of through an approved waste dump site, incineration plant or recycling company.

Container: Since emptied containers retain product residue, follow label warnings even after container is emptied.

Product/ packaging disposal:

Treat as hazardous waste and dispose of in accordance with municipal, provincial and national regulations.

SECTION 14. TRANSPORT INFORMATION

UN Number: Not regulated
Un proper shipping name: Not applicable
UN Classification transport hazard class(es): Not applicable
Packing group (if applicable): Not applicable
Marine pollutant (Y/N:) No
Transport in bulk according to MARPOL 73/78, Annex II and the IBC Code: Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation for the mixture:

Relevant information regarding authorization: Occupational Health and Safety Act 1993 Regulation for Hazardous Chemical Substances.
Relevant information regarding restrictions:
EU regulations: Regulation EC 1272/2008 [EU-GHS/CLP] and EU directives 67/548/EEC or EC 1999/45/EC.
Other National regulations: National Road Traffic Act, 1996 (ACT NO. 93 of 1996).
SANS 11014:2010 – Safety data sheet for chemical products, Content and order section
SANS 10228:2012- The identification and classification of dangerous goods for transport by road and rail modes.
National Environmental Management: Waste Act 59 of 2008.
Chemical Safety Assessment carried out? No

SECTION 16. OTHER INFORMATION

Indication of changes:

GHS aligned
Not classified as hazardous under GHS

Training instructions:
Use as indicated on the label, special training may be required for application.

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:
To the best of our knowledge, the information contained herein is accurate and is based on the present state of our knowledge and does not therefore guarantee specific properties. However, neither the above-named supplier nor any of its subsidiaries assumes any liability whatsoever for any accuracy or completeness of the information contained herein.
Final determinations of suitability of any material are sole responsibility of the users, who must take responsibility for observing existing laws and regulations. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.