UNIVERSAL TEBUCONAZOLE 250 EW MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF PRODUCT & COMPANY

Product Name: **TEBUCONAZOLE 250EW**
Fungicide
UN No.: 3082
Company: **Universal Crop Protection (Pty) Ltd.**
Co. Reg. No.: 1983/008184/07
PO Box 801,
Kempton Park, 1620, South Africa
Telephone: (011) 396 2233
Fax: (011) 396 4666
Website: www.villacrop.co.za

Emergency telephone numbers:
24 Hr Transport / Spill emergency no:
Envirosure. +27 31 205 4918
(Hazcall24) +27 86 044 4411
(Client: Villa Crop Protection)
Griffon Poison Information Centre +27 82 446 8946
(Client: Villa Crop Protection)
Poisoning Emergency telephone numbers:
Griffon Poison Information Centre +27 82 446 8946
Poisons Information Centre +27 861 555 777
Villa Crop Protection Emergency number:
National Safety, Health and Environmental Manager:
+27 63 698 0668

2. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name: **Tebuconazole**
Chemical Name: (*RS*)-1-ρ-chlorophenyl-4,4-dimethyl-3-(1*H*-1,2,4-triazol-1-ylmethyl)pentan-3-ol (**IUPAC**)
CAS №.: 107534-96-3
Chemical family: azole
Chemical formula: $C_{16}H_{22}ClN_3O$
Molecular weight: 307.8
Use: Systemic foliar fungicide with protective, curative and eradicant action, with translocation acropetally in the xylem. Steriod demethylation (ergosterol biosynthesis) inhibitor.
Formulation: **Tebuconazole** 250 g/ℓ
Emulsion in Water
Hazardous ingredients:

Tebuconazole	25%	Xi
xylene	25%	Xi
solvent	30%	R40 (carcinogen)
emulsifiers and water	20%	C

Symbol: Xi
Indication of danger: Irritant
Risk phrases: R20/21/22, R36/38, R40, R41, R51

3. HAZARD IDENTIFICATION

Likely routes of exposure:
Skin: Product is not harmful. However, the product is a skin irritant and may be corrosive due to emulsifiers. Not expected to be a skin sensitizer.
Eye: The product is a severe irritant to the eyes. Lengthily exposure or delayed treatment may cause serious damage to the eyes.
Inhalation: Not a hazard under normal use conditions. Prolonged or repeated exposure may irritate the nose, throat and respiratory tract. Regarded harmful.
Swallowed: Data suggests the product is harmful if swallowed. Normal handling procedures is not expected to cause injury. If large amounts are swallowed and aspiration occurs, chemical pneumonitis may develop. Small amounts of product aspirated into the respiratory system during ingestion or vomiting, due to the solvent, xylene in the product, may cause mild to severe pulmonary injury.

4. FIRST AID MEASURES AND PRECAUTIONS

Inhalation:
If vapours or mists have been inhaled, and irritation has developed, remove the source of contamination or move victim to fresh air. The patient should be kept under observation and obtain medical attention if irritation persists.
Skin contact:
Remove contaminated clothing, shoes and leather goods. Wash skin gently and thoroughly with cold water and non-abrasive soap. Obtain medical attention if irritation persists.
Eye contact:
Immediately flush eyes with a stream of clean water for at least 20 minutes, holding the eyelid(s) open. Obtain medical attention immediately.
Ingestion:
Do not induce vomiting due to the solvent. Do not give anything by mouth. Obtain medical attention immediately. If the person is alert, rinse mouth thoroughly with water.
Advice to the physician:
There is no specific antidote available.
Treat symptomatically. The product contains solvent, xylene that may cause chemical pneumonitis if aspirated into lungs. Watch for delayed onset of pulmonary. Treat poisoning victims symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Fire and explosion hazard:
Flash point: 75 ^{O}C
Fire may release harmful carbon monoxide, carbon dioxide and oxides of 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 release harmful carbon monoxide, carbon dioxide and oxides of nitrogen and carbon. Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions:
Avoid contact with skin and eyes. Do not breathe in spray or fumes. 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. Considered as Marine Pollutant.
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.

7. HANDLING AND STORAGE REQUIREMENTS

Handling:
Do not use near source of sparks or open flame. Harmful by inhalation, in contact with skin and if swallowed. Severe irritating to eyes and skin. Avoid contact with eyes and skin, and inhalation of spray and vapour. 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 pesticide 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:
Do not store near sources of sparks, flame or heat. Keep under lock and key and out of reach of unauthorised persons, children and animals. Store in its original labelled container in isolated, dry, cool and well-ventilated area. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

It is essential to provide adequate ventilation. The measures appropriate for a particular work site 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 mists of pesticides is adequate. Limitations of respirator use specified by the approved 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 this substance.
Gloves:
Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.
Eye protection:
The use of safety goggles is recommended.
***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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear to pale yellow liquid, with characteristic aromatic odour.
Flammability: Not flammable.
Flash point: 75 ^{O}C.
Solubility: Forms an emulsion in water.
Density: 0.996 ± 0,05 g/mℓ at 20 ^{O}C

10. STABILITY AND REACTIVITY

Stability: Chemically and thermally stable.
Storage stability: Stable for a period of 2 years under normal warehouse conditions.
Conditions and Materials to Avoid: Keep the product in a cool, dry place, at below 30 ^{O}C. Protect form sunlight, open flame and sources of heat. Avoid contact with strong oxidising agents.
Hazardous decomposition products: Fire may release harmful carbon monoxide, carbon dioxide and oxides of nitrogen.

11. TOXICOLOGICAL INFORMATION

Acute oral $LD_{50\ rats}$:
Formulation calculated: >2000 mg/kg

Acute dermal LD_{50} rats:
Formulation calculated: > 2 000 mg/kg
Inhalation:
Harmful. Inhalation of excessive amounts may cause respiratory irritation.
Acute skin irritation:
Moderate skin irritant. Corrosive, due to emulsifier.
Acute eye irritation:
Severe eye irritant. May cause serious damage.
Dermal sensitisation:
Not expected to be a skin sensitizer.
Chronic Effects:
Based on animal studies, chronic overexposure to **Tebuconazole** may affect the spleen, liver, adrenals and lens of the eye.
Mutagenicity:
Tebuconazole tested negative in several *in vito* and *in vivo* short-term mutagenicity assays.
Reproductivity and Teratogenicity:
In various animal studies, the no-observable effect levels (NOEL) for developmental and reproductive toxicity for **Tebuconazole** were at or above the levels, which caused maternally toxic effects.
Carcinogenicity:
No carcinogenic effects were observed in rats or mice. An increase in liver tumours was observed in mice tested at a very high **Tebuconazole** dose level.
One of the solvents used in the formulation of the product, **TEBUCONAZOLE 250 EW** is carcinogenic.
ADI: 0,03 mg/kg bw

12. ECOLOGICAL INFORMATION

Mobility, Degradability & Accumulation:
The degradation of **Tebuconazole** in soil was slow in laboratory studies. Under field conditions, the compound degraded much more rapidly, and did not accumulate in long-term studies (3 to 5 years). No residues could be detected in deeper soil layers of these and other studies. Adsorption/desorption studies indicated a low mobility in the soil. Therefore, groundwater contamination through leaching can be excluded.
In natural waters, hydrolysis and indirect photolysis occur. In a pond study, the compound dissipated from the water body with DT_{50} of 1 to 4 weeks.
Low vapour pressure and strong adsorption result in low volatilisation into the air.
In animals, elimination of **Tebuconazole** was almost complete (>99%) after 3 days. **Tebuconazole** was excreted with the urine and the faeces.
In plants, metabolism studies show that **Tebuconazole** is the major terminal residue. The metabolites detected were mainly triazole-containing compounds of no toxicological relevance. In plant tissue, a mean DT_{50} of 12 days could be derived (cereals).

ECOTOXICOLOGY:
Non-toxic to birds. Toxic to fish. Not toxic to bees.

Birds:

Oral LD_{50}:	Japanese quail, male:	4438 mg/kg
	Japanese quail, female:	2912 mg/kg
	Bobwhite quail:	1988 mg/kg

Fish:

LC_{50} (96 hours):	Rainbow trout:	4,4 mg/ℓ
	Bluegill sunfish:	5,7 mg/ℓ

Daphnia:

LC_{50} (48 hours):	*Daphnia magna:*	4,2 mg/ℓ

Bees:

LD_{50} (48 hours, oral):	83 µg/bee
LD_{50} (contact):	> 200 µg/bee

Earthworm:

LD_{50} (14 days):	*Eisenia foetida:*	1381 mg/kg dry wt soil

13. 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.
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 one third 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.

14. TRANSPORT INFORMATION

UN NUMBER: 3082
Road Transport ADR/RID:

Class:	9
Packaging group:	III
Shipping name:	Environmentally hazardous substance, liquid, n.o.s. (**Tebuconazole** 250 g/ℓ)

Maritime Transport IMDG/IMO:

Class:	9
Packaging group:	III
Shipping name:	Environmentally hazardous substance, liquid, n.o.s. (**Tebuconazole** 250 g/ℓ)

Considered a marine pollutant.

15. REGULATORY INFORMATION

Symbol: Xi
Indication of danger: Irritant

Risk phrase(s):

R 20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R 36/38	Irritating to eyes and skin.
R 40	Limited evidence of a carcinogenic effect.
R 41	Risk of serious damage to eyes.
R 51	Toxic to aquatic organisms.

Safety phrases:

S 1/2	Keep locked up and out of reach children.
S 13	Keep away from food, drink and animal feeding stuffs.
S 16	Keep away from sources of ignition – No smoking.
S 23	Do not breathe vapour/spray.
S 24/25	Avoid contact with skin and eyes.
S 36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S 61	Avoid release to the environment. Refer to special instructions/safety data sheet.

16. OTHER INFORMATION

Packaging:
Packed in 1, 5, 10, 20 and 25 litres fluorinated plastic containers and labelled according to 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 non-

standard 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.

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For detailed information on revisions, contact the Registration holder.