TETRAMET 600 SC

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **TETRAMET 600 SC**
Other identifier: **atrazine + terbuthylazine + metolachlor + benoxacor 600 SC**
Recommended use: Herbicide
Restrictions on use: Agriculture

Supplier: **Villa Crop Protection (Pty) Ltd.**
Co. Reg. No.: 1992/002474/07
PO Box 10413
Aston Manor, 1630, South Africa
Telephone: (011) 396 2233
Fax: (011) 396 4666
Website: www.villacrop.co.za

Emergency telephone numbers:
24 Hr Transport / Spill emergency no:
(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

2. HAZARDS IDENTIFICATION

UN GHS, Regulation EC 1272/2008 [EU-GHS/CLP] EU & SANS 10234:2008		
Hazard classes	**Hazard categories**	**H-statements**
Health		
Oral	Acute Tox. 4	H302
Skin Sensitization	Skin Sens. 1B	H317
Carcinogenicity	Carc. 1B	H350
Specific Target Organ Toxicity Repeated Exposure	STOT RE 2	H373
Environment		
Aquatic acute	Aquatic acute 1	H400
Aquatic chronic	Aquatic chronic 1	H410

The most important adverse effects:
Physiochemical effects:
None known
Human health effects:
Harmful if swallowed (Acute Tox. 4).
May cause an allergic skin reaction (Skin Sens. 1B).
May cause cancer (Carc. 1B).
May cause damage to organs through prolonged or repeated exposure (STOT RE 2).
Label elements:

Signal word: Danger.
Hazard statements:
H302: Harmful if swallowed.
H317: May cause an allergic skin reaction.
H350: May cause cancer.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
Precautionary statements:
P203: Obtain, read, and follow all safety instructions before use.
P260: Do not breathe dust, fume, gas, mist, vapours, and spray.
P261: Avoid breathing dust, fumes, mists, gas, vapours, or spray. (respiratory sensitization).
P264: Wash hands and face thoroughly after handling.
P270: Do not eat, drink, or smoke when using this product.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release into the environment.
P280: Wear impervious rubber gloves and boots, protective clothing, and chemical safety goggles.
P301+P317: IF SWALLOWED: Get medical help.
P302+P352: IF ON SKIN: Wash with plenty of water and non-abrasive soap.
P318: IF exposed or concerned, get medical advice.
P319: Get medical help if you feel unwell.
P330: Rinse mouth.
P333+P317: If skin irritation or rash occurs: Get medical help.
P391: Collect spillage.
P405: Store locked up.
P501: Dispose of content/container to suitable landfill in accordance with local regulations.
Special labelling of certain mixtures:
None known.
Other hazards:
None known.
Toxicity:
Classification according to GHS: Category 4.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture.

Composition:

Chemical Name	CAS	Conc. (m/v %)	Classification EC 1272/2008
Atrazine	1912-24-9	17.4 %	Skin Sens. 1 (H317) STOT RE 2 (H373) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Benoxacor	98730-04-2	0.8 %	Skin Sens. 1 (H317) Aquatic Chronic 1 (H410) M (Chronic)=1
Metolachlor	51218-45-2	25.2 %	Skin Sens. 1 (H317) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Terbuthylazine	5915-41-3	17.4 %	Acute Tox. 4 (H302) STOT RE 2 (H373) Aquatic Acute 1 (H400) M=10 Aquatic Chronic 1 (H410) M (Chronic)=10
Polysilicate	9004-62-0	<0.5 %	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335)
Poly-glycol	107-21-1	<10 %	Acute Tox. 4 (H302)
Formaldehyde	50-00-0	<0.5 %	Acute Tox. 3 (H301) Acute Tox. 3 (H311) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Acute Tox. 3 (H331) Muta. 2 (H341) Carc. 1B (H350)

4. FIRST AID MEASURES

Remove the victim from the area of exposure. Wash off remaining material with plenty of water. In the event of any complaints or symptoms, avoid further exposure. Immediately consult a doctor.

Inhalation: Remove person from contaminated area to fresh air and assist breathing if needed. Seek medical attention if irritation occurs.

Skin: Remove contaminated clothing and shoes. Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Obtain medical attention if irritation persists.

Eyes: Flush eyes with clean water for at least 15 – 20 minutes. Lift eyelids to facilitate irrigation. If present, remove contact lenses after 5 minutes and continue rinsing.

Ingestion: Seek medical attention or call a poison control centre for treatment advice. Do not induce vomiting unless instructed to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person. If the person is alert, rinse mouth thoroughly with water.

Anticipated acute effects: Harmful if swallowed.

Anticipated delayed effects: May cause cancer, may cause damage to organs through prolonged or repeated exposure.

Most important symptoms/effects: There is no specific antidote for the organonitrogen compounds. Keep patient under observation and treat symptomatically as indicated by his\her condition. No signs and symptoms of triazine poisoning are known or expected in humans. When large amounts have been ingested, consider gastric lavage, or administer activated charcoal with water.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Use carbon dioxide or dry powder for small fires and water fog or foam for large fires.

Unsuitable Extinguishing Media: High volume water jet. Use a water jet only to cool heated containers.

Specific hazards: This product will emit toxic fumes when burned, including carbon monoxide. May produce irritating or poisonous mists or other products of combustion.

Special Fire Fighting Procedures: 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. Avoid pollution of waterways by run-off from the site.

Personal protective equipment: Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid contact with eyes and skin. Do not breathe in spray mist or vapours. Ventilate area of spill or leak, especially in contained areas.

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

Emergency procedures: Alert firefighting personnel, evacuate unprotected personnel and animals.
Environmental Precautions: Prevent spilled product from entering sewers, waterways, or ground water. This product is classified to be very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. Any spillages or uncontrolled discharges into watercourses should be reported immediately to the police and the Department of Water/Environmental Affairs.
Methods and Materials for Containment: Contain spilled product by diking area with sand or earth.
Methods and Materials for Clean-up: 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 containers with the contents and dispose of according to local regulations. Do not place spilled material back in original container. Do not re-use spilled 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.

7. HANDLING AND STORAGE

Handling:
Precautions for safe handling: Avoid contact with eyes and skin. Ensure adequate ventilation during handling and use. Do not handle broken packages without protective equipment. Immediately clean up spills that occur during handling. Keep containers closed when not in use. In the case of contact with the product refer to First Aid Measures – Section 4.
General occupational hygiene: Practice good hygiene when using this product. 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.
Storage:
Conditions for safe storage: Keep under lock and key and out of reach of unauthorised persons, children, and animals. Store in its original, labelled container, tightly closed, in an isolated, dry, cool and well- ventilated area. Avoid excess heat. Not to be stored next to foodstuffs, feed and water supplies. Avoid cross contamination with other pesticides and fertilisers.
Incompatible substances and mixtures: Refer to product label.
Packaging material: Plastic containers.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Permissible concentration:
No occupational exposure limits have been determined for the significant ingredients in this product.

Engineering Controls:
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. Local Exhaust: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OELs or other specified exposure limits. Local exhaust ventilation is preferred. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.
Personal Protective Equipment:
Respiratory Protection: For most well-ventilated conditions, no respiratory protection should be needed. If used in a poorly ventilated area (airborne concentrations exceed exposure limits), use a NIOSH approved air-purifying respirator.
Hand Protection: The use of chemically protective impervious gloves is recommended to prevent against skin contact.
Eye Protection: The use chemical safety goggles is recommended to prevent against eye contact. Contact lenses are not protective eye devices.
Skin and Body Protection: Employee must wear appropriate protective impervious clothing e.g., coveralls, rubber boots, hat, and equipment to prevent repeated or prolonged skin contact with this product. Do not wear leather clothing.
Emergency eyewash: Where there is any possibility that an employee's eyes may be exposed to this product; the employer should provide an eyewash fountain or appropriate alternative within the immediate work area for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Cream white colour liquid.
Odour: None.
pH (1% aqueous dilution): 6.9
Melting point: Not available.
Freezing Point: Not available.
Boiling Point: Not available.
Flash Point: Not available.
Flammability: None-flammable.
Upper/lower explosion limits: Not available.
Vapour Pressure (mm Hg): Not available.
Relative Vapour Density: Not available.
Density/Relative density: 1.101 g/mℓ.
Solubility: Miscible in water.

n-octanol/water partition coefficient: Not available.
Auto-ignition temperature: Not available.
Decomposition temperature: Not available.
Viscosity: Not available.

10. STABILITY AND REACTIVITY

Chemical Stability: The product is stable for two years at ambient temperature and pressure, under normal storage and handling conditions. Avoid storage under extreme temperatures and conditions. Store below 50°C, preferably below 30 °C, and not for prolonged periods in direct sunlight.
Reactivity: None known.
Possibility of Hazardous Reactions: None known.
Conditions to Avoid: Avoid extreme heat and fire.
Incompatible Materials: None known.
Hazardous Decomposition Products: This product can emit toxic fumes when burned, including carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Calculated according to GHS.
Oral LD_{50} (24 h) rats >1900 mg/kg.
Dermal LD_{50} (24 h) rats/rabbits >5000 mg/kg.
Inhalation LC_{50} (4 h) rats >8.4 mg/ℓ
Skin Irritation/Corrosion: Not classified.
Eye Damage/Irritation: Not classified.
Skin Sensitization: May cause an allergic skin reaction.
Respiratory Sensitization: Not classified.
Reproductive cell mutagenicity: Not classified.
Carcinogenicity: May cause cancer.
Reproductive toxicity: Not classified.
Specific target organ toxicity – single exposure: Not classified.
Specific target organ toxicity – repeated exposure: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard: Not classified.
Chronic Effects: None known.
POTENTIAL ADVERSE EFFECTS: None known.

12. ECOLOGICAL INFORMATION

This product is very toxic to aquatic organisms, may cause long-term effects in the aquatic environment.

ECOTOXICITY DATA: Active ingredients.

Fish:		
Atrazine:		
LC_{50} (96 h)	Rainbow trout	11.0 mg/l.
	Guppies	4.3 mg/l.
Terbuthylazine:		
LC_{50} (96 h)		2.2 mg/l.
	Rainbow trout	>5.7 mg/l.
	Mirror carp	
Metolachlor:		3.9 mg/l.
LC_{50} (96 h)	Rainbow trout	4.9 mg/l.
	Carp	10 mg/l.
Benoxacor:	Bluegill sunfish	
LC_{50} (96 h)		2.4 mg/l.
	Rainbow trout	10 mg/l.
	Carp	6.5 mg/l.
	Bluegill sunfish	1.4 mg/l.
	Catfish	
Daphnia:		
Atrazine:		
EC_{50} (48 h)		29 mg/l.
Terbuthylazine:		
EC_{50} (48 h)		>69.3 mg/l.
Metolachlor:		
LC_{50} (48 h)		25 mg/l.
Benoxacor:		
EC_{50} (48 h)		11.5 mg/l.
Algae:		
Atrazine:		
EC_{50} (72 h)	*Scenedesmus subspicatus.*	0.043 mg/l.
(96 h)	*Pseudokirchneriella subcapitata.*	0.01 mg/l.
Terbuthylazine:		
EC_{50} (72 h)	*Scenedesmus subspicatus*	0.016 mg/l.
E_bC_{50} (72 h)	*Microcystis aeruginosa*	0.016 mg/l.
E_rC_{50} (72 h)	*Scenedesmus subspicatus*	0.102 mg/l.
Metolachlor: EC_{50}	*Scenedesmus subspicatus*	0.1 mg/l.
Benoxacor:		
EC_{50} (72 h)	*Scenedesmus subspicatus*	0.63 mg/l.
EC_{50} (96 h)	*Microcystis aeruginosa*	39 mg/l.
Birds:		
Atrazine:		
Acute oral LD_{50}	Bobwhite quail	940 mg/kg.
	Mallard ducks & Japanese quail	>2000 mg/kg.
Dietary LC_{50} (8 d)	Japanese quail	>5000 mg/kg.
	Mallard ducks	>1560 mg/kg.
Terbuthylazine:		
Acute oral LD_{50}	Mallard ducks and Japanese quail	>2000 mg/kg.
Dietary LC_{50} (8 d)	Mallard ducks and Japanese quail	>5620 mg/kg diet.
	Mallard ducks and	

Metolachlor: Acute oral LD_{50}	bobwhite quail	>2150 mg/kg.
Dietary LC_{50} (8 d)	Bobwhite quail and mallard ducks	>10000 mg/kg diet.
Benoxacor: Acute oral LD_{50}	Mallard ducks Bobwhite quail	>2150 mg/kg. >2000 mg/kg.
Bees:		
Atrazine: (LD_{50}, µg/bee)	(contact) (oral)	>100 µg/bee. >97 µg/bee.
Terbuthylazine: (LD_{50}, µg/bee)	(contact) (oral)	>32 µg/bee. >22.6 µg/bee.
Metolachlor: (LD_{50}, µg/bee)	(oral and contact)	>110 µg/bee.
Benoxacor: (48 h)	(oral and contact)	>100 µg/bee.
Worms:		
Atrazine: LC_{50} (14 d)	*Eisenia fetida*	78 mg/kg soil.
Terbuthylazine: LC_{50} (14 d)	Earthworms	>1000 mg/kg soil.
Metolachlor: LC_{50} (14 d)	Earthworms	140 mg/kg soil.
Benoxacor: LC_{50} (14 d)	Earthworms	>1000 mg/kg soil.

Plants:

Atrazine: In tolerant plants, atrazine is readily metabolized to hydroxyatrazine and amino acid conjugates, with further decomposition of hydroxyatrazine by degradation of the side-chains and hydrolysis of the resulting amino acids on the ring, together with evolution of CO_2. In sensitive plants, unaltered atrazine accumulates, leading to chlorosis and death.

Terbuthylazine: Triazine-tolerant plants (e.g., maize) rapidly dechlorinate terbuthylazine to hydroxy-terbuthylazine. Various amounts of de-ethylated and hydroxy de-ethylated metabolites are produced, depending on the plant species.

Metolachlor: In plants, metabolism involves natural product conjugation of the chloroacetyl group, and hydrolysis and sugar conjugation at the ether group. Final metabolites are polar, water-soluble, and non-volatile.

Benoxacor: In plants, one major metabolite, which was also observed in animal metabolism studies, and several minor metabolites, were found.

ENVIRONMENTAL EFFECTS:

Persistence and degradability:

Atrazine: Main metabolites under all conditions are desethylatrazine and hydroxyatrazine. Field DT_{50} 16–1174d (median 38.5 d), the longer values being from cold or dry conditions. In water/sediment system DT_{50} 14–20 d in the water and DT_{50} 35–80 in the whole system. DT_{50} under groundwater conditions 105–>200 d, depending on test system (M. J. Wood *et al.* (1991) In: A Walker (ed.), *Pesticides in soils and water: current perspectives*, BCPC Monograph no. 47, pp. 175–182). K_d 0.2–18 ml/g, K_{oc} 39–173 ml/g; desalkylated metabolites had values similar to those of atrazine (K_d 0.2–8.6 ml/g) whereas hydroxyatrazine (K_d 1.6–390) was much more strongly adsorbed.

Terbuthylazine: In aerobic soils, dissipation is mainly due to microbial activity with the formation of metabolites by de-ethylation and hydroxylation, with eventual ring cleavage, and the formation of non-extractable residues (8–27% after 98 d). Median DT_{50} (field) 17.4 (6.5–149, 9 sites). Adsorption on soils is medium KFoc 224 (162–333, 12 soils), median KF 3.0 (0.3–25.2, 12 soils). Terbuthylazine is only slightly mobile. In water-sediment systems, terbulthylazine dissipates with a DT_{50} of 33–73 d in the whole system.

Metolachlor: Major aerobic metabolites are derivatives of oxanilic and sulfonic acids. DT_{50} in soil *c. 2*0 d (field). K_{oc} 121–309.

Benoxacor: In soil, benoxacor is rapidly dissipated via the formation of non-extractable residues (67–79% after 103 d down to 54–57% after 365 d) and is mineralised by microbial activity (up to 48–49% after 365 d). Soil DT_{50} (20 °C) *c.* 1–5 d. Mean K_{oc} 218 ml/g (42–340 ml/g), indicating medium mobility. In aquatic systems, benoxacor mainly dissipates via the formation of non-extractable residues in the sediment (64–77%) with a DT_{50} of 2.4 d.

Bio-accumulative Potential: Not determined.

Mobility in soil: Not determined.

Other adverse effects: Not determined.

13. DISPOSAL CONSIDERATIONS

Waste: 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.

Container: TRIPLE RINSE THE EMPTY CONTAINER AS FOLLOWS: Invert the empty container over the spray or mixing tank and drain for at least 30 seconds after the flow has slowed down to dripping. Thereafter rinse the

empty container three times in succession with one quarter of the container volume fresh water and decant the rinsate into the spray or mixing tank. Puncture the triple rinsed container and dispose of via an approved collector or recycler (www.croplife.co.za). Do not bury, burn, or donate the container to any other parties that may use it as a container for food or beverages.

14. TRANSPORT INFORMATION

UN Number: 3082
Road Transport ADR/IRD:
Class: 9
Packaging group: III
UN Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S.
(atrazine 174 g/ℓ + terbuthylazine 174 g/ℓ + metolachlor 252 g/ℓ)

Maritime Transport IMDG/IMO:
Class: 9
Packaging group: III
UN Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S.
(atrazine 174 g/ℓ + terbuthylazine 174 g/ℓ + metolachlor 252 g/ℓ)

Marine Pollutant (Y/N): **YES**
Air transport IATA/ICAO:
Class: 9
Packaging group: III
UN Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S.
(atrazine 174 g/ℓ + terbuthylazine 174 g/ℓ + metolachlor 252 g/ℓ)
Special/Environmental Precautions: Wedge drums/containers tightly to avoid movement.
Transport in bulk (according to MARPOL 73/78, Annex II and the IBC code): Not available.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation for the mixture:
OHSA 1993 Regulations for Hazardous Chemical Substances.

Relevant information regarding restrictions: None.

EU regulation: Regulation EC1272/2008 (EU-GHS/CLP)

Other national regulations: None.

Chemical Safety Assessment carried out? No

16. OTHER INFORMATION

Packaging: Packed in 1, 5, 10, 20, 25 litres plastic containers, labelled according to South African regulations and guidelines.
Additional H statements (formulants):
H301: Toxic if swallowed.
H311: Toxic in contact with skin.
H314: Causes severe skin burns and eye damage.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H331: Toxic if inhaled.
H335: May cause respiratory irritation.
H341: Suspected of causing genetic defects.
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, and 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.

END OF DOCUMENT

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For detailed information on revisions, contact the Registration holder.