VILLA COUNTER FC 15G®

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **COUNTER FC 15G®**
Other identifier: Terbufos 150 g/kg
Recommended use: Insecticide
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:
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. HAZARDS IDENTIFICATION

UN GHS, Regulation EC 1272/2008 [EU-GHS/CLP] EU & SANS 10234:2008		
Hazard classes	**Hazard categories**	**H-statements**
Health		
Oral	Acute Toxicity 2	H300
Dermal	Acute Toxicity 3	H311
Eye	Eye irritation 2B	H320
Inhalation	Acute Toxicity 1	H330
Environmental:		
Aquatic Acute	Aquatic Acute 2	H401
Aquatic Chronic	Aquatic Chronic 2	H411

The most important adverse effects:
Physiochemical effects: None known.
Human health effects:
Fatal if inhaled.
Fatal if swallowed.

Label elements:

Signal word: Danger
Hazard statements:
H300: Fatal if swallowed.
H311: Toxic in contact with skin.
H320: Causes eye irritation.
H330: Fatal if inhaled.
H401: Toxic to aquatic life.
H411: Toxic to aquatic life with long lasting effects.
Precautionary statements:
P260: Do not breathe mist/spray.
P264: Wash skin and eyes thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release into the environment.
P280: Wear impervious rubber gloves and chemical safety goggles.
P284: In case of inadequate ventilation wear respiratory protection.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER.
P302+P352: IF ON SKIN: Wash with plenty of water and soap.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER.
P312: Call a poison centre/doctor if you feel unwell.
P330: Rinse mouth.
P337+313: If eye irritation persists: Get medical advice.
P361+364: Take off immediately all contaminated clothing and wash before reuse.
P391: Collect spillage.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P501: Dispose of contents/container in accordance with local regulations.
Other hazards:

None known.

Toxicity:

Classification according to GHS: Category 1
Classification according to WHO: Group Ia
Classification according to GPIC: Group 1b

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Composition:

Chemical name	CAS	Conc. (m/m %)	Classification EC 1272/2008
Terbufos	13071-79-9	15 %	Acute Toxicity 2 (H300) Acute Toxicity 1 (H310) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Stabilizer	--	1 %	Not available
Inerts	--	84 %	Not available

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 from exposure to fresh air immediately. If breathing has stopped, give artificial respiration (not direct mouth to mouth). Maintain airway and blood pressure and administer oxygen if available. Keep affected person warm and at rest. Treat symptomatically and supportively. Administration of oxygen should be performed by qualified personnel. **Immediately seek medical attention**.

Organophosphates: Cholinesterase inhibitor

Acute exposure: When inhaled, the first effects of cholinesterase inhibitors are usually respiratory and may include nasal hyperemia and watery discharge, cough, chest discomfort, dyspnea, and wheezing due to increased bronchial secretions and bronchoconstriction. If sufficient amounts are absorbed, other systemic effects may begin within a few minutes or be delayed for up to 12 hours. Symptoms may include pallor, nausea, vomiting, diarrhea, abdominal cramps, headache, dizziness, ocular pain, blurred vision, miosis or in some cases, especially initially, mydriasis, lacrimation, salivation, sweating, and confusion. Other reported central nervous system or neuromuscular effects may include ataxia, slurred speech, areflexia, weakness, fatigue, fasciculations, twitching, tremors possibly of the tongue and eyelids, and eventually paralysis of the extremities and possibly of the respiratory muscles. In severe cases there may also be involuntary defecation and urination, cyanosis, psychosis, hyperglycemia, acute pancreatitis, cardiac irregularities, pulmonary edema, unconsciousness, convulsions, and coma. Death is primarily due to respiratory failure, although cardiovascular effects including cardiac arrest may also be implicated. Long term sequelae are rare but may include neuropsychiatric disorders and myopathy with muscle tenderness. Some organophosphates may cause a delayed neuropathy beginning 1-4 weeks after an acute exposure which may or may not have caused acute cholinergic effects. Numbness, tingling, weakness and cramping beginning symmetrically in the lower limbs may progress to ataxia and paralysis. In severe cases, upper limb involvement is possible and flaccid paralysis may progress to spastic paralysis with exaggerated reflexes. Improvement may occur over months to years, but some residual impairment usually remains.

Chronic exposure: Repeated or prolonged exposure may result in the effects of acute exposure including the delayed neuropathy. Other effects reported in workers repeatedly exposed include impaired memory and concentration, acute psychosis, severe depressions, irritability, confusion, apathy, emotional lability, social withdrawal, confusion, headache, speech difficulties, delayed reaction times, spatial disorientation, nightmares, sleepwalking, and drowsiness or insomnia. An influenza-like condition with headache, nausea, weakness, weight loss and malaise has also been reported.

Skin: 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 artificial respiration. Get medical attention immediately.

Organophosphates: Cholinesterase inhibitor.

Acute exposure: Localized sweating and fasciculation's may occur at the site of contact. If sufficient amounts are absorbed, other effects of

cholinesterase inhibition as described in acute inhalation occur. Symptoms may be delayed 2 to 3 hours, but usually no more than 12 hours. The rate of absorption is increased by the presence of dermatitis or high ambient temperatures. Delayed neuropathy is also possible.

Chronic exposure: Repeated or prolonged exposure may cause effects as described in acute exposure. Some organophosphates may cause sensitisation.

Eyes: Do not rub eyes. Flush eyes with water or saline solution. If symptoms of poisoning occur, treat respiratory difficulty with artificial respiration and oxygen. Observe patient for at least 24 to 36 hours. Get medical attention immediately. Oxygen should be administrated by qualified medical personnel.

Organophosphates: Cholinesterase inhibitor

Acute exposure: Direct contact may cause pain, hyperemia, lacrimation, twitching of the eyelids, miosis, and ciliary muscle spasm with loss of accomodation, blurred or dimmed vision and browache. Sometimes mydriasis may occur instead of miosis. With sufficient exposure, other symptoms of cholinesterase inhibition as described in acute inhalation may occur.

Chronic exposure: Repeated or prolonged exposure may cause effects as described in acute exposure.

Ingestion: Seek medical attention immediately. If the person is alert and respiration is not depressed, give syrup of IPECAC followed by water (if vomiting occurs, keep head below hips to prevent aspiration). If consciousness level declines or vomiting has not occurred in 15 minutes' empty stomach by gastric lavage with the aid of cuffed endotracheal tube using isotonic saline or 5% sodium bicarbonate followed with activated charcoal. Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen.

Do not give morthine, aminophylline, phenothiazines, reserpine, furosemide, or ethacrynic acid. Treat symptomatically and supportively. Administration of oxygen and lavage must be performed by qualified medical personnel.

Organophosphates: Cholinesterase inhibitor

Acute exposure: When ingested, the first effects may be nausea, vomiting, anorexia, abdominal cramps and diarrhoea. Gastrointestinal absorption may cause symptoms of cholinesterase inhibition as described in acute inhalation. Symptoms may begin within minutes or be delayed for hours. Delayed effects including neuropathy may also occur.

Chronic exposure: Repeated ingestion may cause effects as described in acute exposure.

Anticipated acute effects: Refer to specific route of exposure mentioned above.

Anticipated delayed effects: None known.

Most important symptoms / effects: Refer to specific route of exposure mentioned above.

Advice to physician:

Antidote: The decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel.

For cholinesterase inhibitors: Establish clear airway and tissue oxygenation by aspiration of secretions, and if necessary, by assisted pulmonary ventilation with oxygen. Improve tissue oxygenation as much as possible before administering Atropine to minimise the risk of ventricular fibrillation. Administer Atropine Sulphate intravenously or intramuscularly if *iv* injection is not possible. In moderately severe poisoning administer Atropine Sulphate; 0.4 to 2.0 mg repeated every 15 minutes until atropinization is achieved (tachycardia, flushing, dry mouth, mydriasis). Maintain atropinization by repeated doses for 2 to 12 hours, or longer, depending on the severity of poisoning. The appearance of rales in the lung bases, miosis, salivation, nausea, bradycardia, are all indications of inadequate atropinization. Severely poisoned individuals exhibit remarkable tolerance to Atropine; two or more times the dosages suggested above may be needed. Persons not poisoned or only slightly poisoned, however, may develop signs of atropine toxicity from such large dosages: fever, muscle fibrillations, and delirium are the main signs of atropine toxicity. If these signs appear while the patient is fully atropinized, atropine administration should be discontinued, at least temporarily. Observe treated patient closely for at least 24 hours to insure that symptoms (possibly pulmonary edema) do not recur as atropinization wears off. In very severe poisonings, metabolic disposition of toxicant may require several hours or days during which atropinization must be maintained. Markedly lower levels of urinary metabolites indicate that atropine dosage can be tapered off. As dosage is reduced, check the lung bases frequently for rales. If rales are heard or other symptoms return, re-establish atropinization promptly. Administration of antidote must be performed by qualified medical personnel. In cases of severe poisoning by organophosphate pesticides in which respiratory depression, muscle weakness and twitchings are severe, give **Pralidoxime (Protopam-ayerst, 2-PAM),** 1.0 gram intravenously at no more than 0.5 gram per minute.

Dosage of pralidoxime may be repeated in 1 to 2 hours, then at 10 to 12 hours intervals if needed. In very severe poisonings, dosage rates may be doubled. Treatment with pralidoxime will be most effective if given within thirty-six hours after poisoning. Antidote should be administered by qualified medical personnel.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Use carbon dioxide or dry chemical 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: Hazards or hazard products may arise from 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. Remain upwind of fire. 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.
Personal protective equipment: Wear NIOSH / MSHA approved self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid contact with skin and eyes. Do not breathe in spray mist or dust. 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 as 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.
Methods and Materials for Clean-up: Contain spilt product by picking up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal. Do not create a powder cloud by using a brush or compressed air. Label containers with the contents and dispose of according to local regulations. Do not place spilt material back in original container. Do not re-use spilt material. To decontaminate the spill area, tools and equipment, wash with water and suitable detergent. Collect washings and add to the drums already collected. Do not flush spilt material or washings into drains or waterways. See section 13 for disposal considerations.

7. HANDLING AND STORAGE

Handling:
Precautions for safe handling: Fatal if swallowed. Avoid contact with skin and eyes. 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 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.
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 bags.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Permissible concentration

Components	Exposure limits	Type of exposure limit	Source
Inerts	5 mg/m^3 15 mg/m^3	PEL	*www.osha.gov*
Stabilizer	15 mg/m3	PEL	*www.osha.gov*

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 with cartridges / canisters approved for organic vapours.
Hand Protection: The use of chemically protective gloves is recommended to prevent against skin contact.
Eye Protection: The use of chemical safety goggles is recommended to prevent against eye contact. Contact lenses are not protective eye devices.
Skin and Body Protection: Employees must wear appropriate protective clothing, boots, hat and equipment to prevent repeated or prolonged skin contact with this substance.
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: Solid, granular, blue.
Odour: Not available.
Odour threshold: Not available.
pH (1% aqueous dilution): 7 – 7.2.
Melting point: < 20 °C (Terbufos technical).
Freezing Point: - 29 °C.
Boiling Point: 453 K (Terbufos Technical).
Flash Point: Not applicable to solids.
Flammability: Not applicable to solids.
Upper / lower explosion limits: Not applicable to solids.
Vapour Pressure (mm Hg):
2.60E-04 mm Hg thermal evolution method 26°C, Terbufos Technical.
1.00E-03 mm Hg thermal evolution method 42°C, Terbufos Technical.
2.40E-03 mm Hg thermal evolution method 76°C, Terbufos Technical.
Relative Vapour Density: Not available.
Density / Relative density: Not available.
Solubility: 2.77 - 3.07 % 27°C, Terbufos Technical.
n-octanol / water partition coefficient: 4.71 Terbufos Technical.
Auto-ignition temperature: Not applicable to solids.
Decomposition temperature: Not available.
Viscosity: Not applicable to solids.

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: Unlikely to occur.
Conditions to avoid: Extreme heat or exposure to flames.
Incompatible materials: Alkaline metals. Isocyanates.
Hazardous decomposition products: Emits hazardous fumes and smoke of sulfur oxides, oxides of phosphorus and other unknown composition when heated to decomposition or burned.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:
Oral LD_{50} 10.05 mg/kg (rat)

Dermal LD_{50} 510 mg/kg (rabbit)
Inhalation LC_{50} (4h) 0.008 mg/ℓ (rat)
Skin Irritation: Non irritating (rabbit).
Eye Irritation: In a test on rabbits the product caused minimal eye irritation.
Skin Sensitization: The product was considered non-sensitizing to skin in a study conducted on guinea pigs.
Respiratory Sensitization: No data available.
Reproductive cell mutagenicity: The product gave negative results for mutagenicity for the TA98, TA100, TA102, TA1535 and TA1537 strains of Salmonella typimurium in the presence and absence of metabolic activation.
Carcinogenicity: Terbufos: Sprague-Dawley rats were administered technical terbufos in the diet (89.6% purity) at a concentration of 0, 0.125, 0.5 or 1 ppm for one year. No increase of tumours were detected during the test period.
Stabilizer: Carcinogenic activity was not observed in chronic testing conducted on rats for 103 weeks.
Inerts: No data is available.
Reproductive toxicity: This product is not expected to cause reproductive or developmental effects. Terbufos: The active ingredient was administered to female rats from day 6 to day 15 of gestation. No effects on the formation of the fetus or evidence of embryo-fetal toxicity or teratogenicity were found at any of the doses used.
Stabilizer: No data is available.
Inerts: No data is available.
Specific target organ toxicity – single exposure: Not classified.
Specific target organ toxicity – repeated exposure: Terbufos: Sprague-Dawley rats were administered technical terbufos in the diet at a concentration of 0, 0.125, 0.5 or 1 ppm for one year. No statistically significant effect was observed on body weight, body weight gain and food consumption. Hematological parameters and urinalysis were not altered in any treatment. A greater number of high-dose group females had chromodacryorrhea (7/29), excessive lacrimation (6/29) and alopecia (10/29) when compared to controls (2/29, 2/29, and 4/29, respectively). The activity of the erythrocyte ChE was not affected by any treatment. The ChE activity of the brain was significantly reduced (-8/10%) in the high dose group. In the high dose group kidney weight ([in] females) was reduced. The ophthalmoscopic examination revealed no changes related to the treatment.
Stabilizer: No toxic effects related to chronic exposure to the stabilizer were observed in a test conducted on rats.
Inerts: No data is available.
Aspiration hazard: Not available.
Chronic Effects: Prolonged inhalation may be harmful.
POTENTIAL ADVERSE EFFECTS:
Inhalation: Refer to section 4 – first aid.
Ingestion: Refer to section 4 – first aid.

12. ECOLOGICAL INFORMATION

This product is considered a marine pollutant.

ECOTOXICITY DATA:

Fish:		
LC_{50} (96 h)	*Brachydanjo rerio*	6.451 mg/ℓ
Daphnia:		
EC_{50} (48 h)		0.12 mg/ℓ
Algae:		
EC_{50} (96h)	*Raphidocelis subcapitata*	12.3 mg/l
Birds:		
LD_{50} (14 d)	*Coturnix japônica*	56.25 mg/kg
Bees:		
LC_{50} (48h)		0.008 µg i a/bee

ENVIRONMENTAL EFFECTS
Active ingredient – Terbufos technical
Plants: Degradation in plants is the same as in soil.
Persistence and degradability: Terbufos degradation occurs in both aerobic and anaerobic conditions. In aerobic conditions in a sand-clay soil, the biological half-life was found to be 5 days with a remnant of only 0.02 ppm after one year.
Bio-accumulative potential: For the evaluation a radiolabeled extract of aged soil treated with the active ingredient was placed in water under static conditions. The study results suggest that, in the event of residue of the soil containing the active ingredient being washed into the water of lakes through erosion, the total residue of the active ingredient related to the product expected to be found in the edible tissues of fish will be less than 0.02 ppm, and any fish mortality is likely to occur a few days after contamination.

Mobility in soil: Terbufos has a negligible mobility due to its strong adsorption by clays; it is relatively immobile in soil under leaching and non-leaching conditions.`
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 dispose of 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: Empty containers by inverting the container over the area of use. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

UN Number: **2783**
Road Transport ADR / ORD:
Class: 6.1
Packaging group: I
UN Proper Shipping Name:
ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC.
Maritime Transport IMDG / IMO:
Class: 6.1
Packaging group: I
UN Proper Shipping Name:
ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC.
Marine pollutant (Y/N): Yes.
Air Transport IATA / ICAO:
Class: 6.1
Packaging group: I
UN Proper Shipping Name:
ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC.
Special / Environmental Precautions: Wedge drums tightly to avoid movement.
Transport in bulk: Refer to MARPOL 73/78, Annex II and the IBC code.

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 15 and 18 kg plastic bags and labelled according to South African regulations and guidelines.
Other hazard statements, abbreviations and explanations:
IATA: International Air Transport Association.
IBC: International Bulk Chemical.
ICAO: International Civil Aviation Organization.
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization.
LD_{50} value: The median lethal dose or the amount of a toxic agent that is sufficient to kill 50 percent of a population within a certain period of time.
OEL/RL: Occupational exposure limit-recommended limit.
TWA: Time-weighted average – The average exposure over a specified period, usually a nominal eight hours.
ST/STEL: Short-term exposure limits.
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.