PROFENFOS SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE

Product Name: **PROFENFOS**
Other identifier: **Profenofos 500 EC**
Recommended use: Insecticide
Restrictions on use: Agriculture

Supplier: **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:
(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 Toxicity 4	H302
Dermal	Acute Toxicity 3	H311
Environment		
Aquatic Acute	Aquatic Acute 1	H400
Aquatic Chronic	Aquatic Chronic 1	H410

The most important adverse effects:
Physiochemical effects:
Human health effects:
Harmful if swallowed.
Toxic in contact with skin.

Label elements:

Signal word: Danger

Hazard statements:
H302: Harmful if swallowed.
H311: Toxic in contact with skin.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
Precautionary statements:
P264: Wash hands and face 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 boots, protective clothing and chemical safety goggles.
P301+P317: IF SWALLOWED: Get medical help.
P302+P352+P316: IF ON SKIN: Wash with plenty of water and non-abrasive soap. Get emergency medical help immediately.
P330: Rinse mouth.
P361+P364: Take off immediately all contaminated clothing and wash before reuse.
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 3

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture.
Composition:

Chemical Name	CAS	Conc. (m/v %)	Classification EC 1272/2008
Profenofos	10305 5-07-8	50 %	Acute Toxicity 4 (H302) Acute Toxicity 4 (H312) Acute Toxicity 4 (H332) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	< 3%	Aspiration. Toxicity 1 (H304)

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.

Inhalation: Remove person from contaminated area to fresh air and assist breathing as needed. **Seek medical attention if you feel unwell after inhalation**.

Skin contact: Remove contaminated clothing, shoes and leather goods immediately. Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. **Obtain medical attention immediately.**

Eye contact: 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. Seek medical attention if irritation persists.

Ingestion: **Seek medical attention** or call a poison control centre for treatment advice. Do not induce vomiting, due to the aromatic solvent. 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. Toxic in contact with skin.

Anticipated delayed effects: None known.

Most important symptoms/effects:

The clinical picture of organophosphorus intoxication results from accumulation of acetylcholine at nerve endings. The symptoms can be summarized in three groups as follows:

a) Muscarinic
- increased bronchial secretion, excessive sweating, salivation, and lacrymation;
- pinpoint pupils, bronchoconstriction, abdominal cramps (vomiting and diarrhoea);
- bradycardia.

b) Nicotinic manifestations
- fasciculation of fine muscles and, in more severe cases, of diaphragm and respiratory muscles;
- tachycardia.

c) Central nervous system manifestations
- headache, dizziness, restlessness, and anxiety;
- mental confusion, convulsions, and coma;
- depression of the respiratory center.

All these symptoms can occur in different combinations and can vary in time of onset, sequence, and duration, depending on the chemical, dose, and route of exposure. Mild poisoning might include muscarinic and nicotinic signs only. Severe cases always show central nervous system involvement; the clinical picture is dominated by respiratory failure, sometimes leading to pulmonary oedema, due to the combination of the above-mentioned symptoms.

Clinical diagnosis is relatively easy and is based on:

a) medical history and circumstances of exposure;

b) presence of several of the above-mentioned symptoms, in particular, bronchoconstriction and pinpoint pupils not reactive to the light. Pulse rate is not of diagnostic value, because the Ache effects on the heart reflect the complex innervation of this organ. On the other hand, since changes in the conduction and excitability of the heart might be life threatening, monitoring should be performed.

Symptoms of profenofos intoxication are the one of cholinesterase inhibition and can include headache, dizziness, blurred vision, nausea, cramps, diarrhea, discomfort in the chest, nervousness, sweating, tearing, salivation, pulmonary oedema, convulsion, coma. If swallowed and aspirated into the lungs, chemical pneumonia can occur.

Depending on severity of poisoning these symptoms become worse with the onset of vomiting, abdominal pain, diarrhoea, sweating and salivation. Confusion, ataxia, slurred speech, loss of reflexes are some of the central nervous system effects may lead to misdiagnosis of acute alcoholism.

Advice to physician: Atropine must be administered as early as possible and in an adequate dosage. Patients with organophosphate poisoning require amounts of atropine far in excess of doses usually employed in medical practice. The therapeutic objective is to achieve atropinisation, as evidenced by dilation of the pupils, drying secretion, pulse rate of over 120/min and flushing skin.

To prevent gastrointestinal absorption in the unconscious that have swallowed this product, perform stomach lavage using 5% sodium bicarbonate followed by activated charcoal. Establish and maintain airway and tissue oxygenation by aspiration of secretions.

Administer atropine sulfate intravenously, or intramuscularly if IV injection is not possible. In moderately severe poisoning administer atropine sulfate, 0.4-2.0 mg repeated every 15 minutes until atropinization is achieved (tachycardia, flushing, dry mouth, mydriasis). Maintain atropinization by repeated doses for 2-12 hours, or longer, depending on the severity of poisoning. Severely poisoned individuals may exhibit remarkable tolerance to atropine. Two or more times the dosage suggested above may be needed.

In case 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 1-2 hours, then at 10-12 hour intervals if needed. In very severe poisonings, dosage rate may be doubled.

Toxogonin is a more recent cholinesterase reactivator. It can be administered instead of 2PAM at a dose of 250 mg

intramusculary for adults (4 to 8 mg/kg for children) and, if necessary, repeat after 1 to 2 hours.
Diazepam should be included in the therapy of severe cases and whenever convulsions appear. Doses of 5 to 10 mg for adults (2 to 5 mg for children) can be administered intravenously or subcutaneously or per rectum, and repeated as required.

NOTE

Because of their respiratory-depressant effects, **morphine** and similar drugs are **contra-indicated** for patients poisoned with organophosphorous compounds. **Avoid aminoglycosides** and **succinylcholine**, which have a blocking effect on the neuromuscular junction. **Phenothiazines, reserpine and theophylline** are **contraindicated** in organophosphorous poisoning.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).
Unsuitable Extinguishing Media: High volume water jet, as this will spread the fire. Use a water jet only to cool heated containers.
Specific hazards: Use appropriate extinguishing media for combustibles in the area. Residual organic material will emit toxic fumes when burning.
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: Harmful if swallowed. Avoid contact with eyes and skin. Do not breathe in spray mist or fumes/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 as 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: Harmful if swallowed and toxic in contact with skin. Avoid contact with eyes and skin. Do not inhale spray mist or vapours. 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 tightly 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: Fluorinated plastic containers.

8. EXPOSURE CONTROL 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 work site 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: Employee must wear appropriate chemical resistant rubber gloves (PVC or neoprene gloves) to prevent skin contact with this product.
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 impervious clothing, rubber boots, hat and equipment to prevent repeated or prolonged skin contact with this substance. 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: Yellowish to light brown clear liquid.
Odour: Weakly like cooked onions.
pH (1% aqueous dilution): 5 to 7 at 25 °C
Melting point: Not available.
Freezing Point: Not available.
Boiling Point: >180 °C.
Flash Point: > 93
Flammability: Not flammable.
Upper/lower explosion limits: Not available.
Vapour Pressure (mm Hg): Not available.
Relative Vapour Density: Not available.
Density/Relative density: 1,13 g/cm^3 ± 0,010
Solubility: Perfectly miscible with water. Gives a stable emulsion.
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 2 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, static discharge, shock or vibration.
Incompatible Materials: Strong oxidizers, strong bases, strong reducing agents.
Hazardous Decomposition Products: Emits toxic fumes under fire conditions. CO, CO^2, chloride and hydrogen bromide, phosphoric acid, and phosphorous pentoxide.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:
Calculated according to GHS.
Oral LD_{50} (24 h) >700 mg/kg (rat).
Dermal LD_{50} (24 h) >900 mg/kg (rabbit).
Inhalation LC_{50} (4 h) >6 mg/ℓ (rat).
Skin irritation/Corrosion: Not classified.
Eye Damage/Irritation: Not classified.
Skin Sensitization: Not classified.
Respiratory Sensitization: Not classified.
Reproductive cell mutagenicity: Not classified.
Carcinogenicity: Not classified.
Reproductive toxicity: Not classified.
Specific target organ toxicity – single exposure: Not classified.
Specific target organ toxicity – repeated exposure: Not classified.
Aspiration hazard: May be fatal if swallowed and enters airways.
Chronic Effects: Not available.
POTENTIAL ADVERSE EFFECTS:
Skin contact: Toxic in contact with skin.
Ingestion: Harmful if swallowed.

12. ECOLOGICAL INFORMATION

This product is very toxic to aquatic organisms with long lasting effects.

ECOTOXICITY DATA:
Profenofos

Fish:		
LC_{50} (96 h)	Rainbow trout	0.08 mg/ℓ
	Crucian carp	0.09 mg/ℓ
	Bluegill sunfish	0.3 mg/ℓ
Daphnia:		
EC_{50} (48 h)		1.06 µg/ℓ
Algae:		
EC_{50} (72 h)	*Scenedesmus subspicatus*	1.16 mg/ℓ
Birds:		
Dietary LC_{50} (8 d)	Bobwhite quail	70-200 mg/kg
	Japanese quail	>1000 mg/kg
	Mallard ducks	150-612 mg/kg
Bees:		
LD_{50} contact (48 h)		0.102 µg/bee.
Worms:		
LC_{50} (14 d)	Earthworms	372 mg/kg.

ENVIRONMENTAL EFFECTS:
Based on information for the active ingredient
Plants: In cotton, Brussels sprouts and lettuce, the compound is rapidly taken up and metabolised. The overall metabolic pattern indicates degradation to polar metabolites.
Persistence and degradability: Mean DT_{50} in soil (lab and field) is 1 week.
Bio-accumulative Potential: Log K_{ow} 4.44. Rapidly excreted by rats following oral administration.
Mobility in soil: Not available.
Other adverse effects: Not determined.

13. DISPOSAL CONSIDERATION

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: Emptied containers retain product residues. Do not re-use the empty container for any other purpose. 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. Observe all labelled safeguards until container is destroyed.

14. TRANSPORT INFORMATION

UN NUMBER: **3018**
Road Transport ADR/IRD:
Class: 6.1
Packing Group: III
UN Proper Shipping Name: ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (Profenofos 500 g/ℓ)
Maritime Transport IMDG/IMO:
Class: 6.1
Packing Group: III
UN Proper Shipping Name: ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (Profenofos 500 g/ℓ)
Marine Pollutant (Y/N): Yes

Air Transport IATA/ICAO:
Class: 6.1
Packing Group: III
UN Proper Shipping Name: ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (Profenofos 500 g/ℓ)

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

Packed in fluorinated 5, 10, 20 & 25 litres plastic containers and labeled according to South African regulations and guidelines.

Other hazard statements, abbreviations and explanations:

H304: May be fatal if swallowed and enters airways.
H312: Harmful in contact with skin.
H332: Harmful if inhaled.
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.