

## VILLA ARENA 206 EC

## MATERIAL SAFETY DATA SHEET

### 1. PRODUCT & COMPANY IDENTIFICATION

**Product Name:** ARENA 206 EC  
Insecticide  
**UN No.:** 2903  
**Supplier:** Villa Crop Protection (Pty) Ltd  
PO Box 10413,  
Aston Manor, 1630, South Africa  
**Telephone:** (011) 396 2233  
**Fax:** (011) 396 4666  
**Website:** [www.villacrop.co.za](http://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:** 1) BENFURACARB  
2) LAMBDA-CYHALOTHRIN  
**Chemical Name:** 1) ethyl *N*-[2,3-dihydro-2,2-dimethylbenzofuran-7-yloxycarbonyl(methyl)aminothio]-*N*-isopropyl-β-alaninate (IUPAC)  
2) equal quantities of:  
(*S*)-α-cyano-3-phenoxybenzyl (*Z*)-(1*R*,3*R*)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate and  
(*R*)-α-cyano-3-phenoxybenzyl (*Z*)-(1*S*,3*S*)-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate (IUPAC)  
**CAS No.:** 1) 82560-54-1  
2) 91465-08-6  
**Chemical Family:** 1) carbamate  
2) pyrethroid  
**Chemical Formula:** 1) C<sub>20</sub>H<sub>30</sub>N<sub>2</sub>O<sub>5</sub>S (Mol. wt.: 410.5)  
2) C<sub>23</sub>H<sub>19</sub>ClF<sub>3</sub>NO<sub>3</sub>  
**Use:** 1) Systemic and contact insecticide with stomach and contact action to control various insect pests.

2) Synthetic pyrethroid, non-systemic insecticide and acaricide with stomach and contact action, and repellent properties.

**Formulation:** 1) BENFURACARB: 200 g/l  
2) LAMBDA-CYHALOTHRIN 6 g/l Emulsifiable Concentrate (Liquid)

#### Hazardous Ingredient:

Inert:	concern:	% present:
BENFURACARB	slight eye irritant, toxic	20 %
LAMBDA-CYHALOTHRIN	harmful	0.6 %
aromatic hydrocarbon	harmful	67 %

**SYMBOLS:** T, Xi, N, F  
**RISK-PHRASE(S):** R10, R23/25, R36/38, R50/53, R65, R66

### 3. HAZARD IDENTIFICATION

#### Toxicity class:

WHO II

**ADI:** Not available

#### Main Hazard:

**BENFURACARB** is a carbamate compound, which inhibits cholinesterase. It is toxic. Swallowing may be fatal and inhalation poisonous. Exposure to product may cause irritation of eyes, skin or upper respiratory tract. Due to aromatic hydrocarbon, product may cause lung damage if swallowed.

#### Likely routes of exposure:

Skin and eye contact, ingestion and inhalation.

**Inhalation:** Toxic by inhalation. Vapour concentrations above recommended exposure levels may be irritating to the eyes and the respiratory tract may cause headaches and dizziness. Could be anaesthetic. Aspiration into lungs may cause chemical pneumonitis.

**Ingestion:** Toxic when swallowed. If large amounts are swallowed and aspiration of the solvent into the lungs occurs, chemical pneumonitis may develop. Small amounts of product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury.

**Skin:** Harmful by skin contact. Due to inerts, the product is a mild irritant and may cause mild to severe irritation to the skin. May cause dermatitis through defatting of tissue.

**Eye:** Mild irritant. May cause mild to severe irritation.

### 4. FIRST AID MEASURES AND PRECAUTIONS

Proper care should be taken during occupational use to avoid any inhalation of spray particles, and to prevent accidental contamination of food products and water. The product contains a cholinesterase inhibitor.

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The first effects of carbamate poisoning may include nasal hyperemia and watery discharge, chest discomfort, dyspnea, and wheezing due to increased bronchial secretions and bronchoconstriction. Other systemic effects of carbamate poisoning may begin within a few minutes or several hours of exposure. Symptoms may include nausea, vomiting, diarrhoea, abdominal cramps, headache, vertigo, ocular pain, ciliary muscle spasm, blurring or dimness of vision, miosis or in some cases mydriasis, incoordination, paralysis, paresis, muscle weakness, mood disturbances, lacrimation, salivation, sweating and confusion. In severe cases, there may also be involuntary defecation and urination, bradycardia, hypotension, pulmonary edema, convulsions, stupor, coma and death from respiratory failure or cardiac arrest. **BENFURACARB** does not accumulate in mammalian tissue and the cholinesterase inhibition reverses rather rapidly.

**Inhalation:** Remove person from exposure area to fresh air immediately. Keep affected person warm and at rest. If breathing has stopped, give mechanical artificial respiration (not direct mouth-to-mouth). Maintain airway and blood pressure and administer oxygen if available. Only qualified personnel should perform administration of oxygen. Treat symptomatically and supportively. Get immediate medical attention.

**Skin contact:** Remove contaminated clothing immediately. Wash contaminated areas with large amounts of water and non-abrasive soap followed by alcohol. Emergency personnel should wear gloves and avoid contamination. Treat respiratory difficulty with mechanical artificial respiration. Get medical attention immediately.

**Eye contact:** Flush eyes immediately with large amounts of gently flowing cold water or normal saline solution, occasionally lifting upper and lower lids, until no evidence of chemical remains (approximately 15 to 20 minutes). If irritation persists, get medical attention.

**Ingestion:** Do not induce vomiting. Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen. In cases of ingestion of liquid concentrates of carbamate pesticides, hydrocarbon aspiration may complicate these poisonings. Pulmonary edema and poor oxygenation in these cases will not respond to atropine and should be treated as a case of acute respiratory distress syndrome. Lavage is contraindicated in hydrocarbon ingestion. Treat symptomatically and supportively. Qualified medical personnel must perform administration of oxygen. Get medical attention immediately.

**Advice to physician:** The use of sorbitol is not recommended. Activated charcoal is contraindicated in an unprotected airway, a GI tract not anatomically intact, and when charcoal therapy may increase the risk of aspiration

of a hydrocarbon-based pesticide, such as **BENFURATHRIN EC**. **Do not give morphine, aminophylline, phenothiazines, reserpine, furosemide or ethacrynic acid. Pralidoxime (2-PAM, Protopam) and other oximes are contra-indicated. THEY SHOULD NOT BE USED.**

**Antidote:** Establish clear airway and tissue oxygenation by aspiration of secretions, and if necessary, by assisted pulmonary ventilation with oxygen. Administer atropine sulphate intravenously, or intramuscularly, if IV injection is not possible. In cases of moderately severe poisoning, administer atropine sulphate, 0.4 to 2.0 mg repeated every 15 minutes, until atropinisation is achieved (tachycardia, flushing, dry mouth, mydriasis). Maintain atropinisation 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 dosages suggested above may be needed. Observe treated patients closely at least 24 hours to ensure that symptoms (possibly pulmonary edema) do not recur as atropinisation wears off. In very severe poisonings, metabolic disposition of toxicant may require several hours or days during which atropinisation 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 atropinisation promptly. Hydrocarbon aspiration may complicate these poisonings. Pulmonary oedema and poor oxygenation in these cases will not respond to atropine and should be treated as a case of acute respiratory distress syndrome.

### 5. FIRE FIGHTING MEASURES

**Flammable properties:** Flammable

**Flash point:** 27°C

**Fire and explosion hazard:** Low hazard. Materials can form flammable mixtures or can burn only upon heating to temperatures at or above the flash point. Due to inert, product can accumulate static charges, which can cause an ignitable electrical discharge.

**Extinguishing agents:** Extinguish small fires with carbon dioxide, dry powder, foam or water. Water spray can be used for cooling off unaffected stock, but avoid spraying water directly into storage containers due to danger of boil over. Contain water used for fire-fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

**Fire-fighting:** Move containers from fire area if possible. Fight fire from maximum distance. Stay away from storage tank ends. Use as little water as possible. Dike area of fire to prevent material run-off. Contain fire control water for later disposal. Do not scatter material, extinguish only if flow can be stopped. Cool containers with water

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from as far a distance as possible. Keep upwind. Decontaminate emergency personnel with soap and water before leaving the fire area. Avoid breathing dusts, vapours, and fumes from burning materials.

**Special Hazards:** Fire may produce irritating or poisonous vapours, mists or other products of combustion.

**Personal protective equipment:**

Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus operated in the pressure demand or other positive pressure mode. Avoid breathing dusts, vapours, and fumes from burning materials, by staying upwind. Decontaminate emergency personnel with soap and water before leaving the fire area. Clean all clothing before re-use. Severely contaminated clothing cannot be adequately decontaminated, and must be disposed of as hazardous waste.

### 6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

**Personal precautions:** Do not inhale fumes. Avoid contact with skin, eyes and clothing. Ventilate area of spill or leak, especially in confined areas. For personal protection see Section 8.

**Environmental precautions:** Do not allow entering into drains or watercourses. Spillage or uncontrolled discharges into water courses, public waters, sewers, soil or vegetation to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

**Occupational spill:** Keep out unprotected persons and animals. Do not touch or walk through spilled material; stop leak if you can do it without risk. Earth all equipment used when handling the product. Avoid runoff of product into sewers, water systems, basements or confined areas. Vapour-suppressing foam could be used to reduce vapours. Thoroughly wash body areas, which come into contact with the product.

**For spills:** Keep spectators away and upwind. Use clean, non-sparking tools to collect absorbed material. Recover by pumping (use an explosion proof or hand pump) or with a suitable absorptive material such as damp earth or sand or other suitable non-combustible absorbent material. If liquid is too viscous for pumping, scrape up with shovels or pails and place in suitable containers for disposal. Place the material into a clean, dry container, cover and label drums with its content and dispose of it in accordance with local regulations. 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. Open burning or dumping of this material is prohibited.

**Water Spill:** Warn ships in vicinity. Notify port or relevant authority and keep public away. Shut off source if possible

to do so without hazard. Confine if possible. Remove product from surface by skimming or with suitable absorbents. If allowed to do so by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters.

### 7. HANDLING AND STORAGE REQUIREMENTS

**Handling:** Operator should not be alone during handling and application of product. Do not handle, store or open near an open flame, or other sources of heat or ignition. Avoid contact with eyes and skin and inhalation of fumes. Avoid exposure to spray. 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 insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and water 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:** Store in its original, closed container in an isolated, dry and well-ventilated area. Avoid cross contamination with other pesticides and fertilisers. Keep under lock and key out of reach of uninformed persons, children and animals. Store away from incompatible materials and direct sunlight. Not to be stored next to foodstuffs and water supplies. Product will accumulate static charges, which may cause an electrical spark. Use proper bonding and/or grounding procedures. Do not pressurise, cut, heat or weld containers. Local regulations should be complied with.

### 8. EXPOSURE CONTROL / PERSONAL PROTECTION

**Engineering control measures:** It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. Only spark-resistant equipment should be used. 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 equipment including approved respiratory protection.

**Respirator:** An approved full-face air-purifying respirator, equipped with organic vapour cartridges or canisters, suitable for protection from mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

**Clothing:** Employee must wear appropriate protective (impervious) clothing (long sleeved cotton overalls, rubber



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boots, face shield and hat or cap) and equipment to prevent contact with the substance.  
**Gloves:** Employee must wear appropriate chemical resistant protective gloves (PVC or neoprene gloves) to prevent contact with this substance.  
**Eye protection:** Employee must wear splash-proof face-shield to prevent 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:** A red-brown liquid with an aromatic hydrocarbon odour.  
**Flammability:** Flammable  
**Flash point:** 27°C  
**Density:** 1.021 at 20 °C  
**pH:** 6.6  
**pH of 1% aqueous dilution:** 7.8  
**Solubility in water:** Forms an emulsion in water

## 10. STABILITY AND REACTIVITY

**Storage stability:** Stable for up to 2 years under normal warehouse conditions. Stable in neutral and weak basic media, but unstable in acidic and strong basic media.  
**Stability:** The product is stable.  
**Incompatibility:** The product is incompatible with strong oxidizers and alkaline materials. Compatibility with plastics can vary, therefore, test prior to use.  
**Hazardous decomposition:**  
 None known. Burning can produce oxides of carbon.

## 11. TOXICOLOGICAL INFORMATION

**Acute oral LD<sub>50</sub> rats:** *Technical BENFURACARB:* 205 mg/kg  
*Technical LAMBDA-CYHALOTHRIN:* 56 – 79 mg/kg  
*Formulation calculated:* 678 mg/kg  
**Acute dermal LD<sub>50</sub> rats:**  
*Technical BENFURACARB:* >2000 mg/kg  
*Technical LAMBDA-CYHALOTHRIN:* 636 –696 mg/kg  
*Formulation calculated:* >2000 mg/kg  
 (Unlikely to present acute hazard in normal use)  
**Inhalation LC<sub>50</sub> rats:**  
*Technical BENFURACARB:* 0.34 mg/ℓ air (4hours).  
*Technical LAMBDA-CYHALOTHRIN:* 0.06 mg/ℓ air (4hrs)  
**Acute skin irritation:**  
 Mild skin irritation. Prolonged exposure may cause dermatitis through defatting of the tissue.

**Acute eye irritation:**  
 Slight to severe eye irritant.  
**Carcinogenicity:**  
 Studies indicated that **BENFURACARB** and **LAMBDA-CYHALOTHRIN** are not carcinogenic. Inert contains naphthalene, which has caused tumours in noses and lungs of rats after lifetime exposure. Relevance to humans is questionable.  
**Teratogenicity / Reproductive hazard:**  
 Studies indicated that **BENFURACARB** and **LAMBDA-CYHALOTHRIN** are not teratogenic.  
**Mutagenicity:**  
 Studies evaluating the mutagenic potential of **BENFURACARB** and **LAMBDA-CYHALOTHRIN** have all shown the compounds to be non-mutagenic.  
**Toxicity class:**  
**BENFURACARB:** WHO (a.i.) II  
**LAMBDA-CYHALOTHRIN:** WHO (a.i.) II

## 12. ECOLOGICAL INFORMATION

**Degradability:**  
**BENFURACARB** degrades in soil in 4 to 28 hours, and **LAMBDA-CYHALOTHRIN** in 30 days. Under upland conditions, **BENFURACARB** is decomposed to **Carbofuran**, while under flooded conditions, **Carbofuran** phenol is also found as a major degradation product. In soil **LAMBDA-CYHALOTHRIN** is degraded to two main degradation products that are further degraded to carbon dioxide. Inert is relatively volatile and will evaporate slowly from water. Inert has a potential to bio-concentrate, but is readily biodegradable.  
**Mobility:**  
**BENFURACARB** has low mobility in moist soils. **LAMBDA-CYHALOTHRIN** is non-mobile in the environment and is absorbed on soil particles. Inert can float and migrate into the sediment.  
**ECOTOXICOLOGY:**  
**All information below refers to technical material.**  
**Birds: Toxic to birds**  
**BENFURACARB:**  
 Oral LD<sub>50</sub>: hens 92 mg/kg  
**LAMBDA-CYHALOTHRIN:**  
 Oral LD<sub>50</sub> mallard ducks >3950 mg/kg  
 LC<sub>50</sub> (diet): quail: >5300 mg/kg  
**Fish: Highly toxic to fish and aquatic organisms**  
**BENFURACARB:**  
 LC<sub>50</sub> (48 hours): carp 0.65 mg/ℓ  
**LAMBDA-CYHALOTHRIN:**  
 LC<sub>50</sub> (96 hours): Rainbow trout: 0.36 µg/ℓ  
 Bluegill sunfish: 0.21 µg/ℓ  
**Daphnia:**  
**BENFURACARB:**  
 EC<sub>50</sub> (48 hours): *Daphnia magna* 9.9 µg/ℓ

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<b><u>LAMBDA-CYHALOTHRIN:</u></b>		
EC <sub>50</sub> (48 hours):	<i>Daphnia magna:</i>	0.36 µg/ℓ
<b>Bees: Toxic to bees</b>		
<b><u>BENFURACARB:</u></b>		
LD <sub>50</sub> :		0.16 µg/bee
<b><u>LAMBDA-CYHALOTHRIN:</u></b>		
LD <sub>50</sub> (oral):		38 ng/bee
LC <sub>50</sub> (contact):		909 ng/bee

## 13. DISPOSAL CONSIDERATION

**Pesticide disposal:** Open dumping or burning of this pesticide is prohibited. Contaminated absorbents, surplus product, etc., should be burned at 1000°C in a high-temperature incinerator with effluent gas scrubbing. Where no incinerator is available, hydrolysis under alkaline conditions (pH 12 or above) is a suitable method to dispose of small quantities of the product. Before disposal of the resultant waste, the material must be analysed to ensure that the active ingredient has been degraded to a safe level. 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. **Considered a Marine Pollutant.**

**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 a 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.

## 14. TRANSPORT INFORMATION

<b>UN No.:</b>	2903
<b>Road Transport ADR/IRD:</b>	
Class:	3.3
Packing group:	I
Shipping name:	Carbamate and pyrethroid pesticide, liquid, toxic (BENFURACARB 200 g/ℓ, LAMBDA-CYHALOTHRIN 6 g/ℓ)

<b>Air Transport ICAO/IATA:</b>	
Class:	3.3
Packing group:	I
Shipping name:	Carbamate and pyrethroid pesticide, liquid, toxic (BENFURACARB 200 g/ℓ, LAMBDA-CYHALOTHRIN 6 g/ℓ)

<b>Maritime Transport IMDG/IMO:</b>	
Class:	3.3
Packing group:	I
Shipping name:	Carbamate and pyrethroid pesticide, liquid, toxic (BENFURACARB 200 g/ℓ, LAMBDA-CYHALOTHRIN 6 g/ℓ)

**Considered a marine pollutant.**

## 15. REGULATORY INFORMATION

<b>Symbol:</b>	T, Xi, N, F
<b>Indication of Danger:</b>	Toxic and irritating substance, Environmentally dangerous substance, <b>Flammable</b>

<b>Risk phrases:</b>	
<b>R 10</b>	<b>Flammable</b>
<b>R 23/25</b>	Toxic by inhalation and if swallowed.
<b>R 36/38</b>	Irritating to eyes and skin.
<b>R 50/53</b>	Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
<b>R 65</b>	Harmful: may cause lung damage if swallowed.
<b>R 66</b>	Repeated exposure may cause skin dryness or cracking.

<b>Safety phrases:</b>	
<b>S 1/2</b>	Keep locked up and out of reach of children.
<b>S 3/9/14</b>	Keep in cool, well-ventilated place away from open flames and sparks.
<b>S 13</b>	Keep away from food, drink and animal feeding stuffs.
<b>S 23</b>	Do not breathe vapour/spray.
<b>S 24/25</b>	Avoid contact with skin and eyes.
<b>S 27/28</b>	After contact with skin takes off immediately all contaminated clothing and washes immediately with plenty of water and non-abrasive soap.
<b>S 36/37/39</b>	Wear suitable protective clothing, gloves and eye/face
<b>S 45</b>	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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- S 60** This material and its container must be disposed of as hazardous waste.
- S 61** Avoid release to the environment. Refer to special instructions / Safety data sheets.

### 16. OTHER INFORMATION

**Packing and Labelling Packed** in 1, 5, 10, 20 & 25 litres fluorinated plastic containers and labelled according to the 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 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

**Compiled:** April 2008  
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For detailed information on revisions, contact the Registration holder.