

# VILLA CARDINAL 200 EC

# MATERIAL SAFETY DATA SHEET

## 1. PRODUCT & COMPANY IDENTIFICATION

**Product Name:** Cardinal 200 EC  
 Herbicide  
**UN No.:** 1993  
**Supplier:** Villa Crop Protection (Pty) Ltd.  
 PO Box 801,  
 Kempton Park, 1620, 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:** Fluroxypyr (pyridine acid)  
**Chemical Name:** 1-methylheptyl [(4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy]acetate (IUPAC)  
**CAS No.:** [81406-37-3]  
**Chemical Family:** Pyridinecarboxylic acid  
**Chemical Formula:** C<sub>7</sub>H<sub>5</sub>Cl<sub>2</sub>FN<sub>2</sub>O<sub>3</sub> (Mol. wt.: 367.2)  
**Formulation:** Fluroxypyr 200 (g/l)  
 Emusifiable concentrate  
**Use / Mode of Action:** Fluroxypyr is applied as an ester, such as Fluroxypyr-meptyl. After predominantly foliar uptake, the ester is hydrolysed to the parent acid, which is the herbicidally active form, and translocated rapidly to other parts of the plants. Acts by inducing characteristic auxin-type responses, e.g. leaf curling.

**Hazardous Ingredient:**  
 Fluroxypyr (pyridine acid) ±20 %  
 Inerts ±80 %

**SYMBOLS:** F, Xi, Xn, N

**RISK-PHRASE(S):** R 10, R20/21/22, R 36/37, R48, R51/53, R65

## 3. HAZARD IDENTIFICATION

**Toxicity class:** WHO III. Slightly hazardous.  
 May cause irritation to the skin and eyes.  
**Flammable.**  
**Toxic to aquatic organisms.** May cause long-adverse effects in the aquatic environment.

## 4. FIRST AID MEASURES AND PRECAUTIONS

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.  
**Symptoms of human poisoning:** Inert is irritating to respiratory system and may cause lung damage if swallowed. Vapour may cause drowsiness and dizziness. Repeated exposure may cause skin dryness and cracking. Fumes with Carbon monoxide gas may cause dimness of vision, disturbance of judgement, and unconsciousness followed by coma and death.  
**Inhalation:** Immediately remove source of contamination or move victim to fresh air. If breathing has stopped, perform artificial respiration and administer oxygen. Avoid mouth-to-mouth resuscitation. Keep person warm and at rest. Treat symptomatically and supportively as and when required. **Seek medical advice immediately.**  
**Skin contact:** Remove contaminated clothing, shoes and leather goods immediately. Gently wipe off excess chemical. Wash skin gently and thoroughly with non-abrasive soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15 to 20 minutes). Seek medical advice if necessary.  
**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:** Have victim rinse mouth thoroughly with water. **Do not induce vomiting, due to the aromatic solvent. Seek medical advice immediately.** If the person is alert and respiration is not depressed, give large quantity of water to drink. Never give anything by mouth to an unconscious person. Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen. Qualified medical personnel should perform administration of gastric lavage or oxygen.  
**Advice to physician:** Keep patient prone and quiet. Start artificial respiration immediately; if patient is breathing never give anything by mouth to an unconscious person. In serious cases, medical attention should be sought.

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### 5. FIRE FIGHTING MEASURES

**Fire/Explosion hazard:** Flammable. Fire risk.

**Flash point:** ~63 °C.

Vapour may cause drowsiness and dizziness.

**Extinguishing agents:** Extinguish fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Use as little water as possible. Use spray or fog. Solid stream may cause spreading. Contain water used for fire fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

**Firefighting:** Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Use a recommended extinguishing agent for the type of surrounding fire. Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind. Remove container from fire area if possible and without risk. Water can be used to cool unaffected containers but must be contained for later disposal. Dyke fire control water for later disposal. Do not scatter the material. Avoid pollution of waterways. Do not use high volume water jet, due to contamination risk. Contain water used for fire fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

**Personal protective equipment:** Fire may produce irritating or poisonous vapours or gases (oxides of chlorine and sulphur) or other products of combustion. Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

### 6. ACCIDENTAL RELEASE MEASURES (Spillage)

**Personal precautions:** Avoid contact with skin and eyes. Do not breathe in fumes. For personal protection see Section 8.

**Environmental precautions:** Do not apply on directly to water, to areas where surface water is present or to intertidal areas below the mean mark. Do not contaminate water by disposal of equipment washwaters. See "Storage, shipment and Disposal" section. In case of spills properly dispose of contaminated materials.

**Occupational spill:** Do not touch-spilled material; stop leak if you can do it without risk. Keep out unprotected persons and animals.

**For spills:** Soak up with absorptive material such as damp earth or sand or other suitable non-combustible absorbent material. Place the material into a clean, dry container and cover for subsequent disposal. In situations where product comes in contact with water, contain contaminated water for later disposal. Prevent material from spreading by damming in with absorptive material.

Do not flush spilled material into drains. Keep spectators away and upwind. To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e. organic solvent, detergent bleach or caustic). Add the solution to the drums already collected. Label drums with its content and dispose it in accordance with local regulations.

Open burning or dumping of this material is prohibited.

Do not get water inside containers.

### 7. HANDLING AND STORAGE REQUIREMENTS

**Handling:** Harmful if swallowed. Avoid inhalation and contact with eyes and skin. Use with adequate ventilation. Do not handle broken packages without protective equipment. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Remove clothing immediately if the product gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Seek medical advice.

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.

Worker should shower at the end of each work day. Launder all clothing before it is re-used again.

**Storage:** Store in its original container in dry, cool, well-ventilated area. Avoid excess heat. Not to be stored next to foodstuffs and water supplies.

Keep out of reach of children, uninformed persons and animals. Do not contaminate other pesticides and fertilizers.

**Storage stability:** Stable for a period of 2 years under normal warehouse conditions.

### 8. EXPOSURE CONTROL/PERSONAL PROTECTION

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. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

**PERSONAL PROTECTIVE EQUIPMENT: Respirator:** An approved full-face respirator suitable for protection from spray or mists of pesticides is required. Limitations of respirator use specified by the approved agency and the manufacturer must be observed.

**Clothing:** Employee must wear appropriate protective (impervious) clothing; boots, hat and equipment to prevent repeated or prolonged skin contact with this substance. Do not wear leather clothing.

**Gloves:** Employee must wear appropriate chemical resistant protective gloves to prevent contact with this substance.

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**Eye protection:** The use of chemical resistant goggles or face shield.

**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:** Tan liquid.

**Odour:** Fragrant odour.

**Density:** 1.00 g/ml.

**Solubility in water:** Soluble.

**Flash point:** ~63 °C.

**Flammability:** Flammable. Fire risk.

**pH:** Not applicable.

**pH of 1% aqueous dilution:** 3.5 to 5.0.

### 10. STABILITY AND REACTIVITY

**Storage stability:** Stable for up to 2 years when stored in a dry, cool covered warehouse in original, well-labelled containers. Store at low temperature conditions, below 50°C, preferably below 30 °C and not for prolonged periods in direct sunlight.

**Condition to avoid:** Avoid heat and sunlight.

**Incompatibility:** The product is incompatible with strong oxidising agents.

**Hazardous decomposition:** Thermal decomposition may emit toxic fumes of CO<sub>2</sub>, NO and smoke. Occasionally hydrogen cyanide gas in reduced atmospheres. Nitrogen and its compounds sometimes oxides of nitrogen. Hydrogen chloride gas and other compound of chlorine. Hydrogen fluoride gas, other compound of fluorine and water.

**Hazardous Polymerisation:** Will not occur

### 11. TOXICOLOGICAL INFORMATION

**Formulation:**

**Acute oral LD<sub>50</sub>:** >5000 mg/kg.

**Acute dermal LD<sub>50</sub>:** >2000 mg/kg.

**Acute inhalation LC<sub>50</sub>:** >1.0 mg/l.

Inert is irritating to respiratory system.

**Acute skin irritation:** Slightly skin irritant.

**Acute eye irritation:** Slightly eye irritation.

**Sensitization:** Non-sensitizer.

**Teratogenicity/ Development:** Negative.

**Mutagenicity:** Negative.

**Carcinogenicity:** Limited evidence of carcinogenic effect

**Toxicity class:** WHO III.

### 12. ECOLOGICAL INFORMATION

In animals: Hydrolysed to the parent acid, **Fluroxypyr**, which is extensively metabolised and rapidly excreted, mainly unchanged, in the urine.

In plants: Hydrolysed to the parent acid, **Fluroxypyr**.

In soil: In laboratory soils, the ester is rapidly converted to **Fluroxypyr** in all soil types, with DT<sub>50</sub> <7 d. In soil/water slurries, DT<sub>50</sub> 2–5 h (pH 6–7, 22–24 °C). Total DT<sub>50</sub> for **Fluroxypyr-meptyl** and **Fluroxypyr acid**: soil, aerobic 23 d; aquatic, aerobic 14 d; aquatic, anaerobic 8 d; field dissipation 36.3 d.

**ECOTOXICOLOGY: Technical.**

**Birds:** LD<sub>50</sub>: mallard ducks & bobwhite quail >2000 mg/kg.

**Fish:** LC<sub>50</sub> (96 hours): For rainbow trout: & Golden orfe > solubility limit.

**Daphnia:** LC<sub>50</sub>: > solubility limit.

**Bees:** Not hazardous to bees.

LD<sub>50</sub>: (contact and oral) >100 µg/bee.

**Earthworms:** LC<sub>50</sub>: >1000 mg/kg.

### 13. DISPOSAL CONSIDERATION

**Pesticide disposal:** Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product cannot be reused or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers.

Comply with local legislation applying to waste disposal.

**Container disposal:** Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed.

**TRIPLE RINSE** empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow draining for at least 30 seconds after the flow has slowed down to a drip. Thereafter rinse the container three times with a volume of water equal to a minimum of 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.

Comply with local legislation applying to waste disposal.

### 14. TRANSPORT INFORMATION

**UN No.:** 1993

**Road Transport ADR/IRD:**

Class: 3.3

Packing group: III

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Shipping name: Pesticide, Liquid, **Flammable**, N.O.S.  
**Fluroxypyr acid 200 (g/l)**

**Maritime Transport IMDG/IMO:**  
 Class: 3.3  
 Packing group: III  
 Shipping name: Pesticide, Liquid, Toxic, **Flammable**, N.O.S.  
**Fluroxypyr acid 200 (g/l)**

The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed. All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.

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### 15. REGULATORY INFORMATION

**Symbol:** F, Xi, Xn, N  
**Indication of danger:** **Flammable**, Irritant, Harmful and Environmentally Hazardous Substance.

**Risk phrases:**

- R 10** **Flammable.**
- R 20/21/22** Harmful by inhalation in contact with skin and if swallowed.
- R 36/37** Irritation to eyes and respiratory system
- R 48** Dangerous of serious damage to health by prolonged exposure.
- R 51/53** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R 65** Harmful: may cause lung damage if swallowed.

**Safety phrases:**

- S 1/2** Keep locked up and out of the reach of children.
- S 3/7/9** Keep container tightly closed in cool, well-ventilated place
- S 13** keep away from food, drinks and animal feedingstuffs.
- S 15** keep away from heat
- S 24/25** Avoid contact with skin and eyes.
- S 29/35** Do not empty into drains; dispose of this material and its container in a safe way
- S 36/37/39** Wear suitable protective clothing, gloves and eye/face protection.
- S 42** During fumigation and spraying wear suitable respiratory equipment.
- S 45** In case of an accident or if you feel unwell, seek for medical advice
- S 60** This material and its container must be disposed of as hazardous waste.

**Compiled:** September 2014  
**Reviewed:** May 2019  
**Revision no:** (3)  
**Next revision:** May 2024

For detailed information on revisions, contact the Registration holder.

### 16. OTHER INFORMATION

**Packing and Labelling:** Packed in 1, 2, 5, 10, 20, 25 and 50 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.