

CIRCADEN[®] Insecticide

SOUTH AFRICA Registration Number/Registrasie Nommer L11488, Act No. 36 of 1947/Wet 36 van 1947

**READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS**

GROUP/GROEP	28	InsecticideS	INSEKDODERS
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A suspension concentrate Insecticide for the control of a range of chewing and sucking insect pests on crops as listed.	'n Suspensie konsentraat insekdoder vir die beheer van verskeie bytende en suigende insek plae op gewasse soos aangedui.
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HAZARD STATEMENTS:

Harmful if inhaled

Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS:

Prevention:

Avoid breathing mist or vapors.

Use only outdoors or in a well-ventilated area.

Avoid release to the environment.

Response:

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a **POISON CENTER/** doctor if you feel unwell.

Collect spillage.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.



WARNING

Active ingredient

cyantraniliprole
(anthranilic diamide) – 200 g/L

Aktiewe bestanddeel

siantraniliprool
(antraniliese diamied) – 200 g/L

Net Volume

1L

Netto Volume

REGISTRATION HOLDER/REGISTRASIEHOUER

FMC Chemicals (Pty) Ltd

Company Registration Number: 1988/001451/07

West End Office Park

Building C, Cnr West Ave & Hall Street

Centurion, 0014

www.ag.fmc.com/za/en

Batch Number

Date of Manufacture

Expiry Date

Printed on Container

Printed on Container

**3 Years from date of
manufacture**

Lot Nommer

Datum van Vervaardiging

Vervaldatum

UN Number/VN Nommer	3082
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For any emergency or poisoning contact: Griffon Poison Information Centre (24 hrs) Vir enige noodgeval of vergiftiging kontak Griffon vergiftiging Inligtingsentrum (24 hr)	+27-(0)-82-446-8946
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WARNINGS:

HAZARD STATEMENTS:

- Harmful if inhaled
- Very toxic to aquatic life with long lasting effects

- **WITHHOLDING PERIODS:** The following minimum number of days (withholding periods) between last application and harvest must be adhered to:

Cabbage.....	28 days
Peppers.....	70 days
Tomatoes.....	70 days

- Handle with care.
- This product is not likely to be hazardous by inhalation or skin contact.
- Very toxic to aquatic life with long lasting effects.
- Keep out of the reach of children, uninformed persons and animals.
- Store in the closed labelled original container at temperatures not exceeding 25 °C away from food and feed.
- Use of this material in a manner or at a time other than in accordance with the directions may cause excessive residues or other undesirable results.
- **RE-ENTRY:** Do not enter treated area until spray deposit has dried.

DISCLAIMER:

Although this remedy has been extensively tested under a large variety of conditions, the registration holder does not warrant that it will be efficacious under all conditions because the action and effect thereof may be affected by factors such as abnormal climatic and storage conditions; quality of dilution water, compatibility with other substances not indicated on the label and the occurrence of resistance of the pest against the remedy concerned as well as by the method, time and accuracy of application. The registration holder furthermore does not accept responsibility for damage to crops, vegetation, the environment or harm to man or animal or for lack of performance of the remedy concerned due to failure of the user to follow the label instructions or to the occurrence of conditions which could not have been foreseen in terms of the registration. Consult the supplier immediately in the event of any uncertainty.

PRECAUTIONS:

PRECAUTIONARY STATEMENTS:

Prevention:

- Avoid breathing mist or vapors.
- Use only outdoors or in a well-ventilated area.
- Avoid release to the environment.

Response:

- **IF INHALED:** Remove person to fresh air and keep comfortable for breathing. Call a **POISON CENTER/** doctor if you feel unwell.
- Collect spillage.

Disposal:

- Dispose of contents/ container to an approved waste disposal plant.

HAZARDOUS INGREDIENTS:

Contains reaction mass of 5-chloro-2-methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3-one (3:1).
May produce an allergic reaction.

- Do not inhale spray mist.
- Do not enter treated areas until the sprayed solution has dried.
- Persons in contact with the Insecticide should wear protective clothing (long-sleeved shirts and long pants, boots with socks, gloves and eye protection).
- Wash yourself after application of the product.
- Wash contaminated clothing after working with the product.
- In case of eye contact wash immediately with plenty of water.
- In case of ingestion call a physician or poison centre.
- Do not eat, drink or smoke whilst applying or mixing, or before washing hands and face.
- Prevent contamination of feed, food, eating utensils and drinking water.
- This product is toxic to silkworms. Do not allow product to drift to silkworms production areas or mulberry orchards. To avoid harm, caution must be used in areas where desirable non-target species may be present.
- This product is toxic to bees. Do not spray when bees are actively foraging.
- **DO NOT APPLY DIRECTLY TO AND PREVENT DRIFT ONTO OTHER EDIBLE CROPS THAN INDICATED ON THE LABEL, GRAZING, RIVERS, DAMS AND AREAS NOT UNDER TREATMENT.**
- Clean applicator after use and dispose of wash water where it will not contaminate crops, grazing, food or water.
- **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.

FIRST AID MEASURES:

General advice:

Never give anything by mouth to an unconscious person.

Inhalation:

No hazards which require special first aid measures. If inhaled, remove to fresh air. Consult a physician after significant exposure.

Skin contact:

Take off contaminated clothing and shoes immediately. Wash off immediately with soap and plenty of water. Wash contaminated clothing before re-use. In the case of skin irritation or allergic reactions see a physician.

Eye contact:

No specific intervention is indicated as the compound is not likely to be hazardous. If easy to do, remove contact lens, if worn. Rinse carefully with water for 15 – 20 minutes. If eye irritation persists, consult a specialist.

Ingestion:

No specific intervention is indicated as the compound is not likely to be hazardous. Not a

probable route of exposure. However, in case of accidental ingestion, call a physician. **DO NOT** induce vomiting unless directed to do so by a physician or poison control centre. If victim is conscious: Rinse mouth with water.

Most important symptoms and effects, both acute and delayed:

Symptoms: No cases of human intoxication are known and the symptoms of experimental intoxication are not known. Skin contact may provoke the following symptoms: sensitizing effects.

Indication of any immediate medical attention and special treatment needed:

Treatment: Treat symptomatically.

RESISTANCE STATEMENT:

CIRCADEN® Insecticide contains cyantraniliprole, a Group 28 Insecticide, based on the international IRAC* Mode of Action classification. Repeated and exclusive use of **CIRCADEN® Insecticide** or other Group 28 Insecticides may create resistant insect populations. Follow these recommendations to prevent or delay the development of Insecticide resistance to **CIRCADEN® Insecticide**:

- Avoid using the same mode of action (same IRAC group number) on consecutive generations of insect pests.
- Make no more than 2 applications of **CIRCADEN® Insecticide** or other Group 28 products per generation to the same insect species on a crop. Application to the next generation of target pest(s) must be with an effective product with a different mode of action (non-Group 28 Insecticide).
- Apply **CIRCADEN® Insecticide** or other Group 28 Insecticides using a “window” approach to avoid exposure of multiple successive pest generations to the same mode of action. A window is defined as the period of residual activity with Insecticides of the same mode of action within an approximate 30 day period.
- No more than two successive applications of **CIRCADEN® Insecticide** may be made within a treatment window to protect new growth or control high pest populations.
- Following a window of use with **CIRCADEN® Insecticide** or other Group 28 Insecticides, rotate to a window using effective Insecticides with a different mode of action.
- Incorporate IPM practices (cultural and biological control) into the pest management program.
- Monitor insect populations for loss of field efficacy.
- Target the most sensitive life stage of the pest, typically small larvae.
- If you experience difficulty with control, and resistance is a reasonable cause, immediately consult your local company representative or agricultural advisor for the best alternate method of control for your area.

*IRAC - Insecticide Resistance Action Committee. For additional information on insect resistance visit the web at <http://www.irac-online.org>.

INTEGRATED PEST MANAGEMENT:

FMC supports the use of Integrated Pest Management (IPM) programs to control pests. This product may be used as part of an IPM program, which can include biological, cultural, and genetic practices, aimed at preventing economic pest damage. IPM principles and practices include field monitoring or other detection methods, correct target pest identification, population monitoring, rotation of Insecticides with different modes-of-action, and treating when target pest populations reach locally determined action thresholds. Consult your local cooperative extension service, professional

consultants or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop or site systems in your area.

BENEFICIAL ARTHROPODS:

CIRCADEN® Insecticide helps conserve beneficial arthropods. While these beneficial arthropods cannot be relied upon to control pests, they are of potential value and can be monitored along with pests in pest management programs on these crops.

CIRCADEN® Insecticide is toxic to bees exposed to direct treatment on blooming crops or weeds. Apply to blooming crops or crops with blooming weeds when bees are not active, preferably after daily bee flight.

GENERAL INFORMATION:

MODE OF ACTION:

CIRCADEN® Insecticide has a novel mode of action and acts by binding to and activating insect ryanodine receptors. This activation stimulates release and depletion of calcium from the internal stores of muscles, resulting in impaired muscle regulation, paralysis and ultimately insect death. Death of the pest occurs within 2-3 days, but inhibition of insect movement and feeding occurs rapidly.

CIRCADEN® Insecticide is active as a larvicide through ingestion (stomach action) and through cuticular absorption (contact action).

CIRCADEN® Insecticide controls mainly Lepidopteran insect pests, but also some insect pests in other Orders e.g. Coleoptera, Diptera etc. Applications of **CIRCADEN® Insecticide** have been shown to leave substantial populations of many beneficial insects (predators, parasitoids and pollinators) as well as predatory mites and can therefore be used effectively in Integrated Pest Management (IPM) programmes.

GENERAL:

Cyazypyr™ (Cyantraniliprole) -containing products must be used in accordance with the directions for use on the specific product labels, or supplemental labels, and other local stipulations. Therefore, it is prohibited to use any product powered by FMC Cyazypyr™ insect control active ingredient in any manner that is inconsistent with its labeling. Always read the entire label before use.

DIRECTIONS FOR USE:

USE ONLY AS DIRECTED

MIXING INSTRUCTIONS:

Application equipment must be clean and free of previous pesticide deposits before applying **CIRCADEN® Insecticide**. Fill mixing tank 1/4 to 1/2 full of water. Add **CIRCADEN® Insecticide** directly to the tank. Mix thoroughly to fully disperse the Insecticide, once dispersed continued agitation is required.

Use mechanical or hydraulic means; do not use air agitation. Observe the most restrictive of the labelling limitations and precautions of all products used in mixtures.

Acidification of application solution - All soil applications of **CIRCADEN® Insecticide** should be adjusted to approximately pH 5 - 6.

Adjust the pH of the application solution after all products being applied have been added to the tank. Once prepared, an application solution may be held for up to 8 hours before starting the application. Do not store the application solution overnight.

COMPATIBILITY:

The compatibility of **CIRCADEN® Insecticide** has not been fully investigated. **CIRCADEN® Insecticide** is compatible with **Bladbuff® 7 (SOUTH AFRICA Reg. No. L8121, Act No. 36 of 1947, NAMIBIA Reg. No. N-AR0823, Act No. 36 of 1947).** & **Bladbuff® 12 (SOUTH AFRICA Reg. No. L8201 Act No. 36 of 1947).**

Consult the labels of the above-mentioned products for full particulars.

Since formulations may be changed and new ones introduced, it is recommended that users premix a small quantity of a desired tank mix and observe for possible adverse changes (settling out, flocculation, etc.). Avoid mixtures of several materials and very concentrated spray mixtures. This product can be mixed with pesticide products labelled for use on crops on this label in accordance with the most restrictive of label limitations and precautions. No label dosage rates should be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing.

TANK MIXING SEQUENCE:

Add different formulation types in the sequence indicated below:

(Allow time for complete mixing and dispersion after addition of each product)

1. Water soluble bags (WSB)
2. Water soluble granules (SG)
3. Water dispersible granules (WG, XP, DF)
4. Wettable powders (WP)
5. **CIRCADEN® Insecticide** and other water based suspension concentrates (aqueous flowables) (SC)
6. Water soluble concentrates (SL)
7. Suspo-emulsions (SE)
8. Oil based suspension concentrates (OD)
9. Emulsifiable concentrates (EC)
10. Surfactants, oils, adjuvants
11. Soluble fertilizers
12. Drift retardants

* Unless otherwise specified by manufacturer directions for use or by local experience.

SPRAY TANK CLEAN-OUT:

- Prior to application, start with clean, well maintained application equipment.
- Immediately following application, thoroughly clean all application equipment to reduce the risk of forming hardened deposits which might become difficult to remove.
- Drain application equipment.
- Thoroughly rinse sprayer and flush hoses, boom, and nozzles with clean water.
- Clean all other associated application equipment.
- Take all necessary safety precautions when cleaning equipment.
- Do not clean near wells, water sources or desirable vegetation.
- Dispose of waste rinse water in accordance with local regulations.

APPLICATION METHODS:

Soil Applications:

CIRCADEN® Insecticide must be applied in a manner that ensures the product is in the root zone. **CIRCADEN® Insecticide** must be in the root zone to provide effective control of target pests. **CIRCADEN® Insecticide** is most effective when it is applied so that the roots are at or near the site

of application; manage irrigation so that significant quantities of **CIRCADEN® Insecticide** remain in the root zone where it is most effective.

Seedling tray drench:

For **CIRCADEN® Insecticide seedling tray drench**, apply the product as a **drench, 1-3 days before transplanting**, using one of 2 different methods below:

Method 1: By spraying the solution at the relevant volume and concentration with a back-pack (low pressure) on the plant's trays, then rinse with clear water, and wait until all the solution has been absorbed by the plugs, in order to make sure all the product has been loaded into the plugs.

Method 2: By soaking the plants in a solution of water + Insecticide at the relevant volume and concentration until all the solution has been absorbed completely by the plant plugs.

* Whatever the method is, a preliminary test should be done on some plants with water only, to determine the appropriate volume of water to be used, so that the plugs completely absorb the solution. The volume must be high enough so that plugs are thoroughly treated, but not too much so that there is no remaining solution in the trays in case of tray soak application, or no significant leaching out of the plant modules after overhead spray + rinsing application.

Plant hole drench (Transplant water treatment):

Transplants should be adequately watered before transplanting. Apply at transplanting in a minimum of 50 ml of treatment solution per transplant. Ensure water volume is sufficient to thoroughly wet the root zone. Refer to the Resistance Management section of this label for further guidance on follow-up treatments.

Drip application:

Dripper placement should be adjacent to plant roots. Product should be applied in the first 3rd of the drip irrigation cycle, starting just after the system has come up to pressure.

CROP/PEST	APPLICATION RATE	RECOMMENDATIONS/REMARKS
<p>CABBAGE:</p> <p>Diamond back moth (<i>Plutella xylostella</i>)</p> <p>Cabbage aphid (<i>Brevicoryne brassicae</i>)</p> <p>Cabbage webworm (<i>Hellula undalis</i>)</p> <p>African bollworm larvae (<i>Helicoverpa armigera</i>)</p>	<p>Seedling tray drench application: 0.015 ml/plant</p> <p>Plant hole drench application: 0.015 ml/plant</p> <p>(maximum rate of 600 ml/ha)</p>	<p>Seedling tray drench</p> <ul style="list-style-type: none"> • Apply CIRCADEN® Insecticide 1-3 days before transplant (according to either method 1, or 2 described above under Application Methods). • For pre-transplant application, the recommended application rate is 15 ml of product per 1000 plant plugs, making sure all the preparation containing the product is taken up by the plugs. • Do not exceed 15 ml/1000 plants and a maximum rate of 600 ml of product per ha. <p>Plant hole drench</p> <ul style="list-style-type: none"> • Planting soil must be at field capacity at planting. • Apply CIRCADEN® Insecticide as a drench application at transplanting, in 50 ml transplant water/plant. • The application water used should ideally have a pH of between 5 and 6. Application water with a pH > 7 should be acidified to within above-mentioned pH range with a phosphoric acid acidifier, e.g. Bladbuff 5. • If pest populations persist following the CIRCADEN® Insecticide application, use a window approach by using products with a different mode of action for follow up sprays, to ensure that consecutive pest generations are not treated with diamide products. • Most beneficial insects and predatory mites are unaffected by applications of CIRCADEN® Insecticide. • Make no more than 1 application per season.

CROP/PEST	APPLICATION RATE	RECOMMENDATIONS/REMARKS
<p>SWEET PEPPERS:</p> <p>African bollworm larvae (<i>Helicoverpa armigera</i>)</p> <p>Green peach aphids (<i>Myzus persicae</i>)</p> <p>Thrips (<i>Thrips</i> sp.)</p> <p>Glasshouse White Fly (<i>Trialeurodes vaporariorum</i>)</p>	<p>Drip application: 375 ml/ha</p>	<p>Drip application</p> <ul style="list-style-type: none"> • Apply 2 CIRCADEN® Insecticide drip applications. • Apply the first application 5-7 days after transplant. • Follow up with a second application 14 days later. • Adjust the pH of the system's pesticide injection tank to pH 5-6 at application. • The alternation of CIRCADEN® Insecticide with Insecticides that have a different mode of action is recommended. Apply the 2 CIRCADEN® Insecticide applications consecutively (= block application) within an application window (30 days) before switching to Insecticides with other modes of action. • Make no more than two applications per season. • Dripper placement should be adjacent to plant roots. CIRCADEN® Insecticide should be applied in the first 3rd of the drip irrigation cycle and then washed in to the soil with clean drip water. <p>Most beneficial insects and predatory mites are unaffected by applications of CIRCADEN® Insecticide.</p>
<p>TOMATO:</p> <p>Leaf miner (<i>Liriomyza huidobrensis</i> and <i>Liriomyza trifolii</i>)</p> <p>Tomato leaf miner (<i>Tuta absoluta</i>)</p> <p>African bollworm larvae (<i>Helicoverpa armigera</i>)</p> <p>Sweet-potato whitefly (<i>Bemisia tabaci</i>)</p> <p>Potato Tuber Moth (<i>Phthorimaea operculella</i>)</p>	<p>Plant hole drench application: 0.015 ml/plant</p> <hr/> <p>Drip application: 375 ml/ha</p>	<p>Plant hole drench</p> <ul style="list-style-type: none"> • Planting soil must be at field capacity at planting. • Apply CIRCADEN® Insecticide as a drench application at transplanting, in 50 ml transplant water/plant. • The application water used should ideally have a pH of between 5 and 7. Application water with a pH > 7 should be acidified to within above-mentioned pH range with a phosphoric acid acidifier, e.g. Bladbuff 5. • If pest populations persist following the CIRCADEN® Insecticide application, use a window approach by using products with a different mode of action for follow up sprays, to ensure that consecutive pest generations are not treated with diamide products • Most beneficial insects and predatory mites are unaffected by applications of CIRCADEN® Insecticide. <hr/> <p>Drip application</p> <ul style="list-style-type: none"> • Apply 2 CIRCADEN® Insecticide drip applications. • Apply the first application 3-5 days after transplant. • Follow up with a second application 7 days later. • Adjust the pH of the system's pesticide injection tank to pH 5-6 at application. • The alternation of CIRCADEN® Insecticide with Insecticides that have a different mode of action is recommended. Apply the 2 CIRCADEN®

CROP/PEST	APPLICATION RATE	RECOMMENDATIONS/REMARKS
		<p>Insecticide applications consecutively (= block application) within an application window (30 days) before switching to Insecticides with other modes of action.</p> <ul style="list-style-type: none"> • Make no more than two applications per season, at minimum 7 day interval. • Dripper placement should be adjacent to plant roots. CIRCADEN® Insecticide should be applied in the first 3rd of the drip irrigation cycle and then washed in to the soil with clean drip water.

ACKNOWLEDGEMENT OF REGISTERED PRODUCTS:

- Bladbuff 7 (SOUTH AFRICA Reg. No. L8121, Act 36 of 1947, NAMIBIA Reg. No. N-AR0823, Act 36 of 1947) and Bladbuff 12 (SOUTH AFRICA Reg. No. L8201 of Act 36 of 1947) are the registered product of Nulandis (Pty) Ltd

