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

Insecticide

CARBOSTEM 480 EC

Reg. No. L 7859 Act No. 36 of 1947

6: 10/05/2024 – May2024

An emulsifiable concentrate systemic insecticide and nematicide for the control of the agricultural pests on the crops as listed.

ACTIVE INGREDIENT

carbosulfan (carbamate) 480 g/ℓ

GROUP	1A	INSECTICIDE
GROUP	N-1A	NEMATICIDE

DANGER

Hazard Statements:

Harmful if swallowed.
May be fatal if swallowed and enters airways.
May be harmful in contact with skin.
Causes mild skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
Fatal if inhaled.
Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Wear impervious rubber gloves and boots, protective clothing and chemical safety goggles.
Avoid release into the environment.

ℓ

villa

UN Number: 2992

Registration holder: UNIVERSAL CROP PROTECTION (PTY) LTD.
Co. Reg. No. 1983/008184/07
65 Botes Road, Glen Marais, Kempton Park, 1619
Tel. (011) 396 2233
Website: www.villacrop.co.za

IN CASE OF POISONING / 24 HR EMERGENCY NUMBERS:
Griffon Poison Information Centre (National): +27 82 446 8946
Poison Information Helpline (National): +27 861 555 777
24 Hr Transport / Spill emergency no: (Hazcall24) +27 86 044 4411
(Client: Villa Crop Protection)

REFER TO DETAILS AS PRINTED ON CONTAINER / BAG

DIRECTIONS FOR USE ENCLOSED
Batch Number:
Date of Manufacture:

RESTRICTED

CARBOSTEM 480 EC
Reg. No. L 7859 Act No. 36 of 1947
IRAC INSECTICIDE GROUP CODE: 1A
IRAC NEMATICIDE GROUP CODE: N-1A

ACTIVE INGREDIENT:
Carbosulfan (carbamate) ……480 g/ℓ

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WARNINGS

Withholding periods:

Allow the following number of days between last treatment and harvest or use as food or feed:	
Cotton, Maize and Grapevines	84 days

IMPORTANT: THE RECOMMENDED WITHHOLDING PERIOD BETWEEN LAST APPLICATION AND HARVEST MEETS LOCAL RESIDUE REQUIREMENTS BUT MAY NOT MEET EXPORT REQUIREMENTS. IF THE TREATED CROP IS INTENDED FOR EXPORT, CONSULT THE RELEVANT EXPORTING ORGANISATION REGARDING MRL REQUIREMENTS AND WITHHOLDING PERIODS. WHEN THIS PRODUCT IS APPLIED ACCORDING TO THE LABEL RECOMMENDATIONS INDICATED BELOW, THE LOCAL MRL WILL NOT BE EXCEEDED. UNIVERSAL CROP PROTECTION (PTY) LTD CANNOT, HOWEVER, BE HELD LIABLE FOR EXPORT CROPS EXCEEDING THE IMPORT TOLERANCES OF OTHER COUNTRIES.

Hazard statements:

Harmful if swallowed.
May be fatal if swallowed and enters airways.
May be harmful in contact with skin.
Causes mild skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
Fatal if inhaled.
Very toxic to aquatic life with long lasting effects.

- Handle with extreme care.
- Toxic to bees and wildlife.
- Store under lock and key in a cool, dry place.
- Store away from food, feed, fertilizer and other agricultural products.
- Keep out of reach of children, uninformed persons and animals.
- Do not use this product in any way contrary to the directions on this label.
- **CARBOSTEM 480 EC** has been tested on the most important commercial cultivars without any phytotoxic effects. More susceptible cultivars may be released in future which need to be tested; for this apply **CARBOSTEM 480 EC** to a limited test area before commercial applications are made.
- **Re-entry interval:** Do not enter treated area within 2 days after treatment unless wearing protective clothing.
- **In case of poisoning call a physician and make this label available to him/her.**

Although this remedy has been extensively tested under a large variety of conditions, the registration holder does not warrant that it will be effective under all conditions. The activity and effect thereof may be affected by factors such as abnormal soil, 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, 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 by 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 in the event of any uncertainty.

PRECAUTIONS

Precautionary statements:

Do not breathe fumes, mist, vapours, or spray.
Wash hands thoroughly after handling. Do not touch eyes.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release into the environment.
Wear impervious rubber gloves and boots, protective clothing and chemical safety goggles.
In case of inadequate ventilation wear respiratory protection.
IF SWALLOWED OR INHALED: Get emergency medical help immediately.
IF ON SKIN or skin irritation or rash occurs: Get medical help.
IF ON SKIN: Wash with plenty of water and non-abrasive soap.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical help.
Rinse mouth.
Do NOT induce vomiting.
Collect spillage.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of content/container to suitable landfill in accordance with local regulations.

- Wash contaminated clothing immediately after use.
- All persons in direct contact with the product, including markers must wear protective clothing as well as a suitable respirator.
- Avoid drift of spray onto other crops, grazing, rivers, dams and areas not under treatment.
- Clean applicator after use. Dispose of rinsate where it will not contaminate crops, grazing, rivers, dams and boreholes.
- Prevent contamination of food, feeds, drinking water and eating utensils.
- **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. **Never** re-use the empty container for any other purpose.

FIRST AID TREATMENT

Skin contact: Remove patient from source of poisoning and keep them quiet and re-assured.
Remove contaminated clothing as well as shoes and leather goods. Wash body with non-abrasive soap and lots of water. Persons providing first aid must wear gloves to avoid self-contamination. Seek medical advice if irritation occurs.
Eye contact: Flush eyes immediately with large amounts of clean water for at least 15-20 minutes. Occasionally lift the upper and lower lids. If present, remove contact lenses after 5 minutes and continue rinsing. **Seek medical attention.**
Inhalation: Remove patient from source of poisoning to a well-ventilated area and loosen clothing around the neck. Perform artificial respiration and administer oxygen if necessary. Keep patient warm and calm. **Seek medical advice immediately.**
Ingestion: If concentrate or water diluted mixture has been swallowed, do not induce vomiting – call a doctor. Vomiting should be supervised by a physician because of possible pulmonary damage by aspiration of the solvent. If product concentrate has been swallowed, **immediately take patient to the nearest doctor**. Do not induce vomiting. **Get medical attention immediately**. Administration of gastric lavage or oxygen should be performed by qualified medical personnel.

NOTE TO PHYSICIAN

The active ingredient is a reversible cholinesterase inhibitor. Administer 2 to 4 mg atropine sulphate intravenously, repeated at 10 minute intervals until atropinisation appears. Do not use morphine, oximes such as 2 PAM. If in eye install one drop of homotropine. Treat symptomatically and supportively. Keep

patient under observation. If product is aspirated into the lungs during ingestion or vomiting, chemical pneumonia may be caused. If vomiting occurs, prevent vomit from being inhaled.

Relevant hazardous components	
Carbosulfan	480 g/ℓ
Emulsifier	< 100 g/ℓ
Solvent	< 400 g/ℓ

In case of poisoning, call the following number: +27 82 446 8946 (Griffon Poison Information Centre).
In case of a chemical spill call the following 24 Hr Transport / Spill emergency number: +27 86 044 4411 (Hazcall24 / Client: Villa Crop Protection).

SYMPTOMS OF HUMAN POISONING
Headache, fatigue, faintness, giddiness, excessive sweating, nausea, abdominal pain, vomiting, muscle twitching, unusually small pupils, respiratory distress and coma.

RESISTANCE WARNING
For resistance management, **CARBOSTEM 480 EC** is a group code 1A insecticide. Any insect population may contain individuals naturally resistant to **CARBOSTEM 480 EC** and other group code 1A insecticides. The resistant individuals can eventually dominate the insect population if these insecticides are used repeatedly. These resistant insects may not be controlled by **CARBOSTEM 480 EC** or any other group code 1A insecticide.
To delay insecticide resistance:

- Avoid exclusive repeated use of insecticides from the same insecticide group code. Alternate or tank mix with registered products from different insecticide group codes.
- Integrate other control methods (chemical, cultural, biological) into insect control programmes.

CARBOSTEM 480 EC contains carbosulfan and is an IRAC group code N-1A nematicide. Although resistance of **CARBOSTEM 480 EC** in plant-parasitic nematodes has not been proven in the field, repeated exclusive use of any product may facilitate resistance development and / or lead to a reduction in control due to other causes (e.g. enhanced microbial degradation). Rotation of nematicides with different mode of actions is recommended. IPM programs using cultural practices, sanitation, planting of nematode resistant or tolerant varieties, scouting or other detection methods, proper pest identification and rotation of nematicides with different mode of action will help prevent economic nematode damage.

Since the occurrence of resistance cannot be forecast, users are advised to keep treated crops under close observation. If treatment is not effective following the use of **CARBOSTEM 480 EC** as recommended, a resistant population may be present. If a resistant population is positively identified, consideration should be given to prompt use of an insecticide with a different mode of action for which there is no record of resistance to the relevant pest. For specific information on resistance management, contact the registration holder of this product.

Mode of action:
CARBOSTEM 480 EC contains **carbosulfan,** a carbamate compound which belongs to the IRAC group code 1A and N-1A. It is a systemic insecticide and nematicide active by contact and ingestion. It inhibits the acetylcholinesterase enzyme at the acetylcholine binding site which blocks hydrolysis of acetylcholine and results in hyperexcitation.

RESTRICTED USES:
A NIOSH approved, air-purifying ventilator MUST be used during mixing and application by the applicator and all persons in the immediate vicinity.

DIRECTIONS FOR USE: Use only as directed.

NOTICE TO USER:
Read the entire label before application. This agricultural remedy is to be used only in accordance with the instructions on the label. It is an offence under the Act to use this agricultural remedy for any purpose in a manner contrary with the directions on the label.

Compatibility:

- **CARBOSTEM 480 EC** is compatible with insecticides **Ichiban 100 EW** and **Lambada Aquamul.**
- The compatibility of **CARBOSTEM 480 EC** with other products depends on the formulations of the respective products as well as the quality of the spray water to be used. As formulations change from time to time, it is recommended that a physical compatibility test be done prior to the tank mixture being made. Do not make tank mixtures with other agricultural remedies or foliar feed products without first ensuring that no reduction in efficacy or crop damage will result. When mixing **CARBOSTEM 480 EC** with other products, follow all label instructions carefully.

Mixing Instructions:

The efficacy of **CARBOSTEM 480 EC** can be reduced by very hard water (> 1 000 ppm solutes) as well as by water with a high pH. To ensure optimum efficacy, **CARBOSTEM 480 EC** should be applied in water of pH 4.5 to 5.5. Where spray water is outside of this pH range, the water should be buffered to within the recommended pH range by use of a registered pH buffer. Where a pH buffering agent is used, this must be thoroughly mixed into the total spray water volume before the **CARBOSTEM 480 EC** is added.

Should the spray water pH be in the correct pH range, the following procedure may be followed: Half-fill the spray tank with suitable water. Shake the container thoroughly prior to use. Add the required quantity of **CARBOSTEM 480 EC** to the water. Fill the spray tank to the desired volume. **Tank mixtures must be sprayed out immediately and not allowed to stand in the spray tank overnight**. Spraying equipment must be thoroughly flushed out at the end of the spraying operation.

Post Spray Equipment Cleaning

It is essential to rinse the spray tank and all hoses with a 0.1 % solution of either calcium chloride or ammonium hydroxide or the recommended rate of **Protank® liquid cleaner** according to the product label. Allow this solution to stand in the spray equipment for 15 minutes; empty the spray equipment; repeat the rinsing with a 0.1 % solution of calcium chloride or ammonium hydroxide for 15 minutes; rinse all equipment with water. Nozzles and fitters must be cleaned individually. Rinse water and solution should be drained in a cesspool or drain where it will not contaminate any water source.

APPLICATION METHODS

Ensure that the equipment is correctly calibrated and is checked regularly during application to ensure even and accurate application. **Constant agitation throughout the spray operation is essential**. Only clean water should be used.

Ground Application:

- **CARBOSTEM 480 EC** can be applied with conventional high volume spraying equipment fitted with hollow cone nozzles to give medium to fine droplets. Calibrate the apparatus prior to application to ensure that the correct dosage is applied. Ensure that the distribution of the spray is uniform throughout the target area.
- Spray volumes must be adapted according to the size, growing pattern and leaf density of the crop. Use an appropriate spray volume to ensure thorough coverage and wetting of all the plant parts. Monitor efficacy within 3 days and reapply if necessary.

USE RESTRICTIONS

- Only apply **CARBOSTEM 480 EC** using an accurate and safe application technique.
- If **CARBOSTEM 480 EC** is used in a tank mix with other recommended products, consideration should be given to the restrictions of those respective products.
- Do not apply this product in combination or tank mixture with any other product or agricultural remedy which is not specifically listed on this label. Universal Crop Protection (Pty) Ltd accepts no responsibility for any negative effects experienced if the instructions on this label are not adhered to, unless a Villa Crop Protection (Pty) Ltd representative was consulted beforehand.

Application to maize:

For Preventive treatment at planting time of maize, **CARBOSTEM 480 EC** should be applied in a small volume of water while planting is taking place. This requires the use of low-pressure spraying equipment mounted on the tractor/planter. The equipment must be capable of applying low volumes of spray solution and must be accurately calibrated.

The spray nozzles of the spray equipment should be mounted on a planter in such a way that a 50 mm band of spray solution can be sprayed into the open planting furrow, before it is closed and compressed by the presswheel. It is preferable that the nozzle should be angled slightly backwards towards the presswheel so that some soil (5 to 10 mm) will have fallen over the seed by the time the spray solution is sprayed into the furrow.

Calibration should be carried out as follows: -

i) Determine the time which it takes the tractor and planter to cover 100 metre when planting. This will be X minutes.
ii) Add some clean water to the spray tank and run the spray equipment for X minutes as determined above, whilst simultaneously collecting water from each nozzle. All nozzles should deliver the same amount of liquid. Find the average delivery per nozzle. This gives Y mℓ in X minutes or Y mℓ per 100-metre row length.
iii) Divide the average delivery per nozzle into the volume of the spray tank multiply 1000 thus:

$\frac{\text{Volume of spray tank x 1000}}{\text{Average delivery per nozzle in mℓ}}$	=	Number of rows of 100 meters which can be sprayed.

iv) To determine the amount of **CARBOSTEM 480 EC** to be added per tank load, multiply the **CARBOSTEM 480 EC** dosage required, namely 50 mℓ/100-metre row length or 40 mℓ/100-metre row length, by the number of rows (determined above) that can be sprayed.
v) Mix this amount of **CARBOSTEM 480 EC** with an equivalent amount of water. Mix thoroughly and pour into the spray tank. Top up the tank with clean water while agitating.

NOTE: Ensure that each nozzle delivers at least 450 mℓ over the 100-metre distance. On this basis a spray tank with a capacity of 150 litres will hold enough spray solution for 3 hectares of maize planted in 0.9 metre rows.

RECOMMENDATIONS

Crop/Pest	Application Rate	Remarks
Maize Black maize beetle Stalkborer Nematodes Ground weevils Leafhopper False wireworm	50 mℓ / 100 m planting furrow applied in at least 400 mℓ water.	Apply preventatively and should control stalkborer for up to 6 weeks. In situations where reduced tillage is practiced, pest populations may be higher. In such circumstances it is important to monitor the degree of control from the first application and if necessary, re-apply at the recommended rate. **Follow-up rain or irrigation is essential for adequate absorption and translocation.**
Maize Nematodes Ground weevils Leafhopper False wireworm	40 mℓ / 100 m planting furrow applied in at least 400 mℓ water.	Will suppress black maize beetle and stalkborer.
Maize Ground weevils (*Protostrophus spp.*)	10 mℓ / 100 m planting furrow applied in at least 2 ℓ water.	Ground weevils will only be killed after feeding – limited insect damage can, therefore, still occur after application to young plant.

Crop/Pest	Application Rate	Remarks
Maize Maize stalk borer (*Busseola fusca*)	420 mℓ **CARBOSTEM 480 EC** / ha **PLUS** 170 mℓ **LAMBADA AQUAMUL** / ha.	**WARNING** ***The risk of Arrested Ear Syndrome (Blunt Ear Syndrome) increases dramatically when any applications (crop protection products, fertilizers, foliar feeds, adjuvants, etc.) are made between the V10 – VT (10th leaf collar – cob tassel emergence) growth stages of maize plants. Applications between the V10-VT growth stages of the crop must be avoided as far as possible.*** For optimal efficacy, apply **CARBOSTEM 480 EC** in tank mix with a registered pyrethroid such as **LAMBADA AQUAMUL** as an early corrective spray against young larvae. For best results, treatment must be applied before the larvae enter the stalks. Do not apply to plants that are under drought stress. The systemic activity decreases in mature plants. Apply only to plants that are actively growing and no later than the stage when the tassels or ears are enclosed by the flag leaf. **Ground application:** Apply as an early corrective treatment in 300 litre per hectare when the young larvae are noticed and not later than when 10% of the crops exhibit shot-hole damage. A second application 10 – 12 days later may be needed when the larvae are bigger than 10 mm or if a re-infestation occurs.

Remarks

- For corrective control of *Protostrophus spp.* (ground weevils) in maize apply **CARBOSTEM 480 EC** when the first signs of infestation on the young seedlings are noticed. The sprayer should be rigged up in such a way that each nozzle sprays a band 300 mm wide over the maize row. In order to achieve good coverage calibrate the sprayer to deliver 2 ℓ of spray solution per 100 m row length.
- For early corrective control of 1st and 2nd generation maize stalkborer (*Busseola fusca*) in maize, apply **CARBOSTEM 480 EC** in tank mixture with a registered pyrethroid (e.g., **LAMBADA AQUAMUL** (L. 9583) or **ICHIBAN 100 EW** (L. 9248) once the first signs of shot-hole damage are observed on Sweetcorn, and when 10% of the plants show shot-hole damage in maize. Follow all directions for use on the relevant pyrethroid label.

Crop/Pest	Application Rate	Remarks
Cotton Cotton aphids (*Aphis gossypii*)	Apply 500 mℓ / ha for plants up to 60 cm in height. For plants higher than 60 cm apply 750 mℓ / ha.	Applications should be based on scouting. Dosage rate depends on physical plant size. Apply in 100 litres per hectare for plants smaller than 60 cm. Apply in 200 litres per hectare for plants taller than 60 cm. Commence spraying when aphids are observed in dry land cotton or when honeydew is detected in irrigation cotton.

Remarks

- Apply **CARBOSTEM 480 EC** as a full cover spray in sufficient water to thoroughly wet the foliage (ground application).

Crop/Pest	Application Rate	Remarks
Vines Bud mite (*Colomerus vitis*)	Apply 50 mℓ/100 ℓ water.	Apply three sprays. Apply when shoots are 5 to 10 cm long and the second and third sprays at 14-day intervals.

Remarks

- Bud mites migrate to new growth from their overwintering position. Application must take place during migration.
- Contact ARC-Infruitec Nietvoorbij for latest recommendations and ensure that applications meet export requirements.

ICHIBAN 100 EW (L 9248) is a registered product of
UNIVERSAL CROP PROTECTION (PTY) LTD.

LAMBADA AQUAMUL (L 9583) is a registered product of
MERIDIAN AGROCHEMICAL COMPANY (PTY) LTD.