


WARLOCK® 19.2 EC

Reg. no. L9872 Act/Wet 36 of/van 1947
N-AR 01801, W130923

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

GROUP	6	INSECTICIDE
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<p>An emulsifiable concentrate insecticide with stomach action for the control of the pests as listed on apples and pears, barley, canola, citrus, maize and sweetcorn, pomegranates, stone fruit, tomatoes, table and wine grapes, and wheat.</p>	<p>’n Emulgeerbare konsentraat-insekdoder met maagaksie vir die beheer van die plae soos gelys op appels en pere, gars, granate, kanola, koring, mielies en soetmielies, sitrus, steenvrugte, tafel- en wyndruiwe en tamaties.</p>
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 <p>DANGER</p>	<p>Hazard statements May be fatal if swallowed and enters airways. May cause an allergic skin reaction. Causes serious eye damage. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.</p> <p>Precautionary statements Wear protective gloves; protective clothing; eye protection and face protection. Avoid release to the environment.</p>
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ACTIVE INGREDIENT/AKTIEWE BESTANDEEL

emamectin benzoate (avermectin) 19.2 g/L emamektien-bensoaat (avermektien)

NET VOLUME/NETTO VOLUME

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REGISTRATION HOLDER/REGISTRASIEHOUER

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UN no.: 3082

EMERGENCY NUMBERS:

Griffon Poison Information Centre: +27 82 446 8946
 Tygerberg Poison Information Centre: +27 861 555 777

Batch number
 Date of manufacture
 Expiry date

Lotnommer
 Datum van vervaardiging
 Vervaldatum

WARNINGS

- May be fatal if swallowed and enters airways.
- May cause an allergic skin reaction.
- Causes serious eye damage.
- May damage fertility or the unborn child.
- May cause damage to organs through prolonged or repeated exposure.
- Very toxic to aquatic life with long lasting effects.

Withholding periods (minimum number of days between last application and harvest):

Apples, pears	14 days
Barley	14 days
Canola	14 days
Citrus	14 days
Maize, sweetcorn	14 days
Pomegranates	14 days
Stone fruit	7 days
Table and wine grapes	7 days
Tomatoes	1 day
Wheat	14 days

Export crops: The local maximum residue levels (MRLs) will not be exceeded if **WARLOCK® 19.2 EC** is used according to the label instructions. However, ADAMA South Africa (Pty) Ltd cannot be held responsible if export MRLs are exceeded. The local export marketing bodies must be consulted regarding application timing, withholding periods and specific tolerances of countries where produce will be exported to.

Note: Growing crops under shading, such as nets or plastic covers, could possibly influence the rate of decline of residues of **WARLOCK® 19.2 EC**. Contact the local ADAMA South Africa (Pty) Ltd technical advisor for more information.

- Handle with care.
- Harmful to animals.
- Harmful to birds.
- Toxic to bees.
- Store in a cool, dry place away from light and food and feedstuffs.
- **Re-entry:** Do not enter treated area until spray deposit has dried off.

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 insect 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 humans or animals 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 in the event of any uncertainty.

PRECAUTIONS

- Keep out of reach of children.
- Obtain, read and follow all safety instructions before reuse.
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Avoid release to the environment.
- Wear protective gloves, protective clothing, respiratory protection and eye and face protection.
- Wash face, hands and any exposed skin thoroughly after handling. Do not touch eyes.
- Take off contaminated clothing and wash it before reuse.
- Contaminated work clothing should not be allowed out of the workplace
- Do not eat, drink or smoke when using this product.
- If exposed, concerned or feel unwell get medical advice.
- Get medical help if you feel unwell.
- IF SWALLOWED: Get emergency medical help immediately. Rinse mouth. Do NOT induce vomiting.
- IF ON SKIN: Wash with plenty of soap and water.
- If skin irritation or rash occurs get medical help. Specific treatment (see supplemental first aid instructions on this label).
- IF IN EYE: Immediately rinse with water for several minutes. Remove contact lenses if present, and easy to do. Get medical help
- Store locked up.
- Collect spillage.
- Dispose of contents/ container to an approved waste disposal plant.

- Do not spray during periods of bee activity.
- Clean spray equipment after use and dispose of wash water where it will not contaminate crops, grazing, rivers or dams.
- Invert the empty container over the spray or mixing tank and allow to drain 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 10% of that of the container. Add the rinsings to the contents of the spray tank before destroying the container.

- Destroy the empty container by perforation and never use for any other purpose.
- Avoid drift of spray mist to other crops, grazing, rivers, dams and areas not under treatment. Do not spray if the wind velocity exceeds 2 meters per second (7 km per hour).
- Prevent contamination of food, feedstuffs, drinking water and eating utensils.

RELEVANT SUBSTANCES

Chemical name	w/w %	CAS no.
Hydrocarbons, C10, aromatics, <1% naphthalene	>60%	EC no: 918-811-1
N-Methyl-2-pyrrolidone	10 – 30%	872-50-4
Benzenesulfonic acid, C10-13- (linear)alkyl derivs., calcium salt	<10%	EC no: 932-231-6
2-Ethylhexan-1-ol	<10%	104-76-7
Emamectin-benzoate	<10%	155569-91-8
2,6-di-tert-butyl-p-cresol	<10%	128-37-0

FIRST AID

In case of accident or unwellness, seek medical advice immediately. Provide this label and SDS to medical personnel for treatment. Emergency personnel should wear protective clothing appropriate to the type and degree of contamination.

Immediately remove contaminated clothing and remove the affected person from the contamination area. Keep the person warm, calm and covered up. First Aid personnel should pay attention to their own safety.

Take the container label or product name with you when seeking medical attention.

Eye contact: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Seek immediate medical attention/advice.

Skin contact: Remove all contaminated clothing and shoes. Rinse the skin immediately with plenty of water for 15 to 20 minutes under the safety shower. Consult a physician if necessary.

Inhalation: Immediately remove the affected victim from exposure to an area with fresh air. If breathing is difficult have qualified personnel administer oxygen. If breathing has stopped, administer artificial respiration. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician.

Ingestion: Call a poison control center or medical practitioner immediately for treatment advice. If conscious, rinse mouth thoroughly with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. If spontaneous vomiting occurs, have victim lean



forward with head down to avoid breathing in of vomit, rinse mouth and administer more water. Get medical attention immediately if symptoms occur.

TOXICOLOGICAL INFORMATION

Antidotes

None known. Treat symptomatically.

Symptoms of human poisoning

None known.

NOTICE TO THE USER: This agricultural remedy is to be used only according to the directions of this label. It is an offense under the Act to use this product inconsistent with the directions on the label.

RESISTANCE WARNING

For the purpose of resistance management, **WARLOCK® 19.2 EC** is classified as a group code 6 insecticide. Any insect population may contain individuals naturally resistant to **WARLOCK® 19.2 EC** and other group code 6 insecticides. The resistant individuals can eventually dominate the insect population if these insecticides are used repeatedly. These resistant insects may not be controlled by **WARLOCK® 19.2 EC** or any other group code 6 insecticides.

To delay insecticide resistance:

- Avoid exclusive repeated use of insecticides from the same insecticide group code. Alternate or tank-mix with products from different insecticide group codes.
- For tank mixing or alternation with products in other insecticide group codes, refer to applicable individual product labels.
- Integrate the control methods (chemical, cultural, biological) into insecticide control programmes.

For specific information on resistance management contact the registration holder of this product.

Abamectin and emamectin benzoate are IRAC mode of action group 6 insecticides. These active ingredients are registered for the control of pests on various crops, including tree nuts, citrus fruit, pome fruit, stone fruit, grapevine and various vegetables. Although these active ingredients have the same mode of action, they target different pests whose life cycles often overlap. To delay the onset of resistance, these insecticides may not be applied within 30 days of each other. If an application of abamectin is made, an application of emamectin benzoate can only be made 30 days thereafter, and vice versa. This waiting period should be increased in the case of target insects with a longer lifecycle to ensure insects from consecutive generations are not exposed to the same mode of action group insecticide. Apply registered insecticides with a different mode of action within the 30 day period following an application or block applications of abamectin or emamectin benzoate. Always conform to all label recommendations and only use registered dosages.

MODE OF ACTION

6: Glutamate-Gated Chloride Channel (GLUCL) Allosteric Modulators – Allosterically activate glutamate-gated chloride channels (GluCl_s), causing paralysis. Glutamate is an important inhibitory neurotransmitter in insects.



USE RESTRICTIONS

Do not use **WARLOCK® 19.2 EC** during flowering and when bees are actively foraging, as the product can be toxic to bees.

DIRECTIONS FOR USE

Use only as indicated.

General

WARLOCK® 19.2 EC controls Lepidoptera larvae effectively, and is effective against Lepidoptera larvae resistant to organophosphate, pyrethroids, and insect growth regulators. The product has a translaminar action and is rapidly absorbed into the plant. Larval feeding stops after the ingestion of plants treated with **WARLOCK® 19.2 EC**, with death occurring within four days.

Note: Growing crops under shading, such as nets or plastic covers, could possibly influence the rate of decline of residues of **WARLOCK® 19.2 EC**. Contact the local ADAMA South Africa (Pty) Ltd technical advisor for more information.

Emergency registrations

Emergency registration has been granted for a number of crops, as indicated in the table listing the application rates for the particular crops and targets. Please note that when a product has been approved for the purpose of emergency registration, it is still under evaluation with regard to efficacy, selectivity and behaviour of residues in the particular crop. Environmental and human safety data have already been evaluated and approved at initial registration of the product.

Compatibility

The compatibility of **WARLOCK® 19.2 EC** with other fungicides or insecticides has not been evaluated. It is advisable always to carry out a physical compatibility test prior to application when **WARLOCK® 19.2 EC** is tank-mixed with other fungicides or insecticides.

Mixing instructions

Half fill the spray tank with water. Add the required volume of **WARLOCK® 19.2 EC** to a small amount of water and mix thoroughly before it is added to the spray tank while agitating. When tank-mixing **WARLOCK® 19.2 EC** with other products, first mix these products separately with water before adding to the spray tank. Wettable powders, water dispersible granules and suspension concentrates should be added to the spray tank first and then followed by **WARLOCK® 19.2 EC**. Fill the spray tank with water while continuously agitating. Do not allow the tank mixture to settle. Refer to the labels of the products that **WARLOCK® 19.2 EC** is to be tank mixed with and adhere to the label instructions. Do not allow spray mixture to stand overnight.

Application

WARLOCK® 19.2 EC can be applied by any suitable medium or high-volume applicator provided it is correctly calibrated, is fitted with an effective agitation mechanism and is able to distribute the spray material evenly over target area. Apply in 300 to 1 000 L of water per hectare, depending on plant height. The use of flat fan nozzles is recommended.

APPLICATION RATES

CROP AND TARGET	DOSAGE	REMARKS
<p>Apples, pears Codling moth (<i>Cydia pomonella</i>)</p>	60 ml/100 L water	<p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Apply at intervals of 7 to 10 days, during the second or following generations of codling moth, but apply to one codling moth generation per season only.</p> <p>Do not apply more than a total of four applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply products with a different mode of action against the next codling moth generations.</p>
<p>African bollworm (<i>Helicoverpa armigera</i>) (Emergency registration)</p>	80–100 ml/100 L water	<p>Monitor for bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Do not apply more than a total of four applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>

CROP AND TARGET	DOSAGE	REMARKS
<p>Barley, wheat</p> <p>African bollworm (<i>Helicoverpa armigera</i>)</p> <p>(Emergency registration)</p>	<p>650 ml/ha</p>	<p>Monitor for bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 days.</p> <p>Ensure thorough coverage of the plants, applying in at least 150 L water per hectare.</p> <p>Do not apply more than a total of two applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>
<p>Canola</p> <p>African bollworm (<i>Helicoverpa armigera</i>)</p> <p>(Emergency registration)</p>	<p>650 ml/ha</p>	<p>Monitor for bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, at intervals of 7 days.</p> <p>Ensure thorough coverage of the plants, applying in at least 150 L water per hectare.</p> <p>Do not apply more than a total of two applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>

CROP AND TARGET	DOSAGE	REMARKS
<p>Citrus</p> <p>False codling moth (<i>Thaumatotibia leucotreta</i>)</p> <p>African bollworm (<i>Helicoverpa armigera</i>)</p> <p>(Emergency registration)</p>	<p>80–100 ml/100 L water</p>	<p>Monitor for false codling moth and African bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Do not apply more than a total of four applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>
<p>Maize and sweetcorn</p> <p>Fall armyworm (<i>Spodoptera frugiperda</i>)</p>	<p>625 ml/ha</p>	<p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage, before larvae migrate into the maize ears.</p> <p>The application rate depends on the level of infestation and size of the larvae. Apply in an integrated pest management programme, alternating with products with a different mode of action, at intervals of 7 days. Start with control measures as soon as the pest is observed in the production region.</p> <p>Apply a maximum of two applications of WARLOCK® 19.2 EC per growing season.</p>

CROP AND TARGET	DOSAGE	REMARKS
<p>Pomegranates</p> <p>False codling moth (<i>Thaumatotibia leucotreta</i>)</p> <p>African bollworm (<i>Helicoverpa armigera</i>)</p> <p>(Emergency registration)</p>	<p>80–100 ml/100 L water</p>	<p>Monitor for false codling moth and African bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Do not apply more than a total of three applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>
<p>Stone fruit</p> <p>False codling moth (<i>Thaumatotibia leucotreta</i>)</p>	<p>80–100 ml/100 L water</p>	<p>Monitor for false codling moth and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>The application rate depends on the level of infestation and size of the larvae.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Do not apply more than a total of two applications of WARLOCK® 19.2 EC per growing season in stone fruit.</p> <p>To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p>

CROP AND TARGET	DOSAGE	REMARKS
<p>Stone fruit (continued) African bollworm (<i>Helicoverpa armigera</i>) (Emergency registration)</p>	<p>80 ml/100 L water</p>	<p>Monitor for bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Do not apply more than a total of two applications of WARLOCK® 19.2 EC per growing season in stone fruit.</p> <p>To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>
<p>Table and wine grapes False codling moth (<i>Thaumatotibia leucotreta</i>)</p>	<p>80 ml/100 L water</p>	<p>Monitor for false codling moth and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage.</p> <p>Do not apply more than a total of four applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p>

CROP AND TARGET	DOSAGE	REMARKS
<p>Table and wine grapes African bollworm (<i>Helicoverpa armigera</i>) (Emergency registration)</p>	<p>80 ml/100 L water</p>	<p>Monitor for bollworm and start application of WARLOCK® 19.2 EC when the first signs of pest presence are observed. Repeat if necessary, applying at intervals of 7 to 10 days.</p> <p>Apply WARLOCK® 19.2 EC as a full cover spray, ensuring thorough coverage. Calculate the spray volume to be applied per hectare according to the tree-row-volume formula described by Unrath.</p> <p>Do not apply more than a total of four applications of WARLOCK® 19.2 EC per growing season. To delay the development of resistance, apply in an integrated pest management programme, alternating with products with a different mode of action.</p> <p>Emergency registration: Please refer to the comments under 'DIRECTIONS FOR USE'.</p>
<p>Tomatoes African bollworm (<i>Helicoverpa armigera</i>) Tomato semi-looper (<i>Chrysodeixis acuta</i>)</p>	<p>500 ml/ha</p>	<p>Apply when the pest is first noticed, as a full cover spray in 300 to 1 000 L of water per hectare, depending on plant height. Use WARLOCK® 19.2 EC in <u>block applications consisting of two sprays each</u>. Apply two applications 7 days apart (first block). Follow up 21 days later with two applications 7 days apart (second block). Avoid applying the second block application of WARLOCK® 19.2 EC within 21 days of the first block application. Treat re-infestation that occurs within 21 days of the second block application of WARLOCK® 19.2 EC with insecticides from a non-related chemistry group.</p> <p>Apply a maximum of four applications of WARLOCK® 19.2 EC during the growing season.</p>

CROP AND TARGET	DOSAGE	REMARKS
<p>Tomatoes Tomato leafminer (<i>Tuta absoluta</i>)</p>	<p>625–750 ml/ha</p>	<p>Apply WARLOCK® 19.2 EC at the first signs of the pest (larvae) or pest damage, as a full cover spray in 300 to 1 000 L of water per hectare, depending on plant height.</p> <p>The application rate depends on the level of infestation and size of the larvae.</p> <p>Apply as <u>block applications</u> consisting of <u>two sprays each</u>: two applications 7 days apart (first block), followed 21 days later with another two applications 7 days apart (second block). If re-infestation occurs during the 21-day interval between the two blocks of WARLOCK® 19.2 EC apply suitable insecticides from a non-related chemistry group.</p> <p>WARLOCK® 19.2 EC should be used as part of an integrated strategy for the control of tomato leafminer.</p> <p>Apply a maximum of four applications of WARLOCK® 19.2 EC during the growing season.</p>