

GP

MozX

Biological Larvicide



***Innovative and flexible
mosquito control***

***Granular Products* ::::**

Quick Guide

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MozX
Biological Larvicide

Active Ingredient: *Bacillus thuringiensis*, subsp *israelensis*, strain HKA1999.

Formulation: Minimum potency 140 ITU/mg as a granule.

Pack Sizes: 750 g; 15, 20, 500, 1000 kg.

Insects Controlled: Salt marsh mosquito larvae including *Aedes vigilax* and dengue vectors including *Aedes aegypti*.

Apply: Apply by accredited and calibrated aircraft or ground application equipment suitable for application of granular material to ensure even coverage of all pools containing mosquito larvae.

Application Method: Aerial and ground application.

Mode of Action: Group 11B microbial disrupters of insect midgut membranes.

Resistance Management: For insecticide resistance management **GP MozX** is a Group 11B insecticide. Some naturally occurring insect biotypes resistant to **GP MozX** and other Group 11B insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if **GP MozX** or other Group 11B insecticides are used repeatedly. The effectiveness of **GP MozX** on resistant individuals could be significantly reduced.

Since occurrence of resistant individuals is difficult to detect prior to use, Granular Products Pty Ltd accepts no liability for any losses that may result from the failure of **GP MozX** to control resistant insects.

GP MozX may be subject to specific resistant management strategies. For further information contact Granular Products.



Effective

Bti is the key active ingredient for public health programmes



Innovative

Formulated for maximum coverage



Specificity

Not harmful to non-target organisms



Australian

Owned & manufactured



No Waste

No mixing required, no exposure, no preparation



Flexibility

Application via ground, drone or helicopter

Innovative and flexible mosquito control

Mosquitoes kill more humans than any other animal in the world. In fact, the World Health Organisation reported that mosquitoes kill more people in a single day than sharks have over the past 100 years.

Mosquitoes are vectors for many disease causing viruses and parasites, and account for 17% of the estimated global burden of infectious diseases. These include: viral diseases, such as yellow fever, dengue fever, and chikungunya, transmitted mostly by *Aedes aegypti*; parasitic diseases, collectively called malaria; elephantiasis; west Nile virus; eastern equine encephalitis; tularemia; and zika. Some of these are fatal, but most cause painful and debilitating conditions.

Aedes vigilax is found in all states of mainland Australia, mainly around coastal and associated estuary and mangrove zones, but can travel many kilometres from these larval habitats. Due to its distribution it is often referred to as the salt marsh mosquito. It is the major coastal pest species for much of this area, and is the accepted as the major vector of Ross River Fever and Barmah Forest (and other viruses such as Gan Gan). It is also known to carry dog heartworm.

Public health programmes around the world include mosquito control measures. However, mosquitoes have proven to be very adaptable to changing conditions (one species feeds earlier to avoid bed nets) and can quickly develop resistance to chemical controls. Staying one step ahead of these cunning creatures saves lives and medical funds.

Efficacy

Bti (*Bacillus thuringiensis*, subsp *israelensis*) has more than 30 years of use around the world for the control of mosquitoes. It has been proven to be effective, reliable and suitable to environmental conditions where mosquitoes breed.

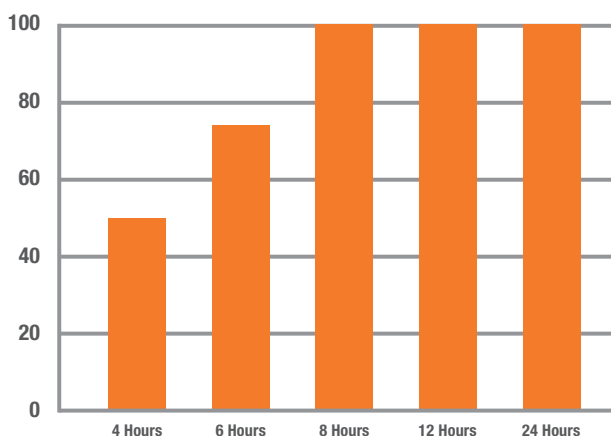
Bti is a naturally occurring bacterium found in soils. It controls the larval stages of certain members of the Diptera family of insects: mosquitoes, black fly and fungus gnats. After ingestion the Bti toxins are activated in the alkaline environment of the insect stomach. This causes perforations of the stomach lining which causes the insect to die of infection or starvation within hours.

GP MozX is the result of Australian innovation; taking a good idea and making it great. Developing a Bti formulation into a granule was a significant breakthrough. **GP MozX** has gone one step further, with a higher bulk density than other formulations available, **GP MozX** can cover a greater area. This reduces loading and application time dramatically, thereby costs as well. As a granule, there is no mixing required; so no worker exposure and no preparation time. Control is achieved in a faster time, saving substantial costs with no worker exposure.

Product	Bulk density (kg/m ³)	% Increase in bulk density compared to industry standard
Industry standard	401	-
Latest industry release	597	148
GP MozX	880	219

Control of *Aedes vigilax* larvae in laboratory facilities in Bundaberg, Qld with GP MozX showed a significant knockdown in 4 hours.

GP MozX provided 100% control by 8 hours. No adult mosquitoes emerged from pupation after exposure to the treated water surfaces for 7 days. In the untreated water, all 80 mosquito larvae pupated and emerged from pupation as adults.



Trials comparing **GP MozX** with industry standards showed no significant differences at 12 hours.

Non-Target Impacts and Resistance

Bti has a low acute and chronic toxicity to people, other mammals, birds, aquatic organisms, earthworms and non-target insects. These are critical attributes when assessing a product that will be used in a broadscale public health programme.

Bti degrades quickly in the environment, particularly in sunlight and acidic soil. In water it settles quickly and binds to soil particles and other organic matter.

It's short half-life and specificity make Bti less likely to develop resistance than chemical insecticides. Although laboratory studies have identified a resistance potential to Bti, there has been no documented occurrence of resistance in more than 30 years use around the world.

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The product label should be consulted before use.

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