Pacific BioLogics

TEKNAR® 1200 SC
BIOLOGICAL MOSQUITO LARVICIDE

Teknar 1200 SC is a selective microbial mosquito larvicide, which contains delta-endotoxin and spores of *Bacillus thuringiensis* subspecies *israelensis* serotype H14. It is for specific control of mosquito (Family Culicidae) larvae. The potency of Teknar 1200 SC is 1200 International Toxicity Units (ITU) per milligram of formulated product.

MODE OF ACTION

Teknar 1200 SC must be ingested by the mosquito larvae to be effective. Following ingestion, the complex delta-endotoxin (pro-toxin) is cleaved into five active toxins by protease enzymes and alkalinity in the larval midgut. The resulting protein toxins then bind with receptor sites on the midgut membrane. The primary action of these toxins consists of interference with pore function and fluid balance, followed by the destruction of the midgut epithelium. Swelling is caused by fluid imbalance and septicaemia in the gut. Death of the mosquito larvae will occur from 6 to 72 hours after treatment, dependant on application rate, temperature, water quality and other factors.

Since activation and binding of the toxins requires specific enzymes, correct pH and appropriate receptors sites, the action of the delta-endotoxin is highly specific to larvae of mosquitoes, black flies, fungus gnats, filter flies and other nematocerous diptera. Black flies *(Simuliidae)* and mosquitoes *(Culicidae)* are the most sensitive families within suborder *nematocera*.

Teknar 1200 SC is most effective on 1st, 2nd, 3rd and early 4th instar mosquito larvae, which actively feed in water. Effectiveness of the product declines gradually with larval age until the middle of the 4th instar. Late 4th instar larvae require increasingly higher doses to effect mortality, especially as larvae cease feeding just prior to pupation. Sub-lethal does of the toxin in the larval stage can affect pupal success by impairing nutritional reserves. Teknar 1200 SC has no effect on pupae or adult mosquitoes.

APPLICATION RATES

SITUATION	INSECT PEST	RATE/HA	CRITICAL COMMENTS
Stagnant and standing ponds, flood and irrigation water, ditches	*Ochlerotatus notoscriptus, Culex annulirostris* (common banded Mosquito) *Culex australicus, Anopheles annuilpes* (common Australian Anopheline)	300 mL to 600 mL	Use for control of 1st to early 4th Instar. Use lower rate when 1st to 3rd instar larvae predominate; higher rate when late 3rd and early 4th instar larvae predominate.
Tidal water and salt marshes, storm water retention areas	*Ochlerotatus vigilax* (saltmarsh mosquito), *Culex sitiens* (saltwater Culex)	600 mL to 1.2 L	May be applied by ground or by air, undiluted or diluted with water.
Water with moderate to high organic content, sewage settling ponds etc.	*Culex quinquefasciatus* (brown house mosquito)	1.2 L per Hectare	Reapply as needed.

Higher rates should be used if:

(1) High populations of larvae are present

(2) High organic matter present (which increases competitive food sources and decreases Teknar 1200 SC uptake).

(3) Later-stage (3rd –4th instar) larvae predominant.

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APPLICATION METHODS

Teknar 1200 SC is a suspension concentrate of solid particles approximately 5 – 8 microns in size. These particles will settle out during storage, therefore before using the product it must always be thoroughly agitated before making up the spray mix. The spray mix should be briefly agitated from time to time; however, continuous agitation should be avoided. Once mixed with water the product should be used within 12 hours.

Teknar 1200 SC may be used diluted or undiluted with water. The volume of application must be sufficient to provide uniform coverage of the target area.

A large range of application equipment can be used for both ground and aerial applications. Including rotary atomisers, mist blowers, hydraulic nozzles etc.

RESIDUAL ACTIVITY

The particulate active ingredients in Teknar 1200 SC will settle out of the mosquito larval feeding zone in time, resulting in a loss of residual activity.

Extended residual effectiveness is not necessary if treating temporary breeding sites or single generation species. In habitats where multiple broods develop, re-treatment schedules should be based on the development cycle of the mosquito larvae. Resurgence of early fourth instar larval numbers is an indicator that it is time for another treatment. The development cycle will depend on temperature, species and habitat characteristics, and can range from one to two weeks. During warm weather, weekly applications of Teknar 1200 SC will give excellent control.

ENVIRONMENTAL SAFETY

Comprehensive non-target studies have shown Teknar 1200 SC to have extremely low toxicity to non-target organisms. Effects on aquatic ecosystems are minimal to non-existent. This combined with very low mammalian toxicity makes Teknar 1200 SC very safe to use at the stated label rates. Teknar 1200 SC is the obvious choice for environmentally sensitive areas.

STORAGE

Teknar 1200 SC should be stored in its' original container, tightly sealed and in a cool dry place. Storage temperatures should not exceed 30^{o}C. The product will store best if kept below 25^{o}C. Short bursts of extreme temperatures can also affect the product, therefore, take only your immediate needs into the field and always endeavour to keep drums as cool as possible. Expiry dates are 12 month from the date of manufacture.

PACK SIZES

For your convenience, Teknar 1200 SC is available in 20, 50 and 200 Litre drums.

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