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## TEKNAR HP-D

Reg. No. L3260 Act No. 36 of 1947

### INTRODUCTION:

**Teknar HP-D** is a specific selective biological larvicide used in the control of mosquito larvae (fam. *Culicidae*) and black fly larvae (fam. *Simuliidae*) including the *Simulium damnosum* complex, the primary vector of river blindness (onchocerciasis) as indicated.

**Teknar HP-D** microbial insecticide comprises crystals derived from the naturally occurring bacterium, *Bacillus thuringiensis* subsp. *israelensis*. However, the strain used is unique, in that it does not, unlike lesser products, form spores. This reduces product viscosity, facilitating easier handling and lessens any environmental concerns of introducing large numbers of viable spores into water bodies. **Teknar HP-D** is highly selective to mosquitoes and black fly larvae, with rapid action (24 hrs) simplifying performance monitoring. The risk of resistance development is low - since Bti was first introduced in the early 1980's, no case of field resistance has been reported. The product is fully effective against insects that have developed resistance to chemical larvicides such as organophosphates, pyrethroids and growth regulators. **Teknar HP-D** is the ideal material to use in areas where chemical approaches are considered inappropriate due to risk of water contamination or hazard to non-target organism. Overall this product has excellent cost efficacy, high potency and reliability that has made it the premium quality Bti of choice in many countries around the world. **Teknar HP-D** continues to set the very high standard by which all other *Bti*'s are judged.

### ACTIVE INGREDIENT:

*Bacillus thuringiensis* 1 200 ITU/mg

### DIRECTIONS FOR USE:

Use only as directed.

TEKNAR HP-D can be applied by ground equipment such as a knapsack sprayer or compression sprayer, and undiluted via quick-release or dribble application or with either rotary or fixed wing aircraft.

PEST	DOSAGE	REMARKS
<b>MOSQUITO LARVAE</b> ( <i>Culicidae</i> )	0.4-0.75 l/ha Floodwater, stagnant or Standing ponds, ditches. Storm water retention areas.	Apply in sufficient water to obtain even distribution when larvae are in 1st to early 4th instar. Use the lower rate when 1 <sup>st</sup> -3 <sup>rd</sup> instar larvae are predominant and the higher rate when late 3 <sup>rd</sup> to early 4 <sup>th</sup> instar larvae are predominant in the mosquito larvae population.
	0.75-1.25 l/ha Lagoons, tidal water Salt marshes, catch basins.	Use higher rate for <i>Anopheles</i> spp. and for water polluted with sewage (moderate Organic content).
	1.25-2 l/ha Water polluted with sewage	



**BLACKFLY LARVAE**  
(*Simuliidae*)

**Water application**

1.2 ppm/10 minutes in flowing water

(Eg Flow rate 10m<sup>3</sup>/second. An amount of 5 litres of **Teknar HP-D** are required

**Aerial Application:**

**Teknar HP-D** can be applied undiluted by either rotary or fixed wing with a flow rate of 10m<sup>3</sup> per second. An amount of 7.2 litres of **Teknar HP-D** is required.

**FORMULATION:**

**Teknar HP-D** is formulated as a liquid flowable concentrate for convenience of handling, to be mixed with water. Suitable for application through conventional ground equipment or undiluted (& minimal dilution) as ULV aerial application.

**MECHANISM OF ACTION:**

The active ingredient consists of four major proteins (27, 65, 128, 135 kDa) that are filtered out of the water by the insect larvae during their normal feeding. Once eaten, very specific gut enzymes, which only function in alkaline conditions of the insect gut, dissolve the proteins into smaller active sub fractions. These then attach themselves to receptor sites located in the gut wall, resulting in spore formation. As a consequence, gut paralysis occurs which leads to the death of the larvae, usually in 24 hours of ingestion. Maximum efficacy and speed of action is exhibited against 1<sup>st</sup> and 2<sup>nd</sup> instars. Late 4<sup>th</sup> instars, pupae and adults are unaffected as none of these feed in water.

**SPECTRUM OF ACTIVITY:**

**Teknar HP-D** has been shown to be effective against the larvae of over thirty species of mosquitoes, black fly (*simuliidae*) and certain biting midges (*chironomidae*). Efficacy is dependent on the quality of the initial application and consequent water coverage.

Dose rates typically range from 0.5-2L/Ha depending on pest species, instars, vegetation present and the degree of pollution. Please see national label for detailed local recommendations. Amongst the mosquito genera controlled by **Teknar HP-D** are the genera *Aedes*, *Anopheles*, *Culex*, *Wyeomyia*, *Psorophora*, *Culiseta* and *Uranotaenia*. The strongest activity is against *Aedes* spp. & *Anophelens*. Although intrinsic activity is high against *Culex* spp., many of these pests breed in dirty (polluted) water where *Bti* proves less effective. **Teknar HP-D** can be used in a number of environments including flood water, small pools, fish ponds, flooded river beds, lagoons, pond margins, salt marshes, flooded gravel, sand pits, sewage beds, rice fields, irrigation ditches, drinking water containers and waste sites such as tyre dumps etc.

**SAFETY:**

**Teknar HP-D** is an environmentally benign insecticide whose active ingredient is naturally occurring, highly specific in activity and practically none toxic to animals and man. It is not toxic to important non-target species such as bees, beneficial insects, predators, parasites, molluscs, crustaceans, amphibians and fish. **Teknar HP-D** is guaranteed free of beta-exotoxin, as confirmed by quality bioassay and as required by many regulatory authorities.

**STORAGE:**

Store in the original container in a cool dry place away from heat and direct sunlight. Storage of temperatures above 30°C and high humidity (above 80%) may impair effectiveness.



**DISPOSAL:**

Dispose of used containers and surplus material safely in accordance with local regulations. Wash spills down with soap and water, but avoid the use of solvents.

**WARNINGS:**

May cause eye irritation. **Teknar HP-D** must be kept in its original container, sealed and stored in a cool, dry and ventilated place. As it is a biological insecticide containing proteinaceous crystals and bacterial spores, it can be damaged by heat and should be protected at all times from high temperatures. Activity may be impaired by prolonged storage above 32°C. At a constant 20-25°C, the shelf life is more than two years. Keep out of the reach of children and animals. Store away from food and feedstuffs.

**PRECAUTIONS:**

Avoid inhalation and contact with eyes and open wounds. Wear face shield and rubber gloves. Wash with soap and water after handling or accidental skin contact. Rinse empty containers three times. Destroy empty container and do not re-use for any other purpose. Avoid contamination of food, feed, eating utensils and drinking water,

**This remedy** has been extensively tested under a large variety of conditions. However, the registration holder does not warrant it will be efficacious under all conditions because the action and effect thereof may be influenced 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 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 in the event of any uncertainty.

**The statements** made in this Data Sheet are, to the best of our knowledge, as accurate as possible, are given only for information and are without guarantee or responsibility on our part regarding the various laws or patents in connection with the use of the product. Further information is available on request.