



## AGNIQUE<sup>®</sup> MMF

### Stops Mosquito & Midge Maturation

*A naturally effective and biodegradable mosquito larvicide and pupicide that aids in the reduction of mosquitoes that may carry and transmit diseases*



# Stop mosquitoes before they become living, breeding, disease carrying adults



## How AGNIQUE® MMF Works

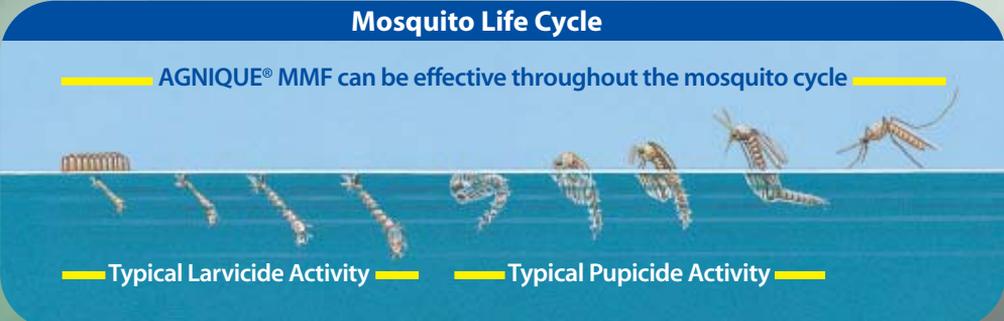
- The invisible monomolecular film quickly spreads over standing water habitats.
- The film reduces the surface tension of the water making it difficult for the mosquito larvae and pupae to attach to the surface which causes them to drown.
- Emerging mosquitoes and midges are unable to fully emerge and will drown.
- Field tests have shown AGNIQUE® MMF to persist for up to 22 days, thus providing long lasting mosquito and midge control.

## Spectrum and Rate of Activity

AGNIQUE® MMF Mosquito Larvicide and Pupicide is effective on all species of mosquitoes and chironomid midges that breed in standing water and require the air/water interface in their lifecycle.

For most mosquito species, larval and pupal stages will be controlled within 48 to 96 hours. The rate of kill will be slower if water temperatures are cold (5–10 °C, 40–50 °F) or for species that don't require as much oxygen (e.g. *aedes aegypti*). The film persistence of AGNIQUE® MMF, coupled with its ability to control emerging adults, will ensure successful control even with these difficult species and/or under these difficult conditions.

AGNIQUE® MMF also successfully controls chironomid midges, and mosquitoes that have minimal surface contact such as *coquillettidia* spp. or *mansonia* spp. These treatments will target the emerging adult lifestage. For midge control, reapplication of AGNIQUE® MMF is recommended every two weeks during the midge season to ensure continuous control.



# A Highly Effective Larvicide and Pupicide

Aids in the reduction of mosquitoes that transmit deadly diseases

## AGNIQUE® MMF

### What is AGNIQUE® MMF?

AGNIQUE® MMF (**MonoMolecular Film**) is a **biodegradable**, ethoxylated alcohol surfactant, made from **renewable plant oils**. Using conventional spraying methods, an invisible monomolecular film rapidly spreads over the surface of standing water habitats. This film interrupts the critical air/water interface in the mosquito's larval and pupal development cycle causing them to drown.

AGNIQUE® MMF is highly effective on all mosquito species. A significant advantage is that mosquitoes and midges cannot develop resistance to AGNIQUE® MMF because control is through a physical mode of action.

### The Advantages of AGNIQUE® MMF Larvicide & Pupicide

- Can be used in **potable water**, recreational areas, **fish bearing waters**, **all irrigated croplands**, and **pastures**.
- Control is by a **physical mode of action** rather than chemical toxicity.
- Can be used around **humans, birds, fish, pets** and all other animals and wildlife.
- Provides **lower application costs** due to low dosage, **excellent spreadability**, and long **residual** period.
- **Total life cycle control** – larvae, pupae and emerging adults.
- Excellent tool for **resistance management**.
- Can be applied by **all conventional spray methods**.
- **Long shelf life** of well over 2 years.

A significant advantage is that mosquitoes and midges cannot develop resistance to AGNIQUE® MMF



# AGNIQUE<sup>®</sup> MMF employs a physical, as opposed to chemical mode of action to control immature mosquitoes and midges

## Non-Target Effects

Most Mosquito Control Insecticides impact non-target species to some degree. Implementation of an integrated pest management strategy that includes surveillance, source reduction, and planned usage of larvicides, pupicides, and adulticides can minimize this effect.

AGNIQUE<sup>®</sup> MMF employs a physical, as opposed to chemical, mode of action to control immature mosquitoes and midges.

AGNIQUE<sup>®</sup> MMF remains on the water's surface and does not enter the water column. Thus, contact with organisms feeding or living throughout the aquatic habitat is minimized. Ninety-six hour, static, acute toxicological tests were conducted to determine the effects of up to a 100 fold excess of a monomolecular film. The results from this test showed no acute effect on any life stage of the following:

- Long-nose killifish
- Freshwater shrimp
- Freshwater amphipod
- Fairy shrimp
- Grass shrimp
- Fiddler crab
- Freshwater isopod
- Snail

## Other published studies have shown:

- Daphnia, dragonfly, bluegill, easter oysters, amphipod, crayfish, mallard duck, many arthropods and microcrustacea are not affected.
- Green tree frog, when exposed to a constant film presence for six months, showed no adverse effects. The frog progressed normally from tadpole to adult through several generations.
- Some arthropods requiring access to the water surface in their lifecycles have shown to be affected by the physical mode of action of AGNIQUE<sup>®</sup> MMF. However complete regeneration of the population occurred in 3 to 7 days.

## Plant Studies

Five species of plants were tested over a four-week period with no observable effects. The five species tested were the black mangrove, saltwort, cordgrass, arrowhead and commercial rice.

## Toxicity Data

Acute Toxicity	
Oral LD50 (rat)	>20,000 mg/kg
Dermal LD50 (rabbit)	> 2,000 mg/kg
Irritation	
Skin (human): non-irritating	
Eye (rabbit): mild irritation; reversible in 7 days	





## AGNIQUE® MMF Application Considerations

AGNIQUE® MMF works differently than other types of larvicides or pupicides. To understand and properly use AGNIQUE® MMF, it must be evaluated based on its own characteristics, the habitat and the mosquito species to be controlled. AGNIQUE® MMF may be slower acting on different mosquito species and at different mosquito life stages, however as long as the film is present AGNIQUE® MMF will effectively prevent adult emergence.

The AGNIQUE® MMF film is only one molecule thick so mosquitoes do not instantly suffocate like they do when exposed to petroleum based pupicide oils. Rather, mosquitoes are unable to attach to the surface of the water and eventually wear down and drown. Because of the variance in oxygen requirements between different mosquito species and different life stages, this can often result in slower control rates which should not be mistaken for poor product performance. With these species, total control may not be achieved until these mosquitoes progress to the fourth instar or even the pupae life stage. However as long as the AGNIQUE® MMF film remains persistent the mosquitoes will not be able to fully emerge so effective control will be achieved.



## Application Habitats and Application Rates

This product is for the control of immature mosquitoes and midges in areas where they breed and develop. This product may be used in habitats including potable water and irrigation waters, permanent and semi-permanent waters, irrigated croplands and pastures, and waters with outlets to natural water bodies.

- **Fresh and Brackish Water:** fresh water and salt marshes, ponds, lakes, storm water, drainage systems and retention & detention basins, roadside ditches, grassy swales, flooded fields and pastures, potable water containers, reservoirs, irrigated croplands, temporary and semi-permanent woodland pools, tidal water, and other areas where water accumulates.
- **Residential Areas:** Ponds, storm water basins, tree holes, rain barrels, landscape and ornamental ponds, tires, storm drains, stationary flower pots, pot holes, gutters, tarps, potable water containers and residential areas where water accumulates and provides ideal breeding habitats for mosquitoes or midges.
- **Polluted Waters:** Sewage lagoons, percolation ponds, animal waste effluent lagoons, septic ditches, waste treatment facility areas, etc.

MOSQUITO HABITAT	Suggested Rate Range
Fresh and Brackish Water*	0.2 – 1.0 gallons/acre (2 – 10 liters/hectare)
Polluted Waters**	0.35 – 1.0 gallons/acre (3.5 – 10 liters/hectare)
MIDGE HABITAT	Suggested Rate Range^
Fresh and Polluted Waters	0.5 – 1.0 gallons/acre (5 – 10 liters/hectare)
* The lower rate (0.2 gallons/acre) is recommended when only pupae control is desired and in sites with no emergent vegetation and low organic content. * Use higher rates when emergent or surface vegetation is present, due to the wicking action of the product. The more vegetation or the drier the vegetation, the higher the required rate. ** Use higher rates in polluted water habitats for effective control. ^ Reapplication is recommended every two weeks during the midge season.	

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Contact your local distributor for additional information.