



# Bistar™ 10WP

*A pyrethroid that will change your perception of synthetic pyrethroids!*



A new tool  
in the fight  
against  
mosquitoes

**FMC**

# Bistar™ 10WP

Bistar™ 10WP is based on the active ingredient bifenthrin, an advanced pyrethroid from the global leader in pyrethroid technology, FMC Corporation.

Bistar™ 10WP has been tested extensively through the World Health Organization Pesticide Scheme (WHOPES).

In addition to extensive laboratory and small scale field testing, large scale field trials have been completed in Mexico, Thailand, Indonesia and India.



## Principal advantages demonstrated by worldwide testing:

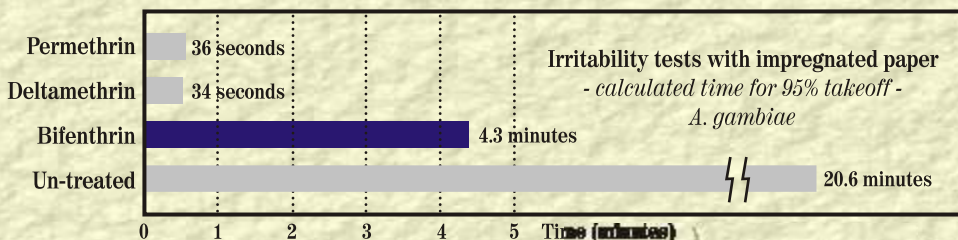
1. Bistar's active ingredient, **bifenthrin**, has a *unique* molecular structure that creates *unique* advantages:
  - *Less skin sensitization to humans*
  - *Less irritating to mosquitoes, allowing for a higher mass control effect*
2. Bistar™ 10WP has an effective residual life up to 6 months against malaria vector mosquitoes at low rates (20-50 mg ai/m<sup>2</sup>); requiring fewer annual treatments.
3. Bistar™ 10WP has superior impact on vectorial capacity of mosquito population, which leads to the reduction of malaria transmission.
4. In addition to controlling *Anopheles* and *Aedes spp*, **bifenthrin** has superior activity against *Culex spp*.

# Efficacy Profile

## 1. Unique activity

Laboratory analysis demonstrated bifenthrin's unique characteristic of less-repellency. Mosquitoes remain on treated surfaces up to 4 times longer than conventional products. This less-repellent aspect of bifenthrin allows the mosquito more time to pick up a lethal dose of insecticide which provides a higher mass control effect on the mosquito population.

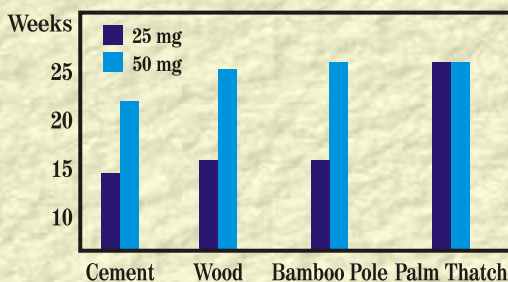
### WHOPES PHASE I LABORATORY EVALUATION



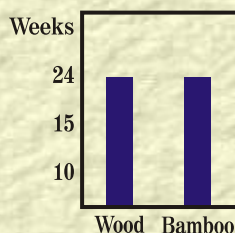
## 2. Long residual activity

Bistar has shown in large scale field tests to **have a sufficient residual activity** to control *Anopheles* spp. for up to 6 months.

Residual activity in Mexico of Bistar against  
*A. Pseudopunctipennis* and *A. Albimanus*  
Bistar at 25 and 50 mg ai/m<sup>2</sup>  
Weeks with control > 75%



Residual activity in Thailand against  
*A. Maculatus* and *A. dirus*  
Bistar at 25 mg ai/m<sup>2</sup>  
Weeks with control > 80%



## 3. Significant impact on malaria transmission

Bistar has been shown to impact the vectorial capacity of mosquito populations resulting in a significant reduction of indigenous malaria cases.

IMPACT OF BISTAR ON  
MOSQUITO AGE STRUCTURE IN MEXICO

Insect	%Parous rate	
	Before spray	After spray
<i>An. Albimanus</i>	47%	17%
Control	49%	45%
<i>An. Pseudopunctipennis</i>	71%	23%
Control	65%	53%

MEAN INDIGENOUS MALARIA CASES IN  
THAILAND BEFORE AND AFTER BISTAR SPRAY

Insecticide	Before Intervention	After Intervention
	Bifenthrin	3.33
Deltamethrin	8.83	5.68
Control	4.18	3.00

## 4. Superior *Culex* spp. activity

Laboratory analysis comparing bifenthrin to all other conventional products found that bifenthrin was the best performing insecticide against *Culex* spp.

IRD/LIN Laboratoire de Lutte controles Insectes Nuisibles - Montpellier

**CONCLUSION:** Bifenthrin can be considered as the best performing insecticide on resistant *Culex p. quinquefasciatus*, particularly when blood feeding reduction is concerned.

Note: Trial included: bifenthrin, deltamethrin, permethrin, cyfluthrin, lambda cyhalothrin, alpha cypermethrin and etofenprox.

# Worldwide Field Trials

Bistar provides outstanding results with **regard to efficacy and residual control in all large scale field trials.**

## MEXICO LARGE SCALE PHASE III MALARIA VECTOR TRIAL

**Malaria vectors:** *Anopheles pseudopunctipennis*, *Anopheles albimanus*

**Competitive standard:** Deltamethrin

### Summary of Results:

- Bistar provided high residuality for more than 5 months
- Bistar had a low repellent effect
- Parous rates were significantly reduced with Bistar, indicating a reduced risk of malaria transmission
- Bistar received high acceptance among residents and spraymen

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## THAILAND LARGE SCALE PHASE III MALARIA VECTOR TRIAL

**Malaria vectors:** *Anopheles minimus*, *Anopheles dirus*

**Competitive standard:** Deltamethrin

### Summary of Results:

- Bistar provided 6 months of residual control.
- Significant reduction in indigenous malaria cases - only in the Bistar sprayed areas.

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## MEXICO DENGUE VECTOR TRIAL

**Trial type:** Alternative control concept - **Rapid spray of high risk houses**

**Dengue vectors:** *Aedes aegypti*

**Competitive standard:** Deltamethrin

### Summary of Results:

- Bistar at 20 mg ai/m<sup>2</sup> gave >75% control **for 28 weeks on** all surfaces
- Bistar was judged to have the better overall performance



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## INDIA LARGE SCALE PHASE III MALARIA VECTOR TRIAL

**Malaria vectors:** *Anopheles culicifacies*

**Competitive standard:** Malathion

### Summary of Results:

- Bistar 10WP sprayed at 25 mg ai/m<sup>2</sup> was very effective in reducing vectorial potential.
- Low excito-repellent action of Bifenthrin caused a mass killing effect of indoor resting population of vector mosquitoes
- The householders did not report any adverse reaction and preferred the spraying with this new product.

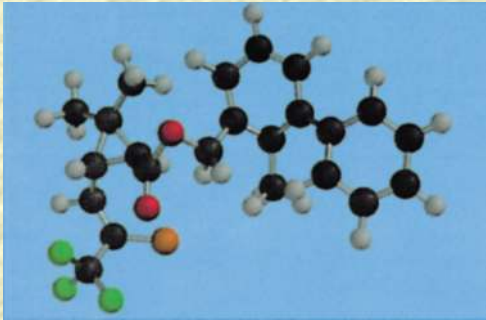
## DOSAGE

Bistar 10WP is recommended at 25mg a.i./sq.m. 125 g of Bistar 10Wp is to be mixed in 10 litres of water and sprayed uniformly over 500 sq.m.area.

## PACKING

The product is available in 10Kg and 20Kg drum.

# Not all pyrethroids are created equal.



*The active ingredient in Bistar™ is bifenthrin, which looks and feels different.*

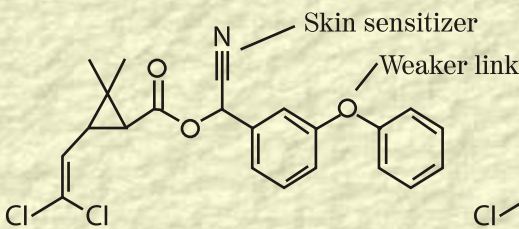
**BIFENTHRIN**

**BIFENTHRIN'S UNIQUE CHARACTERISTICS**

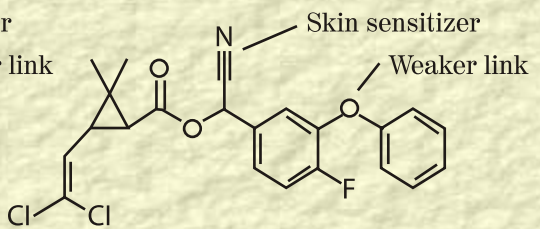
Characteristic	Benefit	Advantage
No alpha-cyano group	→ Non-skin sensitizing	→ Fewer complaints
Strong biphenyl bond	→ More stability	→ Longer residual
Unique structure	→ Less insect irritability	→ Higher mass control effect

## Typical Pyrethroids

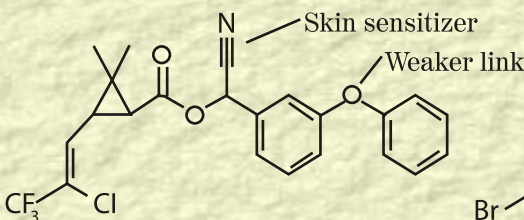
### Cypermethrin



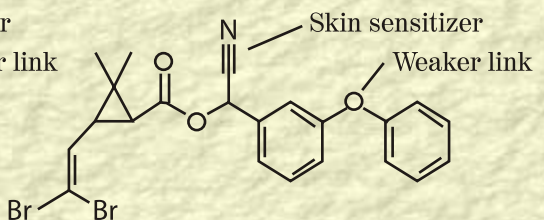
### Cyfluthrin



### Lambda-cyhalothrin



### Deltamethrin





# WHOPES review of Bistar™ 10WP

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“The study showed bifenthrin to be less irritating than permethrin and deltamethrin, even with *Cx. quinquesfasciatus*, which is more susceptible to the irritant effect of pyrethroids and has reduced knock down. Bifenthrin consistently provided a high kill by allowing mosquitoes to rest on treated surface for longer periods”.

Source: WHO/CDS/WHOPES/2001.4

(Other tested pyrethroids include deltamethrin, alpha-cypermethrin, lambda-cypermethrin, cyfluthrin and etofenprox)

“When ranked in comparison with the other tested pyrethroids based on mortality and blood feeding inhibition in tunnel tests at reduced dosage using both *Anopheles* and *Culex*, Bifenthrin performed best in experiments on susceptible strains as well as on resistant strains.”

Source: WHO/CDS/WHOPES/2001.4

(Other tested pyrethroids include deltamethrin, alpha-cypermethrin, lambda-cypermethrin, cyfluthrin and etofenprox)

“With susceptible *Culex* all insecticides performed very well, including at reduced dosage. Against resistant *Culex*, bifenthrin was very effective, far more than the other tested pyrethroids.”

Source: WHO/CDS/WHOPES/2001.4

(Other tested pyrethroids include deltamethrin, alpha-cypermethrin, lambda-cypermethrin, cyfluthrin and etofenprox)

“Following indoor residual application, acceptability of bifenthrin by residents and spray men was good”.

Source: WHO/WHOPES/2001.4

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**BISTAR**<sup>™</sup>  
insecticide

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**FMC**

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