



# nanolcaridina

## Repellent Action

### Active Ingredient: Icaridina

Nanovetor Icaridina is an active ingredient encapsulated in lipid particles, with particle diameter larger than 600nm. The active ingredient encapsulation through Nanovetores technology allows the stabilization of sensitive components, therefore, complex of being formulated and guarantees a higher durability of its properties. Studies have shown that icaridine can be used with safety by children and pregnant women. The product promotes repellency of mosquitoes in general, and is highly effective against *Aedes aegypti*, responsible for the transmission of Zika, Dengue and Chikungunya. Due to its natural features and non-existent toxicity and chemical aggression, the product can be used daily.



### Features:

**Aspect:** White to cream milky liquid  
**Usage Concentration:** 25%  
**pH Stability:** 5,0 a 7,0  
**Solubility:** Water Dispersible  
**Particle:** Lipid  
**Release Trigger:** Enzymatic



### Attributes

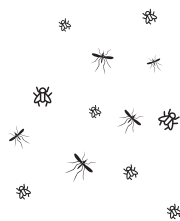
- Long lasting repellent action
- Nanotechnological product



### Usage Indication

Creams, lotions, emulsions, gels, and body sprays.

# Description



The active ingredient Icaridin is derived from pepper and stands out in the market for its repellency potential against *Aedes aegypti*, it has up to 2 times more power than other active ingredients used in the market (Badolo, 2004). *Aedes aegypti* is the mosquito that transmits the virus that causes Dengue, Zika and Chikungunya, serious diseases that can cause microcephaly and even death. The use of Icaridin is not restricted to a single group, as it is possible to use Nano Icaridina for children from 6 months old and even pregnant women, since its active ingredient chemical formulation is not harmful to pregnancy or nursing (CDC).

Nanovetor Icaridina is formulated using lipid nanoparticles, in order to improve the performance and durability of the active ingredient's repellent action on the skin.



The active ingredient Icaridin, applied in free form in a concentration of 10%, provides protection for a period of 3 to 5 hours, and with 20% its protection is from 8 to 10 hours (Bayrepel, 2008). The Nanovetores encapsulation technology allows an increase of the repellent action time, using low concentrations. Clinical trials conducted with a formulation containing just 5.5% of Nano Icaridin provided repellent action against insects for a period up to 8 hours.

## Regulatory Information

INCI NAME	CAS NUMBER
AQUA	7732-18-5
HYDROXYETHYL ISOBUTYL PIPERIDINE CARBOXYLATE	119515-38-7
OLEIC ACID	112-80-1
PPG-15 STEARYL ETHER	25231-21-4
STEARIC ACID	57-11-4
POLYSORBATE 80	9005-65-6
STEARETH-2	9005-00-9
BEHENIC ACID	112-85-6
POLOXAMER 407	9003-11-6
STEARETH-21	9005-00-9
PHENOXYETHANOL	122-99-6
PALMITIC ACID	57-10-3
CAPRYLYL GLYCOL	1117-86-8
BHT	128-37-0

## Physical-Chemical Information

PHYSICAL STATE	LIQUID
FORM	MILKY
COLOR	WHITE TO CREAM
ODOR	CHARACTERISTIC
pH	5.0 TO 7.0
SOLUBILITY	WATER DISPERSIBLE
RELATIVE DENSITY	0.9 TO 1.1 g/ml
CHEMICAL IDENTITY	ORGANIC
CHARACTERIZATION	BLEND

\*As it contains natural active ingredients, the product may change in color and odor.



**STORAGE:**  
KEEP AT ROOM TEMPERATURE, AROUND 25°C.



**COMPATIBILITY:**  
EMULSIONS IN GENERAL.



**INCOMPATIBILITY:**  
ETHANOL AND OTHER ORGANIC SOLVENTS.

## Approved by International Regulations:



China - IECIC



Europa - EC Cosing



EUA - CIR



Australia - AICS Inventor

# Effectiveness Test

Nanovetor Icaridina has been clinically tested for its repellent action against insects in an accredited laboratory.

**Evaluated Product:** Nanovetor Icaridina in Nanostructured Ultra Fluid Base.

**Methodology:** The methodology used to evaluate the repellent effect of products or equipment usually is the introduction of a volunteer's hand impregnated with the product or the hand holding the repellent equipment inside a cage with a large number of mosquitoes, stipulating a test time that may vary, and in the end, counting stings or drawn species.

**Conclusion:** The product NANOVECTOR ICARIDINA IN NANOSTRUCTURED ULTRA FLUID BASE provided 100% repellency against mosquitoes of families Anopheles species An. albimanus, and Culex species quinquefasciatus, during 480 minutes after application, and 100% repellency for 360 minutes for Aedes aegypti species Culicidae species according to EPA methodology - Insect Repellents to be Applied to Human Skin - Product Performance Test Guidelines - OPPTS 810.3700 - EPA Environmental Protection Agency 712 - C-10-001 July 7, 2010.

## Suggested Formula

### Spray Nano Icaridina 25%

#### PHASE I %

Nanovetor Icaridina.....25

#### PHASE II %

Nanostructured Ultra Fluid Base.....75

1- Add phase I gradually on phase II and mix.

## Usage Protocol

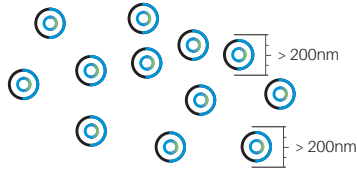
- 1 Apply the spray on the clean and dry skin, pressing the applicator at a distance of about 15 cm from the area you want to protect, in an amount sufficient to obtain a good coverage.
- 2 Spread on the area until complete absorption of the product.

## References

1 - Badolo A, Ilboudo-Sanogo E, Ouédraogo AP, Constantini C. Evaluation of the sensitivity of Aedes aegypti and Anopheles gambiae complex mosquitoes to two insect repellents: DEET and KBR 3023. Trop Med Int Health 2004;9:330-4.

2 - Bayrepel - the new active ingredient in AUTAN® [homepage on the internet]. [cited 2008 April 10] Available from [http://www.autan.com/nqcontent.cfm?a\\_name=Info](http://www.autan.com/nqcontent.cfm?a_name=Info) (see brochure)

# Nanovetores Encapsulation Technology



**Monodispersity**, that ensures control of the particle size, providing adequate permeation to its proposed action.



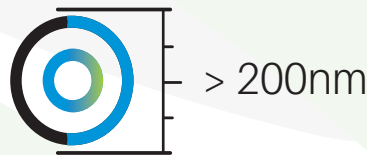
**Enzymatic Specific Trigger Release**, where enzymes present on the skin disintegrate particles, releasing the active ingredient specifically.



**Active Ingredient Protection** against oxidation resulted from interaction with external environment and other components of the cosmetic formulation.



**Water Base.** Active ingredients are manufactured without the use of organic solvents, ensuring safety for users and the environment.



**Secure particles** larger than 200nm, biocompatible and biodegradable.

## Use Encapsulated Active Ingredients and Ensure:

Stability Improvement

Use of sensitive active ingredients (without refrigeration)

Increased compability in the formulation

Increased Solubility

Occlusion of odors

Prolonged release

Reduced dose

Increased effectiveness