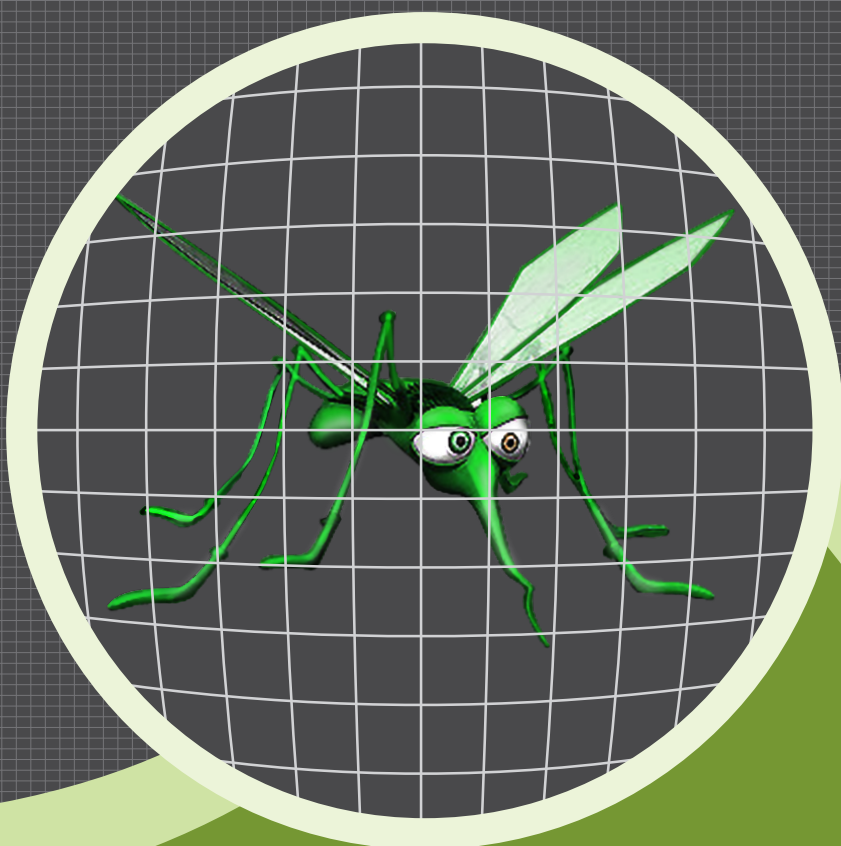


# MAGNet®

LONG LASTING INSECTICIDAL NET

HIGH PERFORMANCE LLIN AGAINST MOSQUITOES AND OTHER INSECTS



MAGNet® is a WHOPES Recommended LLIN made of high density polyethylene (HDPE) monofilaments incorporated with WHO approved insecticide providing long lasting protection against malaria, dengue, chikungunya, yellow fever, filariasis, encephalitis, leishmaniasis and other diseases spread by insect vectors.



ISO 9001: 2008  
ISO 14001:2015  
OHSAS 18001: 2007

Requires No Further Treatment | Heavy Duty | Long Lasting (20+ Washes)  
High Performance | Low Pollution | Ready to Use | WHOPES Recommended

ALSO PACKED IN





## Company Profile

V.K.A. Polymers Private Limited, India, specializes in manufacturing HDPE monofilament mosquito nets for more than 35 years. Backed by their vast experience in the field VKA started manufacturing long lasting insecticidal nets (LLIN). MAGNet® is VKA's registered trademark of high performance LLIN. VKA is the only High Density Polyethylene (HDPE) LLIN manufacturer to have ISO 9001: 2015, ISO 14001:2015 and OHSAS 18001: 2007 certifications.

## What is special about MAGNet® comparing to other HDPE and polyester LLINs?

### Ready to use

No chemical treatment is required.

### Durable

Made of High Density Polyethylene (HDPE) monofilaments.

MAGNet® uses 150 denier heavy duty HDPE yarn, much stronger than 100 denier polyester yarn.

MAGNet® has unsurpassed protection at the seams by using five thread over locking stitch with dual seams, providing double protection.

### Long lasting

No fear of losing the insecticide on washing because MAGNet® uses true controlled release of insecticide incorporated into the HDPE monofilaments.

Very high wash resistance: Bioefficacy is high even after 20 washes.

### Highly cost effective

Technology development, manufacturing and marketing by V.K.A. Polymers Private Limited, India. (ALL UNDER ONE ROOF). Only HDPE LLIN directly marketed by the manufacturer.

MAGNet® is the most affordable LLIN.

### Better bioefficacy

The insecticide (alpha-cypermethrin) used in MAGNet® is a broad spectrum insecticide and is very effective against most common species of mosquitoes.

Insecticidal activity is restored within 24 hours after wash. Unlike some LLINs MAGNet® need not be heated to restore bioefficacy after washing.

Insecticide approved by World Health Organization is used.

### Assured quality

In-house testing facilities for both physical and chemical properties, and strict quality management in each and every stage of manufacturing.

Manufactured by V.K.A. Polymers Private Limited, India, an ISO 9001: 2015, ISO 14001:2015 (TÜV SÜD) and OHSAS 18001: 2007 (TÜV SÜD) certified organization.

Founders of V.K.A. Polymers have more than 35 years of experience in manufacturing HDPE mosquito nets.

### Green product

MAGNet® is packed in oxobiodegradable plastic bags. The net (HDPE) can also be recycled.

### WHO approval

Full WHO recommendation October 2014.



## MAGNet® Specifications [WHO Specification : 454/LN/2 (October 2014)]

Specification (Test Standards)	Range
Fiber analysis (ISO 1833: 1977)	100% High density polyethylene (HDPE)
Fabrication (ISO 8388: 1998)	Warp knitting
Number of filaments in yarn	Monofilament
Number of hanging loops	6 (4 in corners and 2 in mid lengths)
Fire safety	Class 1 (USA safety regulation CFR 1610-CS 191-53)
Linear density (ISO 2060, DUPRO)	150 Denier $\pm$ 7%
Mesh Size ( WHO 2011 : 454/LN/2 July 2011)	Minimum 20 holes/cm <sup>2</sup>
Bursting strength on net (ISO 13938-1: 1999)	$\geq$ 450 kPa
Bursting strength on seams (ISO 13938-1: 1999)	$\geq$ 450 kPa
Dimensional stability to washing on fabrics, 6A, 40°C washing procedure 1 wash cycle and flat dry (ISO 5077: 1984/ISO 6330: 2001)	$\pm$ 10% of initial dimensions
Alpha-cypermethrin concentration (CIPAC method)	5.8 g/kg $\pm$ 25%
LLIN Technology	Incorporation of insecticide into HDPE monofilament
Insecticidal effect (WHOPES)	$\geq$ 80% Functional mortality and/or $\geq$ 95% knockdown after 20 washes
Wash resistance after 5, 10, 15, 20 and 25 washes (CIPAC method)	Retention index 95-99%
Storage stability after storing at 54°C for 2 weeks (CIPAC method)	Alpha-cypermethrin concentration $\geq$ 95% of active content before storage

All MAGNet® sizes are subject to a tolerance of  $\pm$  5%.

Available colors :  
White, Blue, Green



Packed in bales containing  
50 nets

**Also available on request:**  
**Conical nets, custom colors**  
**and sizes.**





## The technology

MAGNet® uses a unique proprietary formulation, developed through research and development, to incorporate the insecticide into high density polyethylene (HDPE) filaments. Unlike polyester and treated nets that have all the insecticide coated on the surface, MAGNet® has it incorporated within the HDPE filaments.

The insecticide from within diffuses to the surface slowly and this makes a very small percentage of the insecticide sufficient enough to kill mosquitoes available on the surface. The true controlled release makes MAGNet® safer than coated nets.

Washing the net removes the insecticide on the surface but this is replenished by the insecticide within the filaments. The special formulation used in MAGNet® restores the bioefficacy within 24 hours. Unlike some LLINs heating is not required to accelerate restoration of bioefficacy after washing MAGNet®.

## The insecticide

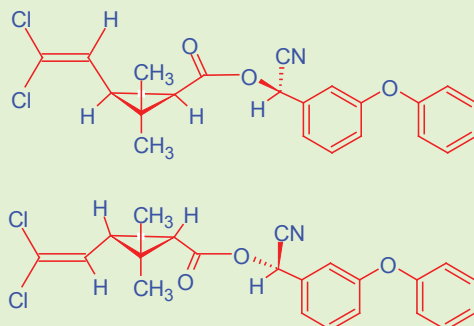
The insecticide used in MAGNet® is WHO approved alpha-cypermethrin. Alpha-cypermethrin is a wide spectrum insecticide. Among the pyrethroids approved by WHO for bed nets, alpha-cypermethrin is reported to have the fastest knockdown effect especially for *A. gambiae*, the malaria vector, and very effective for both susceptible and resistant strains of *A. gambiae*. (Hougard *et al.* Bulletin of the World Health Organization, 2003, 81(5), 324-333.) Mammalian toxicity of alpha-cypermethrin is very low. Alpha-cypermethrin is a racemic mixture comprising (*R*) and (*S*) isomers of  $\alpha$ -cyano-3-phenoxybenzyl-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate. It is a synthetic pyrethroid and the chemical structures of the isomers are:

Chemical family : Synthetic Pyrethroid

Molecular formula:  $C_{22}H_{19}NO_3Cl_2$

Molecular weight : 416.3

CAS Reg. No.: 67375-30-8



## The material

MAGNet® is made up of high density polyethylene monofilaments.

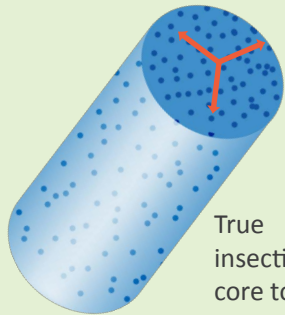


## How does MAGNet® work ?

### Controlled Release Technology

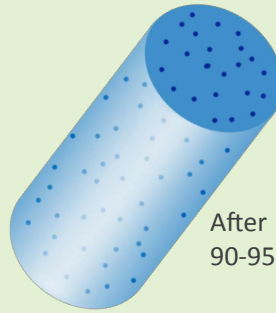
MAGNet® vs. coated polyester LLIN

#### MAGNet®: Insecticide incorporated net



Reservoir of insecticide in the fiber core

True controlled release of insecticide molecules from fiber core to its surface



Insecticide lost from surface on washing is replenished from the reservoir within

After 20 washes: Bioefficacy is 90-95% of new MAGNet®

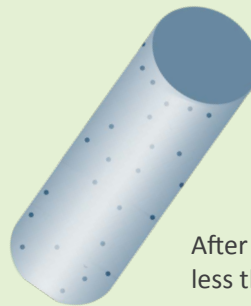
**Sustained bioefficacy and high denier HDPE make MAGNet® really long lasting (up to 5 years)**

#### Insecticide coated polyester net



No insecticide reservoir in fiber core

Entire amount of insecticide is coated on to the fiber surface



No replenishment of insecticide lost from surface is possible

After 20 washes: Bioefficacy is far less than that of new polyester net

**Polyester nets last for a maximum of 2 years due to decreasing bioefficacy and weaker yarn**

The lethal combination of high knockdown and mortality effects of the insecticide incorporated into MAGNet®'s filaments kills almost all mosquitoes sitting on MAGNet®. MAGNet® does not provide mere physical barrier to mosquitoes but gives a far better protection to people sleeping under it due to high bioefficacy. MAGNet® is 100% safe to people sleeping under it.

#### Mortality

High mortality rate sustained even after 20 washes



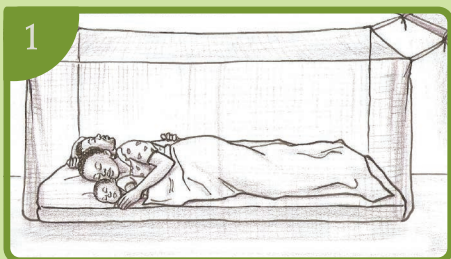
#### Double protection

Provides both chemical and strong physical barriers

#### Knockdown Effect

Causes knockdown of all mosquitoes sitting on MAGNet® even after 20 washes

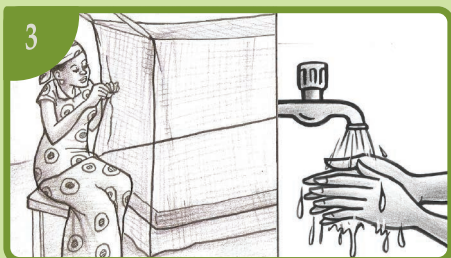
## Directions for use and wash



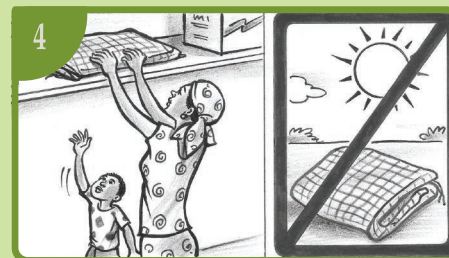
1. Use loops to hang the net above bed and tuck in the net for complete protection.



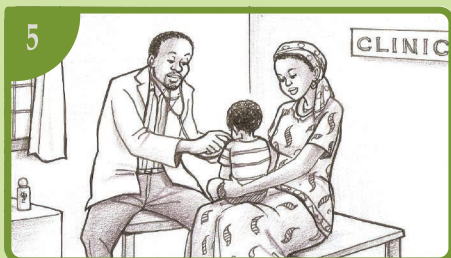
2. Wash the net separately in soap water at room temperature. Hang the net in shade to dry.



3. After handling the net, wash hands thoroughly.



4. When not in use, store the net in a cool, dry place, away from children. Avoid exposure to sunlight.



5. MAGNet® protects against malaria vectors. You should visit the nearest clinic in case of fever.

**IMPORTANT:** Keep the net under ventilation for 24 hours before first use or after prolonged storage.



Hand wash at 30°C



Wash with gloves



No dry cleaning



No ironing



No bleach



Avoid exposure to sunlight



No tumble

Manufactured by



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