



## Microencapsulation

# Permost CS

A controlled-release insecticide for the control of flying and crawling insects for use in public hygiene, food storage, agricultural premises and stables.

**Permethrin 25% w/v (250 g/L)**

### What is Permost CS?

Permost CS is a specialised microencapsulated insecticide containing the active ingredient permethrin. This water-based formulation contains a range of microcapsules of varying sizes, which facilitates controlled release with long residual activity of up to 60 days. The active ingredient is encapsulated in the solution, which reduces operator exposure and offers low mammalian toxicity. Due to these factors, Permost CS can be applied in a wide range of environments.

### Benefits of Permost CS:

- Broad-spectrum insect control
- Approved for use in a wide range of environments
- Residual control – reducing call-backs
- Enhanced performance on difficult surfaces
- Low mammalian toxicity
- Measuring bottle – ensuring optimum operator safety
- Non-staining
- Minimal odour

### Application Environments:

- Domestic/commercial/industrial premises
- Public offices, municipal buildings
- Rubbish/municipal tips, amenity areas such as public parks
- Hospitals (excluding occupied wards)
- Military barracks
- Food handling areas/premises, restaurants, food retailers
- Raw material stores (excluding grain stores), empty grain silos, stores and farm buildings
- Empty dairies
- Animal and avian houses
- Aircrafts, ships, buses, boats, trains and trucks

*Not suitable for direct application to animals.*

### Active Ingredient:

Permethrin 25% w/v (250 g/L)

### Mode of Action:

Permethrin interferes with sodium channels to disrupt the function of neurons causing muscles to spasm, culminating in paralysis and death.

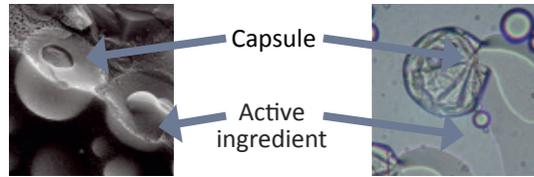
### Target Pests:

- Ants
- Cockroaches
- Earwigs
- Fleas
- Ticks
- Silverfish
- Bed bugs
- Beetles
- Red grain beetles
- Flies
- Mosquitoes
- Clothes moths
- Grain weevils
- Flour beetles
- Darkling beetles
- Red mites
- Food moths
- Hide beetles
- Saw-toothed beetles

## Formulation

### What is microencapsulation?

Microencapsulation is the process of carrying an active ingredient inside a capsule or polymer membrane.



Capsules vary by two factors:

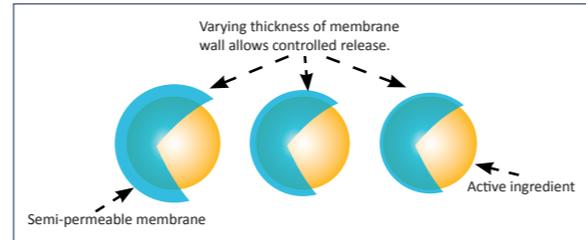
1. Size (ranging from 10 to 110 nanometres)
2. Membrane thickness

## How Does Microencapsulation Work?

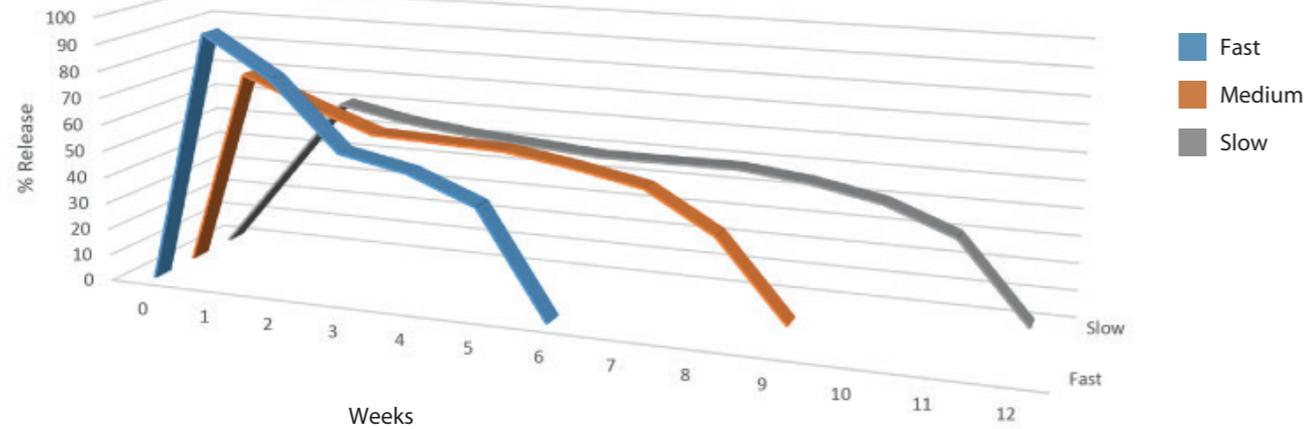
The varying size and thickness of the capsules allows the active to be released by:

1. Diffusion through the pores in the capsule wall
2. As capsules rupture/break on application or later as the membrane breaks down
3. Rupture of thinner membranes on application, allowing immediate release of active

Thicker membranes allow for a controlled release, meaning product can remain effective for up to 3 months.



## Microencapsulation Release



## Controlled Release

Capsule suspension (CS) products are manufactured to contain a mixture of microcapsules that differ in wall thickness, allowing controlled release.

	Fast Release	Medium Release	Slow Release
Wall thickness	16.5 nm	60 nm	102 nm
Release time	0.5 - 1 week	2 - 4 weeks	6 - 8 weeks
Residual activity*	up to 5 weeks	up to 8 weeks	up to 12 weeks

\*Residual activity depends on environmental conditions

## Application Recommendations:

Surface and space spray, spot, crack and crevice treatment

	Rate	Water	Area
Surface spray, crack, spot and crevice	Light infestation – 25 ml Heavy infestation – 50 ml	5 L	100 m <sup>2</sup>
Spray all infested areas giving special attention to cracks, crevices, dead spaces and harbourages. The product is suitable for application to hard porous, soft porous and non-porous surfaces.			
Hot fogging	100 ml	N/A	500 m <sup>3</sup>
Cold fogging	100 ml	5 L	500 m <sup>3</sup>
Spray into the air around the areas to be treated paying particular attention to sites where insects rest and breed or harbourages.			

Permost CS can be used as a barrier application in and around buildings. For domestic premises, product should only be used as a crack and crevice treatment.

# Hockley International

## Permost CS

Contains:  
permethrin 25%



## Permex 22 E®

Contains:  
permethrin 12.36%,  
+ tetramethrin 1.64%  
+ PBO 6.40%



## Piretrox™

Contains:  
natural  
pyrethrum 1.25%



## Permost Uni Fly Spray

Contains:  
permethrin 0.25%  
+ tetramethrin 0.1%  
+ PBO 0.3%



## Tetrapiu

Contains:  
permethrin 0.15%  
+ tetramethrin 0.06%  
+ PBO 0.3%



## Piretrox™ PU

Contains:  
natural  
pyrethrum 0.3%  
+ PBO 3%



## Py-Pro Super

Contains:  
natural  
pyrethrum 0.3%  
+ PBO 3%



## SoFast

Contains:  
imidacloprid 0.5%  
+ (z)-9-tricosene



## HokoEx®

Contains:  
cyromazine 2%



**hi** Environmental  
Health

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