

PRODUCT REFERENCE GUIDE

Tempo®

REVOLUTIONARY FORMULA

Tempo is the revolutionary new synthetic pyrethroid formulation from Bayer Environmental Science. **Tempo** incorporates the high performance and long lasting activity of beta-cyfluthrin with a unique formulation that users can apply with confidence - giving better results with greater safety.

Formulation and Performance

WHAT IS BETA-CYFLUTHRIN?

Beta-cyfluthrin is the refined form of the synthetic pyrethroid, cyfluthrin which is currently in use in a number of formulations in Australia and around the world. Technical grade cyfluthrin consists of a mix of four basic forms, or isomers. Two of these isomers (II and IV) are more biologically active than the others and have been isolated and concentrated to create beta-cyfluthrin. It is therefore twice as effective as cyfluthrin. This is a characteristic which has been well known in the Professional Pest Management industry for some time since the launch of Responсар® Beta (containing 12.5% betacyfluthrin) in the 1990s.

WHAT MAKES TEMPO DIFFERENT?

Tempo is a 2.5% formulation (25 g/L) and because beta-cyfluthrin is so insecticidally active, only a very low dose is actually needed in the formulation - by lowering the concentration in the formulated product the potential for irritancy during handling and mixing is reduced straight away. Mixing volumes are easier to handle than Responсар (ie. not as small) and the chamber pack means accurate dosing is much simpler.

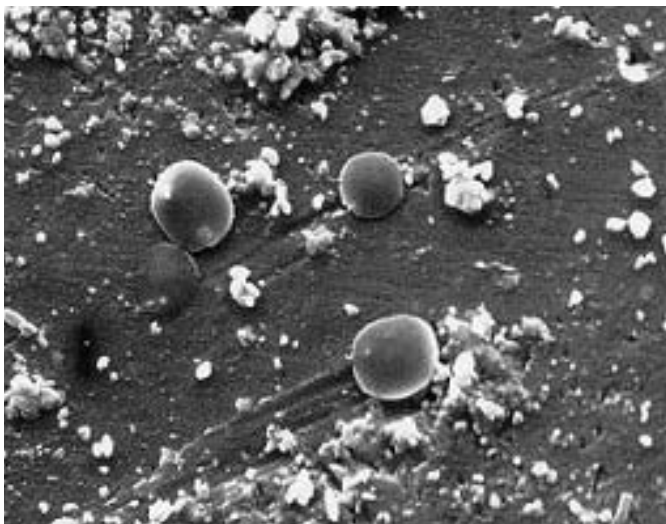
But that's not all! Bayer has pioneered the latest development in formulation technology. The active ingredient is actually coated (adsorbed) onto particles of an insoluble salt to create a sophisticated suspension concentrate with larger than normal particle size. These larger particles mean that the active ingredient is less likely to become airborne during spraying and the larger surface area to volume ratio reduces potential contact with the active ingredient and therefore reduces the potential for irritancy. These particles are illustrated in the electron micrograph (Fig 1 - next page).

Group	3A	Insecticide
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Bayer Environmental Science

Fig 1 - Electron Micrograph



Particles of Tempo

Formulation and Performance cont...

In short the ease of use of a suspension concentrate (SC) spray has been maintained, the performance has been improved and the irritancy issue has been effectively removed.

What's the issue with the irritancy?

Beta-cyfluthrin belongs to a group of pyrethroids known as the alpha-cyano pyrethroids - which simply means that they contain a cyano group (CN) within their structure at the alpha carbon position. A peculiarity of some of these compounds is that they can induce what is known as paraesthesia in some individuals.

Paraesthesia is a transient sensation of irritation, tingling or numbness in the skin. This is brought about by transient lowering of the threshold of the sensory nerve fibres or sensory nerve endings and normally does not last more than a few hours. Beyond this there are no abnormal neurological signs to be expected and no ongoing effects once this sensation has subsided.

While this is only a transient effect (with no long term implications) it is not pleasant and some Professional Pest Managers (PPMs) prefer to avoid exposure to any synthetic pyrethroids to play it safe. Other people may be affected by one pyrethroid and not another and the opposite effect may be experienced by another. One thing is for sure everyone would like to avoid irritancy. Since synthetic pyrethroids remain one of the safest insecticide groups for use in professional pest control and the alpha-cyano pyrethroids are generally some of the most insecticidally active, developing an answer to solve this problem for the industry has been a challenge.

Bayer has now provided the answer with **Tempo**!

How does this formulation improve efficacy?

Tempo has longer residual life on a greater range of surfaces than most other currently available suspension concentrates.

Traditionally wettable powder formulations were regarded as the best formulation to use for extended residual activity on the broadest range of surfaces (one of the reasons why they are still used today around the world in vector control programmes for extended control of malaria vectors).

Some types of surfaces have properties which allow small particles of active ingredient (as you might find in suspension concentrates) to be 'hidden' within microscopic indentations in the surface (or even in some cases absorbed) - this reduces the opportunity for contact with the target insect over time. A larger particle size means that this does not occur to such a degree and therefore there is greater potential for contact with the target insects ultimately meaning better results.

Tempo has actually been shown to last up to three times longer than other leading pyrethroids on certain problem surfaces such as painted plywood and unglazed tiles (both surfaces can 'absorb' active making it unavailable). So **Tempo's** unique formulation makes it the best all round spray available.

An analysis of results from various studies conducted by Bayer Environmental Science and by independent organisations against a range of pest species on a range of surfaces indicate the following (in terms of residual life):

Against cockroaches (German)

1. (Laboratory and field) Ceramic tiles
Tempo > Resposar = Cislin®
= alphacypermethrin SC > Ficam® W
> Crackdown®
(Ref 1 and 2)
2. (Laboratory and field) Emulsion paint
Tempo > Ficam W > Crackdown > Cislin
> alphacypermethrin SC > Resposar
(Ref 1 and 2)
3. Field trials
Tempo > Resposar = Cislin
(Ref 2 and 3)



Against spiders (grey house spiders and daddy long legs)

1. Field trial
Tempo > Cislin = Bifenthrin 10 % EC (Ref. 4)

Against coastal brown ants

1. Concrete pavers
Tempo > Responсар (Ref. 5)

References:

1. 'Laboratory Report: Evaluation of the residual activity of various pesticide products from Australia' Bayer Environmental Science internal document.
2. Field Study to compare the efficacy of four Bayer Responсар formulations against the German cockroach. UTS May 1996
3. Field Study to determine the efficacy of two Bayer Responсар formulations against the German cockroach. (12 month study) UTS March 1996
4. Bayer Technical Report BAL001/00. 'Efficacy of Responсар 025 SC against webbing spiders'
5. Bayer Technical Report BAL 004/95 'Efficacy of several insecticides applied as residual surface sprays on clay paving bricks against the Coastal Brown Ant'

What about staining?

Older style sprays which contain solvents may cause permanent staining on certain surfaces (generally a feature of the solvent). Wettable powders usually leave a visible deposit on certain surfaces. Water based suspension concentrate formulations will usually not stain any surface (unless water alone causes a stain). Whilst there is a larger particle size with **Tempo** it does not behave like a wettable powder and still behaves like a suspension concentrate. Tests conducted by Bayer Research and Development on a range of surfaces indicate that occasional visible deposits may be seen on surfaces like glass and less frequently on dark surfaces (particularly if label dose rates are exceeded) in all cases these deposits are easily removed with a damp cloth if necessary.

Safety

Like most synthetic pyrethroids beta-cyfluthrin is an ester molecule and it is therefore lipophilic - this means it is rapidly taken up by insects through their waxy cuticles. Flushing and knockdown effects occur quickly as the peripheral nervous system is affected and death occurs soon afterwards once the central nervous system is affected. In mammals beta-cyfluthrin (like many other pyrethroids) is very rapidly metabolised and effectively absorption cannot keep up with break-down.

Insect Control

Tempo provides excellent control (indoors and outdoors) of:

Spiders	Cockroaches	Clothes moths
Ants	Mosquitoes	Houseflies
Fleas	Silverfish	Carpet beetles
Crickets	Bed bugs	Stored product pests

Successful insect control is best achieved by integrating both chemical and non-chemical methods. Poor hygiene will encourage re-infestation, so it is important to reinforce integrated prevention methods (IPM) with your customer to get the most out of your chemical treatment.

Tempo may be used in conjunction with other treatments where a liquid treatment is not appropriate, such as around moisture-sensitive machinery and electronics and in roof voids (examples of products to use might be Coopex® Dusting Powder or Maxforce® Gold and Premise® Cockroach Gel).

Use of Tempo® in conjunction with Gel Baits for cockroach control

The use of a residual spray in cockroach control can be counter-productive to the benefits of using a gel bait under certain circumstances. Generally the principle should be to apply gel baits to inaccessible areas (and for example to locations above floor level) where there is identified cockroach activity. Residual sprays should be used as barrier treatments or residual ground sprays to help prevent movement and spread of the infestation away from the areas where baits have been applied or to help prevent entry of new insects into the premises. The decision relating to this will be better made by the individual Professional Pest Manager at a situation specific level based on their own professional experience.



Summary of Features

- Revolutionary new (water based) suspension concentrate formulation
- No hydrocarbon solvents = no odour
- Back-up and product technical support from Bayer Environmental Science
- Very high margin of safety when used according to label
- Excellent residual activity indoors and out on a range of surfaces
- Rapidly metabolised in mammals so does not accumulate in tissues
- Approved for use in food handling premises and other potentially sensitive situations
- AQIS Approval for use in export registered meat establishments
- Non-volatile
- Non-flammable
- Reduced irritancy



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General Instructions

Always read the label and follow the directions given.

For further advice contact your local Bayer Environmental Science representative or your local distributor of professional pest control products.

At what rate do you apply Tempo?

There are two rates on the label. The initial or cleanout rate which is used for heavy pest infestations is 10 mL per litre. A one litre pack will make 100 L at this rate. The maintenance rate for use when the pests are under control is 6 mL per litre. A one litre pack will make over 166 litres at this rate.

Distributor details:

The information and recommendations contained herein are based on tests and data believed to be reliable. Results may vary as the use and application of the product is beyond our control and may be subject to climatic, geographical or biological variables, and/or developed resistance. No responsibility is accepted in respect of product save for those non-excludable conditions implied by the Trade Practices Act or any State or Federal Legislation.