

# MAGNETIC POWDER AS AN ENHANCED DELIVERY AGENT FOR ACTIVE INGREDIENTS IN URBAN PEST MANAGEMENT PRODUCTS

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## SUMMARY

Satisfactory results from dry flowable powder formulations for control of crawling insect pests are driven by the quantity of powder adhering to the insect (Fig 1) and by the ability to transfer powder from insect to insect (Fig 2). This poster describes the performance of a magnetic dry flowable powder (Magthanite™) which, because of the paramagnetic qualities of the insect exoskeleton, enhances the pick-up and retention of the active ingredient by the insect cuticle and its transfer to other insects in the colony, thus increasing secondary and tertiary kill. The results of adherence and transfer using magnetic powder have been shown to be superior to those obtained electro-statically with an inert powder or talc. The effectiveness of magnetic powder technology as a delivery vehicle for the active ingredient has been demonstrated on key pest species including termites, ants and cockroaches and with a range of active ingredients including fipronil, abamectin, permethrin, cyphenothrin, cypermethrin and d-phenothrin (Fig 3) as well as natural entomopathogens. Tests on *Periplaneta americana* with fipronil at 0.1% concentration show enhanced speed of action with a magnetic powder compared to a standard filler: 100% control achieved within 6 days compared to incomplete control after 10 days. This increased speed of action and level of control of *P. americana* in the magnetic powder formulation in comparison with a commercial powder formulation has also been demonstrated with abamectin at 0.05%. Comparative tests were conducted on *Blattella germanica* (Fig 4) using a dry flowable powder with magnetic properties and an attractant, incorporating fipronil at 0.05%, in comparison with commercial gel baits of abamectin at 0.05% and imidacloprid at 2.15%. These show that the magnetic dry flowable formulation produces significantly increased mortality and a more rapid effect. Magnetic powder formulations also offer the potential to reduce active ingredient concentration. Fig 5 shows the ant *Lasius niger* exposed for 1 minute to a residual deposit of Magthanite™ with 0.5% permethrin. The effect was similar to a standard commercially available 1.0% concentration: 100% knockdown in 10 minutes and 100% mortality.

## Benefits to Pest Managers

This technology offers the Pest Manager a novel, additional method of urban pest control in a variety of situations, particularly in crack and crevice applications, and in dealing with infestations in hard to access locations such as circuit breaker boxes, under motors in domestic appliances and behind skirting boards.

Magnetic powder technology also offers a potential response to the growing problem of gel aversion displayed by cockroaches.

The magnetic powder technology is available in a variety of delivery systems: bait stations, duster applicators, tube applicators, and, as the latest research indicates, aerosols.

The flexibility of the magnetic powder technology in terms of combinable active ingredients, target pest species and delivery systems is facilitating the development of a diverse range of urban pest control products appropriate from the standpoints of cost and packaging for use in both developed and developing urban pest management markets.

For more information  
[www.magthanite.com](http://www.magthanite.com) / [info@magthanite.com](mailto:info@magthanite.com)

Fig 1:  
Superior  
pick-up

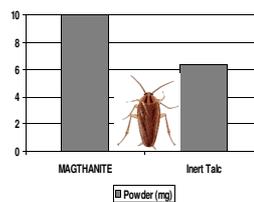


Fig 2:  
Superior  
transfer

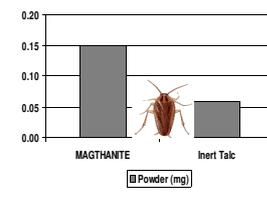


Fig 3 : Efficacy  
against major  
cockroach species

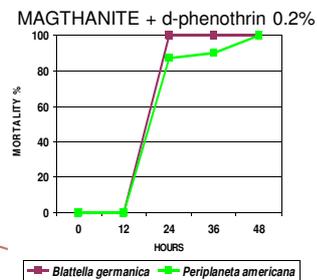


Fig 4 : Faster  
control and  
increased kill vs.  
gels

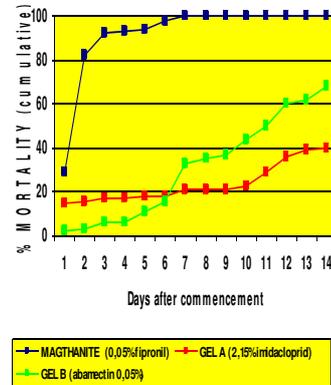


Fig 5 : Rapid ant  
control with less  
active ingredient  
*Lasius niger* with  
MAGTHANITE™



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