



Ready Reckoner- Application Overview

Use of Rodrepel®™ and Termirepel®™ and
Termirepel®™ in Agricultural Applications

C Tech Corporation

Product Specialization
Group

Generic Requirements

Rodrepel®™ and Termirepel®™ are non toxic, non hazardous and environmentally friendly anti rodent, anti termite master batches

A brief overview on the use of Rodrepel®™ and Termirepel®™ in
Agricultural Applications



TECHNICAL NOTE

RODREPEL®™ AND TERMIREPEL®™ FOR AGRICULTURAL APPLICATIONS

Rodrepel®™ and Termirepel®™ are non-toxic, non-hazardous, environmentally safe additives specially developed for use as a master batch in the agricultural sector, polymeric applications and coating applications.

Rodrepel®™ and Termirepel®™ do not kill but keep the pests away by making use of the sensory mechanisms. They are products of Green Technology and are applicable for a variety of uses in a multitude of sectors. Unlike toxic pesticides and insecticides, Rodrepel®™ and Termirepel®™ can be safely used with food applications due to their non-toxic and non-hazardous nature.

They are broad spectrum aversives adept at repelling rodents and a variety of species of insects including termites, caterpillars, red and black ants, aphids, leafhoppers, beetles, mites, leaf borers and many more.

Food loss and contamination due to pests is one of the biggest problems faced by the agricultural industry. There is a need to safely and sustainably address this problem in order to ensure loss of grain and crops in the agricultural sector are reduced and deterred.

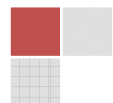


❖ LOSSES DUE TO PEST ATTACK IN AGRICULTURAL SECTOR



Rodents are responsible for millions of dollars of damage to field crops, stored grain and farm equipment each year. Rodents eat about 15% of their weight each day and contaminate much more with their droppings. They are also a carrier for a host of diseases. They cause around 20% of food loss every year. Both pre-harvest losses as well as post-harvest losses are severe. Pests contribute to leaf rot or root rot of the crops further increase the problem.

The current toxic pesticides and insecticides used are toxic and do not effectively solve the problem. These chemicals leach into the soil polluting it and also contaminate the ground water. They also affect beneficial insects like bees which facilitate pollination and earthworms which improve the fertility of soil. Termite barrier sheets containing anti-termite chemicals have found limited use as the insects nibble their way through. Thus the current pesticides and methods cannot be used effectively.



❖ SALIENT FEATURES

- Non-toxic
- Non- hazardous
- Environmentally safe
- Acts as an aversive
- Large life span of 5-40 years
- Thermally stable at temperatures as high as 1400 °C
- Does not leach into Groundwater and soil
- Does not volatize
- No harmful fumes
- Available as a LDPE and EVA masterbatch
- Can be customized according to customer requirement
- Inert in the polymer matrix
- Does not degrade in soil
- Chemically Stable
- Hazardous polymerization not likely to occur
- Not harmful if accidentally inhaled or ingested
- Safe to add in pipes used for drinking water

❖ THERMAL STABILITY

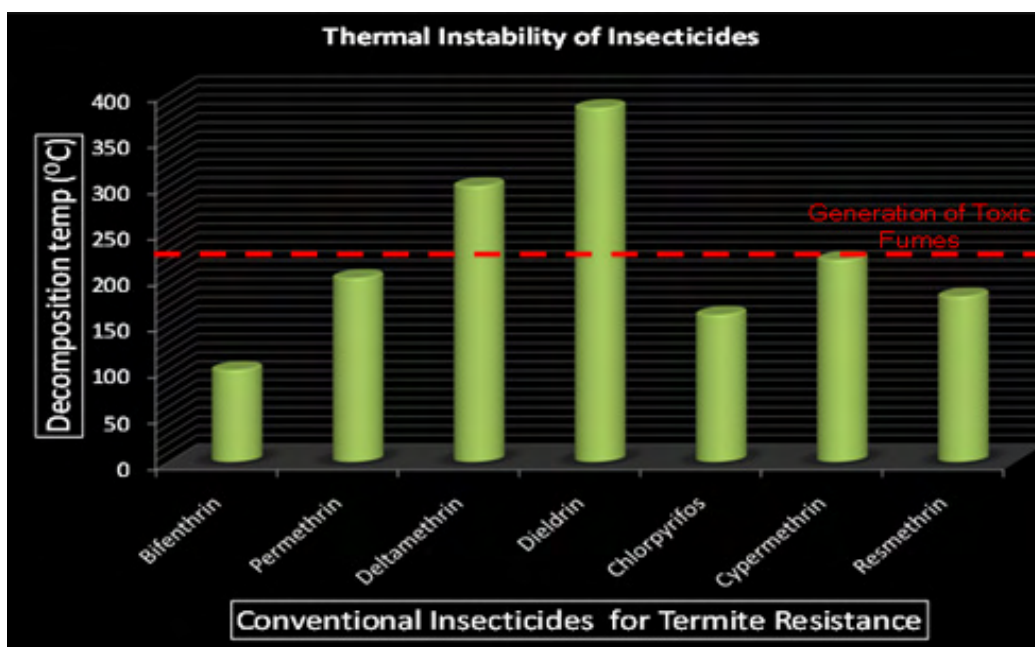
Most of the termiticides and pesticides used volatize at high temperatures releasing harmful fumes. As temperature increases, vapor hazards increase. The vapors from many pesticides increase three to four times for each 10 C increase in temperature.

Rodrepel®™ and Termirepel®™ are designed to withstand the high temperature of polymer processing. Rodrepel®™ and Termirepel®™ are



stable up to 1400 C and hence are safe to use in severe temperature conditions.

Thus Rodrepel®™ and Termirepel®™ can safely be used even in high temperature applications with complete stability.



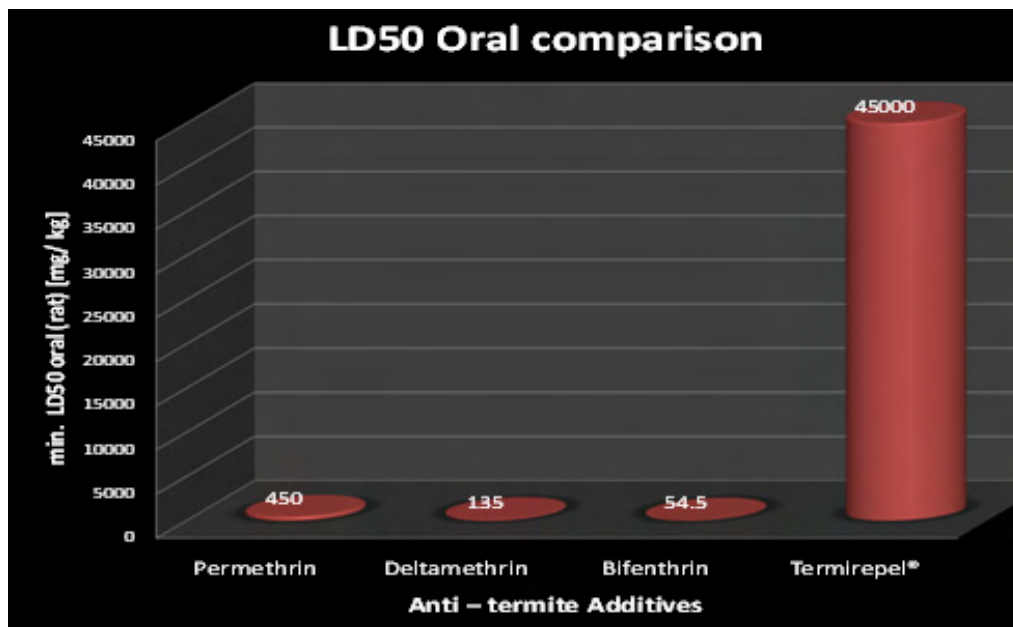
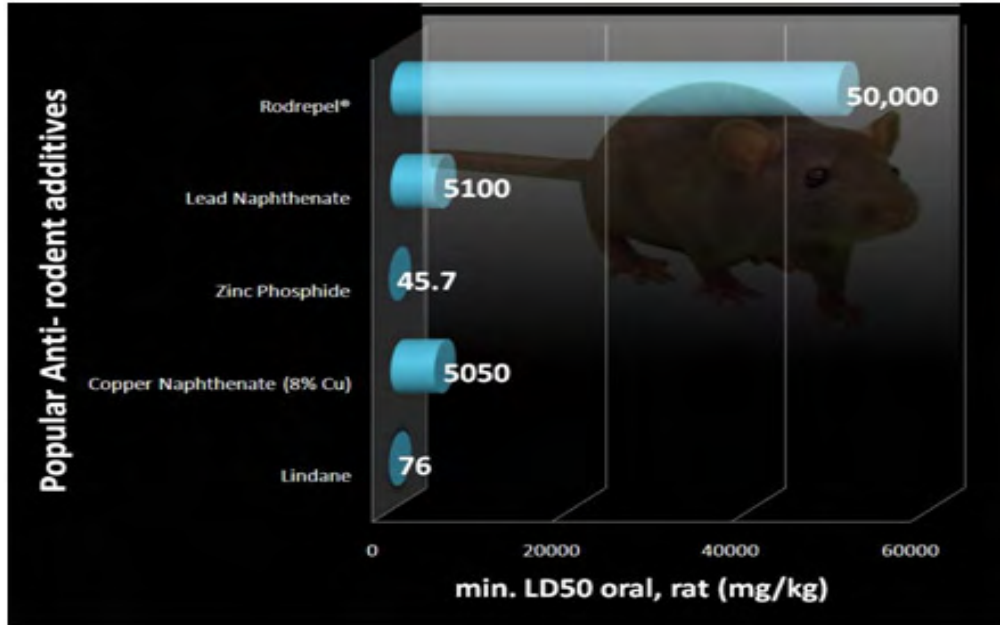
Given above is the thermal stability of commonly used insecticides

❖ NON-TOXICITY

The Lethal Dose and Lethal Concentration are used to determine the toxicity of most chemicals. The testing is mostly done with rodents and mice. The LD50 is a method to measure the toxicity of a material. It is the amount of a chemical substance per 100 grams or per kilogram of the weight of the test animals that would cause the death of half (50%) of the test species. Lower the LD50 value, higher is the toxicity as lesser quantity of the substance is enough to cause toxic effects. Rodrepel®™ and



Termirepel®™ have a very high LD50 value thus showing its non toxic nature.



The non-toxicity of Rodrepel®™ and Termirepel®™ when compared with harmful rodenticides



❖ **CRITICAL PARAMETERS**

Sr. No.	Property	Testing/Effect
1	Non toxicity	Oral LD50 tests for evaluating the toxicity of the masterbatch
2	Run-Off and Wind Drift for soil applications	No run-off or wind drift as Rodrepel®™ and Termirepel®™ in solution does not seep into groundwater
3	Vapor barriers and Waterproof membranes	Not needed as the product does not leach out
4	Soil Parameters	Evaluation that the treated soil for rodent control is safe - The Stake method - The Ground board method, - The Modified ground board method.
5	Odour	No perceptible odor to humans in the final product

❖ **APPLICATIONS:**

Rodrepel®™ and Termirepel®™ can be customized for use in the following ways



➤ **Agricultural Tubing and Hosing**

Damage to the drip irrigation systems causes loss of water and defeats the purpose of using it. Rodrepel®™ and Termirepel®™ are added to the piping and hosing used in drip irrigation system piping and hosing to prevent rodents gnawing on them.

➤ **Agricultural Films**

Thin agricultural films with Rodrepel®™ and Termirepel®™ added can be used to protect plants from insects and pests. These films have been used extensively in South East Asia to deter weevils which damage crops like Banana Plantations.

➤ **Mulches**

Mulches are thin films laid on the soil used to enhance cultivation. However they serve as a breeding ground for termites. Termirepel®™ added to the mulches helps to deter this problem, while not affecting the effectiveness of the mulches in any way.

➤ **Grain Bags**

Grain bags to which Rodrepel®™ or Termirepel®™ have been added is used to reduce storage losses caused by pests. Rodents damage the storage bags and contaminate the grain. This also leaves the food open to contamination by air and moisture. As a result the entire batch is spoiled. The Rodrepel®™ added grain bags deter the rodents from gnawing into the bags, thus protecting the grain and preventing food loss



❖ **SAFETY AND VERSATILITY**

- Rodrepel®™ and Termirepel®™ are thermally stable and do not degrade on exposure to heat and light. They are soil stable and do not leach out to pollute the soil or air.
- They are completely inert in the polymer matrix apart from performing the main function of acting as an aversive.
- They are compatible with a number of polymeric bases depending on the end application
- Rodrepel®™ and Termirepel®™ are RoHS and REACH compliant and FIFRA exempted.



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