

Non-Toxic Additives to Protect Plastics from Pests!

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Once a leader in industrial innovation, the chemical industry has changed countless aspects of modern life. From the plastic in the toothbrush we use in the morning, to the tires we drive to work on and the fuel that powers them, to the clothes that keep us warm, chemical innovations are so infused in our daily lives that we generally take them for granted. It is hard to imagine life without the myriad chemical breakthroughs that shape today's world.

Science comprises of three main elements: chemistry, physics and biology. In the past few decades the most significant development is the revolution in the life sciences and related technologies, including a growing overlap between chemistry and biology. 21st century brings in new aspects of chemical industry. Chemical industry now drives on many factors including shareholder return, globalization, efficient use of capital, faster product development, minimizing environmental impact, improved return on investment, improved and more efficient use of research, and efficient use of people.

All these aims are achieved by chemical industry in coordination with biology. Our scientist brings in new technology every day but the major factor which should be kept in mind while evolving these technologies is "Our Environ-

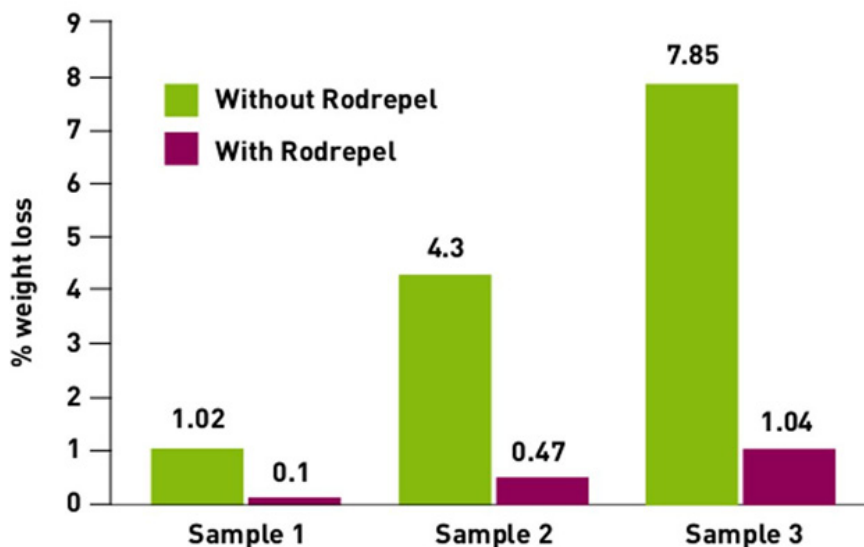
ment". Mother earth is constantly suffering from many human originated problems like global warming, toxic products, industrial waste, ozone layer depletion etc. How do we tackle all this? The answer is quite simple: use non-toxic products and sustainable technology in every aspect of our lives.

Today major industrial sectors like plastics, wire and cable, telecommunication sector, railway sectors are facing huge losses due to rodents and termites. Rodents as we know constantly chew, they do it not for fun but for survival. They

have ever growing incisors which are required to be sharpened and worn down for survival. Rodents being very aggressive tend to attack all kinds of plasticizers. The main reason behind this is they are attracted to the odor, color and smell of plasticizers. Termites being equally aggressive and attracted to plasticizers can bring down your home in one night. Although they are small but are highly destructive when united they stand. Around 200 million Euros are spent every year for termite treatment. If added the cost of repairs, replacement or destruction the



C Tech Masterbatches- Rodrepel[®]™ and Termirepel[®]™ being packed and sent to PolyOne distributors of the C Tech masterbatches in the wire and cable space in US and Europe



IICT TEST RESULTS FOR CABLES WITH AND WITHOUT RODREPEL THAT WERE EXPOSED TO RATS FOR 30 DAYS

annual cost would go up to 500 million Euros a year.

There had been many incidences in which humans had to pay immensely just because a rodent bit a cable or a termite fed on wood. One such incidence was reported by NZ Herald saying, a rat chewed over a fiber optic cable bringing the stock exchange at halt and stopping shoppers using Eftpos machines. Trading on stock exchange was brought to a halt from 11:01am until 4pm. Another major incidence was reported by Taiwan Times which stated that hungry termites fed over a tree which fell on a train passing through a forest leading to five deaths.

Current methods and their drawbacks for rodent control

Traditional chemicals used as rodenticides include organochlorine pesticides like Lindane and heavy metal based compounds such as Copper Naphthenate and Lead Naphthenate. These are used as additives in polymer industry during extrusion. However, these chemicals are not meant for use in polymer products due to following concerns:

Human Health Hazard These harmful rodenticide additives volatilize at polymer processing temperatures and release extremely fumes. Not only does this lead to an extensive loss of chemical during processing; but also poses fatal hazards to workers handling such products at the shop floor. A short term or an acute exposure to such toxins can cause brain damage, kidney damage and gastrointestinal distress while a long term or chronic exposure would mean adverse effects on kidney, blood pressure and the central venous system of humans. Carcinogenic and mutagenic disorders have also been reported.

Environmental issue The use of such pesticides is also a serious environmental concern as they leach out from the polymer to enter the atmosphere and are later deposited by rain. They get carried into surface waters as well as ground water. Being fat-soluble such chemicals tend to accumulate through food chains, as is common with organochlorine pesticides.

Regulatory norms Most countries like Finland, Indonesia, Korea, Netherlands, New Zealand, Saint Lucia, Sweden, Aus-

tralia, Austria, Cyprus, Norway and Sri Lanka have either banned or restricted the use of Lindane and other such poisonous pesticides. In India too, eminent government bodies like TEC, RDSO, etc have defined the anti rodent test methodology to account for the non toxic nature of the additives, and to curb the use of hazardous chemicals by the polymer industry.

Thus, control over rodents in a safer, better and eco-friendlier manner is the need of the hour; in India and other parts of the world.

Non toxic and more efficient alternative

Employing innovative masterbatch formulation techniques and focusing on environmental issues and safety norms that are the call for the day, polymer-specific masterbatch for effective rodent repellence is now possible. Rodrepel™ and Termirepel™ a range of non toxic and non hazardous anti-rodent and anti-insect/termite aversives have been developed specifically by the C Tech Corporation, India for the purpose of addressing the menace of these uninvited guests in polymeric, coating, construction and agricultural applications. These are completely environmental friendly and pose no harm to animals and human life. They do not leach out and are completely thermally stable.

The C Tech Corporation has developed and evaluated the use of these products in various applications. PolyOne Corporation which is a distributor of Rodrepel™ and Termirepel™ for wire and cable in Europe and USA has extensively tested the product in these applications at various reputed government testing institute like the Indian Institute of Chemical Technology, Hyderabad and the BAM Federal Institute for Materials Testing and Research.