

# An Innovative Anti Rodent Masterbatch

## Hi Tech Rodento – Repell **not kill**

as per GR/DWC-34/01.Sep 2007 issued by GR/DWC-34/01.Sep 2007 issued by Telecommunication Engineering Center (TEC)  
issued by MOT, Govt of India.



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Subject: New Technology Anti Rodent Masterbatch for Repelling Rodents and not killing animals to avoid biting of cable, wires , hay bales, tarpaulins etc.

APPLICATION – WIRES AND CABLES FOR HOME, OPTIC FIBER, CARS & AUTOMOBILES, TARPAULINS FOR WAREHOUSES, TUBES, PIPES

Electrical failures or malfunctions cause 13% of home fires in the U.S., according to the National Fire Protection Association. They are the second leading cause of home fires. Unfortunately, the risk of an electrical fire increases when rodents come into contact with open wiring, electrical panels, and more. That’s why it’s important to prevent rodents from entering the home as much as possible, and to recognize the common signs of electrical problems.

Contrary to how it might seem, Rats and Mice aren’t always on the lookout for wires to chew. Really, they’re looking for just about anything to chew, because their teeth never stop growing! While our own teeth are rooted into our jawbone, a rodent’s incisors don’t have any roots. So they aren’t constantly chewing things to be a pain — they are constantly chewing to grind down their teeth and prevent them from growing into their brains.



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They often go for wires simply because they're there, and they're hidden where the rodent is also hidden (like between walls). Unfortunately, when rodents chew on wires, it opens up your home to a greater chance of an electrical fire. This can be caused by frayed wires or a short circuit.



Rodents who enter the home often chew on electrical wiring housed in the hidden spots they've settled in, damaging the wiring's protective insulation. They also may build nests around wiring, which leads to overheating.

The damage they cause can lead to minor electrical problems around the home, such as tripped breakers, short circuits, or electrical outage to the entire house. Rodent damage can also put you at risk of a house fire. When the wiring's insulation is damaged, exposed wires could catch the materials surrounding them on fire. Home insulation or the rodent's nest could be hit by an electrical arc, causing them to ignite.

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## DANGERS OF RODENTS !

What Causes A Short Circuit of wires eaten by rodents?

There are number of factors that can lead to a short circuit. Here are some of the most common causes.

- The wiring encounters water or some other liquid.
- Faulty insulation or loose connections can result in the live and neutral wires coming in contact with each other.
- Nail and screw punctures that cause the wire casings to deteriorate.

An abnormal build-up of electrical currents within your home's electrical wiring system.



What Causes RODENT TO EAT GRAINS?

- Rodents chew on tarpaulins that is used to cover grains
- Rodents eat grains bags of grains and eventually grains causing leakage of grain bags
- This causes spillage of grains and also water that ingresses in the bag causing further mould and fungus growth



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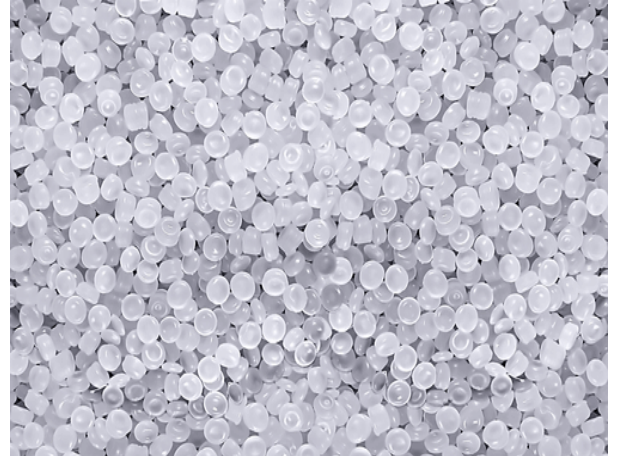
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**ABOUT THE PRODUCT - HI TECH RODENTO 2331 E and Laboratory Test Study**

HI TECH RODENTO masterbatch combines powerful additives for deterring animals from chewing compounded materials, such as electric and fiber optic cables, plastic pipes, foam insulation, and many other materials. HI Tech Rodento for Rodents is the anti-rodent solution for damage to virtually all polymers.



We have made a formulation that not only complies to international standards but perform to simply repel the rodents and not killing them. The added chemicals that repel rodents through a fear mechanism, making them unwilling to even approach the impregnated polymers. Laboratory tests conducted as per Bharti Automation Pvt, Ltd as per GR/DWC-34/01.Sep 2007 issued by GR/DWC-34/01.Sep 2007 issued by Telecommunication Engineering Center (TEC) shows results of no bites or toothmarks on to a plastic with 2 percent additive. It has been tested on The wild rodents are collected freshly from urban and rural areas of India and acclimatized in laboratory cages for 10 days prior to start of the test. During the test period the rats are provided with fruits, vegetables, food and water ad libitum. The individual test samples were weighed and three such replicates for each sample were exposed individually to three test animals.

A no choice tests was also conducted where The rodents were exposed to the test samples only and no food is given to the rodents during the period of trial. The test sample (one sample

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each of treated and unheated /control sample) was exposed to the test rodents. This trail was run for 7 days whilst ensuring the health status of starved test rodents.

Observation on tooth marks, rodent behaviour toward exposed samples, relative extent of damage in treated and non treated samples are computed for both types of samples. Health status of test animals in no choice test is also be monitored for the record any ill effect of exposure of treated / control samples on these animals. Number of cases and the extent of rodent bites / scratch marks in control and anti-rodent treated samples are indicate the rodent deterrent/repellent properties of the test samples.

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(A Testing Division)



**TEST REPORT**

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Dated: 22/09/2020

**Table 3: Number of Bites on No choice test samples**

Sample	No. of Samples	No. of Bites						
		Day1	Day2	Day3	Day4	Day5	Day6	Day7
Anti-Rodent Masterbatch	1	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	2	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	3	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	4	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	Total	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	Average	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites

The health status and abnormal behaviour were also noted during the test period. OD the termination of the test, the final samples weight, weight loss, damages and teeth bites were recorded which stand at 0 and no risk of health was observed on the rodents. The Gnawing (G) and Rodent Repellancy (RR) factor for each replicate was calculated and presented each separately in the tables. The G and RR factor so calculated are deciding factors for the sample to have resistance against rodent attack and the rodent developed disliking during the course of study.

The products do not leach as they are inert within the polymeric matrix. They have a working life span ranging from 15-40 years depending upon the application, and are compatible with many sorts of thermoset plastics and thermoplastics

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The combination of Hi Tech Rodento 2331 and deterrents make it the most effective additive in the world for protecting plastics from rodent damage.

## MAIN FEATURES

- EVA/ LDPE/ PP/ HDPE based which makes Rodento 2331 compatible with PVC, LDPE, LLDPE, HDPE, LSOH/HFFR, XLPE, EPDM, PP, ABS, and others.
- Rodento 2331 mixes uniformly with base polymer at normal processing temperatures.
- Non-toxic, non-hazardous, non-dangerous and environmentally friendly
- In line with REACH and RoHS

## HOW IT WORKS

What the research has proven is that animals chew on plastic materials because they look good, smell good and taste good. Rodento 2331 alters that attractiveness in the following four ways:

- First, when the animal smells or licks the plastic they will experience an extremely foul-tasting material.
- Second, this foul-taste experience is combined with an extraordinarily distasteful pungent flavour that causes severe distress to the mucosa of the animal, making the mouth, nose and eyes burn.
- Third, Rodento 2331 has a distinct odor that animals will now associate with the bad experience leading them not to go near it.
- Fourth, the terrifying fear response and unpleasant experience is also communicated to other animals in the vicinity.

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## TYPICAL APPLICATIONS

- Wire and cables | Tubes and pipes | Electrical boxes
- Wiring harnesses | Food and feed bags
- Trash bags | Tarpaulins | Hay Sleevs Bales and bundles
- Grain Storage bags



## USAGE INFORMATION DOSAGE LEVELS

Hi Tech Rodento is typically added at rates of 2-5%, depending on the application, but in certain applications where the product has a very thin profile (like tape and film), dosage can be as high as 7%. In other uses where the plastic is thicker 2% is satisfactory. So summing it thickness between 20-100 microns require 6-7% dosage, 100-1000 microns require 4-6% dosage and 1 mm or more require 2-4% dosage. Experimentation to optimize usage is the only true guide for your specific application.

## ENVIRONMENTAL CONCERNS

HI Tech Rodento 2331 is formulated by the principle of doing no harm to people, plants, or animals and no damage to the environment. Our approach is to not injure animals or add hazardous chemicals to the environment. Using HI Tech Rodento 2331 meets these goals and does not harm animals. Furthermore, HI Tech Rodento 2331 is embodied permanently in the polymer so that it does not leach into the environment. The additives used do not fall in the pesticide schedule in India and can be used in industrial setting.

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## CONCLUSION

The product Hi Tech Rodento 2331 should be incorporated and enforced in the standards as a safer product compared to Barium Carbonate, Zinc Phosphide, warfarin, diphacinone, coumafuryl and pindone , Calcium cyanide (often called cyanogas or cymag), carbon disulphide, methyl bromide, sulphur dioxide, etc.

It can easily incorporated into plastics, wires, cables, tarpaulins or can used as industrial coatings. It is already in use by various manufacturers of wires and cables and tarpaulins and can be incorporated in the same process manufacturing without any changes in equipment.

Hi Tech innovative products like Rodento Tarpaulin Covers, Rodento Plastic Masterbatches and Rodento Coatings can be utilized extensively in various private and public sector to stop the menance caused by rodents in a very safe way.

Regards,



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## LAB STUDY REPORT

**BHARTI AUTOMATION PVT. LTD.**  
(A Testing Division)



### TEST REPORT

Name and address of Customer:	<b>HI Tech International</b> Adj. Airport road, Vill Khagat, G.T. Road, Sahnewal, Ludhiana-141120, Punjab (India)		
Testing laboratory and its address:	<b>Bharti Automation Pvt. Ltd (A Testing Division)</b> Plot No-354, Sector-7, IMT Manesar, Gurgaon-122051		
Sample Description:	<b>Anti-Rodent Masterbatch</b> Code: HITECH -RODENT -E-2331		
Test name:	<b>Anti-Rodent Test (No Choice, 7 days)</b>		
Receipt No.:	<b>200912001</b>	Date of receipt:	<b>12/09/2020</b>
Date of Starting Test	<b>14/09/2020</b>	Date of Completion:	<b>21/09/2020</b>
Issue Date:	<b>22/09/2020</b>	Pages	<b>5</b>
Test specification:	General Requirements No: GR/DWC-34/01.Sep 2007 issued by Telecommunication Engineering Centre (TEC)		
Condition of the Sample:	<b>OK</b>		
Test Result:	The test items passed /-failed-the test specification(s).		
<b>Other Aspects:</b>	<b>Anti-Rodent Masterbatch, Code: HITECH -RODENT -E-2331</b> has been tested as per General Requirements No: GR/DWC-34/01.Sep 2007 issued by Telecommunication Engineering Centre (TEC) Complies to all the applicable parameters.		
This test report relates to the test sample submitted.			

Tested by:	Checked by / Authorized Signatory:	Issued by:
 <b>Sajid</b> (Test Engineer)	 <b>Ashok Giri</b> (Technical Manager)	 <b>Chinmaya Mallick</b> (Customer Executive)
Date: 22/09/2020	Date: 22/09/2020	Date: 22/09/2020

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**TEST REPORT**

Report No. 200912001

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Dated: 22/09/2020

**1. PURPOSE**

To determine the Anti-rodent property of the **Anti-Rodent Masterbatch** towards widely available wild rodent species.

**2. SCOPE**

It is designed to suit the complete evaluation of anti-rodent property as per General Requirements No:GR/DWC-34/01.Sep 2007 issued by Telecommunication Engineering Centre (TEC).

**3. SPECIES OF RODENTS USED:**

Rattus Rattus (house rat) and Tatera indica (Indian Gerbil)

**4.EQUIPMENT USED FOR TEST:**

- a) Analytical Weighing Balance
- b) Microscope
- c) Two self-cages.

**5. TEST METHODOLOGY:**

The wild rodents are collected freshly from urban and rural areas of India and acclimatized in laboratory cages for 10 days prior to start of the test. During the test period the rats are provided with fruits, vegetables, food and water ad libitum. The individual test samples are weighed and three such replicates for each sample is exposed individually to three test animals.

**No Choice Test:** The rodents will be exposed to the test samples only and no food is given to the rodents during the period of trial. The test sample (one sample each of treated and untreated /control sample) will be exposed to the test rodents. This trail may be run for 5-7 days depending upon the health status of starved test rodents. Tap water will be provided ad libitum to the rodents.

Observation on tooth marks, rodent behavior toward exposed samples, relative extent of damage in treated and untreated samples are computed for both types of samples. Health status of test animals in no choice test is also be monitored for the record any ill effect of exposure of treated / control samples on these animals. Number of cases and the extent of rodent bites / scratch marks in control and anti-rodent treated samples are indicate the relative deterrent/repellent properties of the test samples.

The health status and abnormal behavior also noted during the test period. On the termination of the test, the final samples weight, weight loss, damages and teeth bites are recorded. The Gnawing (G) and Rodent Repellency (RR) factors for each replicate is calculated and presented each separately in the tables. The G and RR factors so calculated are deciding factors for the sample to have resistance against rodent attack and the rodent developed disliking during the course of study. Finally, the samples are rated either safe or not safe based on the final outcome of the test under laboratory conditions.



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**6. RESULTS**

**Table 1: The Initial and Final Weights of No choice test Samples**

Anti-Rodent Masterbatch		Initial Weight*	Final Weight*	Weight Loss*	% Weight Loss	Observation
	Sample 1	1.4363	1.4361	0.0002	0.0139	No toothmark and bite found after the test.
	Sample 2	1.4384	1.4381	0.0002	0.0139	No toothmark and bite found after the test.
	Sample 3	1.4361	1.4359	0.0002	0.0139	No toothmark and bite found after the test.
	Sample 4	1.4372	1.4370	0.0002	0.0139	No toothmark and bite found after the test.
	Total	5.7480	5.7471	0.0008	0.0139	
	Average/ % Wt. Loss			0.0002	0.0139	

\*Wt. in grams

**Table 2: Gnawing factor of No choice test Samples**

Sample	No. of Samples	Initial Sample Weight	GF Factor(G)								
			Total Wt lost	Day1		Day3		Day5		Day7	
				Wt. lost	GF value	Wt. lost	GF value	Wt. lost	GF value	Wt. lost	GF value
	1	1.4363	0.0002	No loss	0	No loss	0	No loss	0	0.0002	0.0139
	2	1.4384	0.0002	No loss	0	No loss	0	No loss	0	0.0002	0.0139
	3	1.4361	0.0002	No loss	0	No loss	0	No loss	0	0.0002	0.0139
	4	1.4372	0.0002	No loss	0	No loss	0	No loss	0	0.0002	0.0139
	Total	5.7480	0.0008	No loss	0	No loss	0	No loss	0	0.0008	0.0139
	Average	1.437	0.0002	No loss	0	No loss	0	No loss	0	0.0002	0.0139

GF Factor(G)=(Wt. loss/initial sample wt.) x 100



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**Table 3: Number of Bites on No choice test samples**

Sample	No. of Samples	No. of Bites						
		Day1	Day2	Day3	Day4	Day5	Day6	Day7
Anti-Rodent Masterbatch	1	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	2	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	3	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	4	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	Total	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites
	Average	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites	No Bites

**Table 4: Rodent Repellency (RR) Factor of No choice test Samples**

Sample	No. of Samples	RR Factor			
		Day1	Day3	Day5	Day7
Anti-Rodent Masterbatch	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	Total	0	0	0	0
	Average	0	0	0	0

RR Factor= (Total no of bites per week/ no of bites on the first day) x 100

**OBSERVATION:**

Health status of Rodent under and after the test found ok.

Conclusion based on the results the samples is rated as safe.



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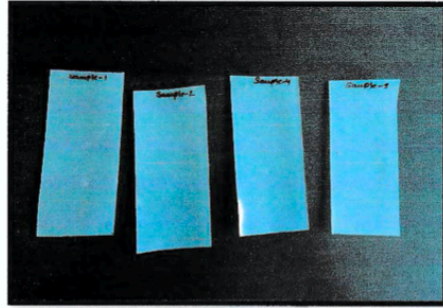


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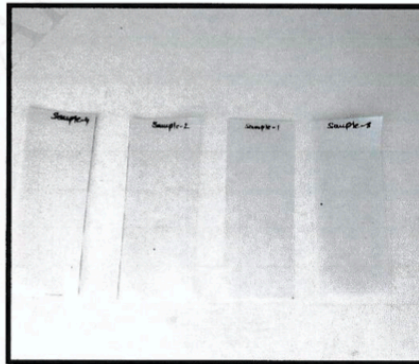
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Sample Before Test



Sample Under Testing



Sample after Test

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