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## 1.0 TITLE

Assessment of rat gnawing activity against wired cables treated with anti-rodent additives and non-treated wired cables.

## 2.0 BACKGROUND & OBJECTIVE

Rats are found to be constantly grinding their incisors or gnawing hard objects to wear them down as the teeth seems to grow continuously. They tend to gnaw woods, cables and other household appliances which cause damage to the items.

To control and prevent rats from gnawing items such as wired cables, an approach of adding anti-rodent additives is applied to the wired cables. The objective of this project is to identify the effectiveness of the additives that were added in the wired cables.

## 3.0 MATERIALS

List of sample wired cables:-

- a) "Controls 1 to 3" – Non-treated wired cables  
Marked : 600/100V CU/XLPE/LSHF  
2C x 35mm<sup>2</sup>  
(Refer Figure 1)
- b) "Samples 1 to 3" – Wired cables treated with anti-rodent additives  
Marked : 600/1000V CU/XLPE/OSCR/WBT/LSHF/SWA/LSHF-AT-AR-UV  
5G x 2.5mm<sup>2</sup>  
(Refer Figure 2)

#### 4.0 METHODOLOGY

i) Test Animal:

Sprague-Dawley rat (adult females weighing 250 gram to 300 gram), are acclimatized for a duration of 7 days; confined singly in wired cages with food (standard mouse diet) and water.

ii) Test Method:

- The two type of cables (as listed in 3.0) are placed and secured inside the cages and daily observations are made to determine the amount of cable gnawing activity.
- One rat is released into each cage and will remain in the cage for a minimum duration of 7 days. (Refer Figure 3)
- Rat activities will be noted for food and water intake as well as observation for any abnormalities.
- The degrees of gnawed cables are recorded at the end of the 7-day test period.

iii) Test condition:

Room temperature at  $26 \pm 2$  °C and relative humidity at  $65 \pm 10\%$ .

iv) A minimum of three replicates for each sample was conducted.

v) The effectiveness of sample is evaluated by determining the percentage of gnawed volume (%), which is calculated using the equation below

$$\% \text{ Gnawed} = (\text{Total gnawed volume, cm}^3 / \text{Total outer volume of test samples, cm}^3) \times 100\%$$

vi) Results reported are based on the items tested and within the test conditions described herein only.

#### 5.0 RESULTS

Replicates	Cable Volume ( in X ml )					
	Without Treatment			With Treatment		
	Pre-test	Post-test	Difference (%)	Pre-test	Post-test	Difference (%)
<b>1</b>	6.2	6.2	0	9.8	9.8	0
<b>2</b>	6.2	5.3	14.0	9.8	9.8	0
<b>3</b>	6.2	5.5	11.3	9.8	9.8	0
<b>Average</b>	6.2	5.7	<b>8.4</b>	9.8	9.8	<b>0</b>

Note:

1. Three replicate samples were used in the experiment.
2. Refer Figure 4 & 5 for pre-post condition of cables.

## 6.0 OBSERVATION

- a. There were no adverse effects on the rats tested, in relation to biological as well as their routine behavior. No abnormality was detected.
- b. Food and water intake were within normal consumption rate.
- c. No gnawing activities were observed for the samples – wired cables treated with anti-rodent additives.
- d. Gnawing activities were observed for the control (without treatment) wired cables.

## 7.0 COMMENTS

The experiment results showed that there are rat gnawing activities observed on the non-treated wired cables. The addition of anti-rodent additives seem to have stopped the rat gnawing activities on the wired cables.

## 8.0 CONCLUSION

Wired cables treated with anti-rodent additives show no rodent attack.

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**APPENDIX**

Figure 1: Non-treated wired cables



Figure 2: Wired cables treated with anti-rodent additives



Figure 3: Gnawed Rat Experimental set-up



Figure 4: Control (Non-treated wired cables):

Replicate	Before	After (7 days)
1		
2		
3		

Figure 5: Sample (Wired cables treated with anti-rodent additives):

Replicate	Before	After (7 days)
1		
2		
3		