

**PRODUCT PURCHASING SPECIFICATION  
TRANSFORMER ENGINEERING DEPARTMENT  
BHEL BHOPAL**

Specification No. **TRE 203**  
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Rev. **00** Dt. : 08.01.2014

**EPOXY MICA (B-STAGE) PUTTY TAPE (ROEBEL PASTE)**

1. **General** - This specification governs the quality of B-staged epoxy mica putty in tape form. This is manufactured by impregnating mica with B-staged epoxy resin. The material has temperature index of at least 155 and good adhesion to metal surface.
2. **Compliance with standards** - There is no standard covering this type of material.
3. **Sample for test** - A roll of 50m length shall be supplied for testing and approval.
4. **Properties** -

	Parameters	Required value	Test method / Remarks
4.1	Thickness	3mm $\pm$ 10%	--
4.2	Width	30mm $\pm$ 10% or 34mm $\pm$ 10%	--
4.3	Length	Roll of 50m $\pm$ 10%	--
4.4	Density	Min.-1.50 Max.-1.75 g/cm <sup>3</sup>	Weight/ volume method
4.5	Weight loss (after 8 hours curing at 170 $\pm$ 2 <sup>o</sup> C)	0.25% Max.	As per clause 5.1
4.6	Bending strength (cured)	80 MPa (Min)	By conventional method
4.7	Mica content	55 $\pm$ 5% by weight	As per clause 5.2
4.8	Epoxy content	45 $\pm$ 5% by weight	As per clause 5.2
4.9	Resin identification	Presence of Epoxide Novalak	Infrared spectro-photometer or any conventional method

5. **Preparation of sample** - Sufficient quantity of sample shall be cut from the roll of tape and then the sample shall be cut into 30mm x 10mm size strips.
- 5.1. **Volatile matter content** - About 10g of the above prepared sample shall be weighed in the tared ignited 6mm dia crucible (W1), and shall be placed in the air circulating oven at 170 $\pm$ 2<sup>o</sup>C for 8 hours. It shall be cooled in a desiccator and then finally weighed. Loss of weight (L) shall be determined by subtracting final weight from the initial weight. Percentage loss in weight shall be calculated as  

$$= 100 \times L / W1.$$
- 5.2. **Resin and mica content** - The crucible and the contents from the above determination shall be heated over a low flame until the resin is reduced to carbon, taking care to prevent ignition. It shall then be transferred to a muffle furnace and shall be ignited at 500-600<sup>o</sup>C for 1 hour and then allowed to cool in desiccator and the weight of residue (W2) shall be determined.  
Resin content (%), on loss free basis =  $(W1-L-W2) / (W1-L) \times 100$   
Mica content (%) on loss free basis =  $W2 / (W1-L) \times 100$
6. **Shelf life** - 3 months minimum at 20<sup>o</sup>C and 6 months minimum at 5<sup>o</sup>C or better.
7. **Certificates** - Unless otherwise stated, test certificates shall be supplied along with each consignment. In addition, the supplier shall ensure to send one copy of test certificates along with their dispatch documents to facilitate quick clearance of the material. The test certificates shall bear the information generally as per above table and clause 8.
8. **Packing & marking** - Packing shall be marked legibly at least with the BHEL spec. no., Order No., Quantity, Thickness & width, Net/ gross weight & Date of manufacturer & expiry.

REV	DATE	ALT CHD	REV-	DATE	ALT CHD.	REV 00	NAME	SIGN	DATE
						PREP.	Akshay Dave	<i>AD</i>	07.01.14
						CHD.	S.K.Mahajan	<i>Kmf</i>	08.01.14
DWI/TCB/TRE/010									