

	<b>PLANT PURCHASING SPECIFICATION BHOPAL</b>	BP 25298
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		SUPERSEDES BP25298 Rev.06
<b><u>SILICONE BONDED POLYIMIDE FILM-MICA PAPER SHEET (Temp.Index 220)</u></b>		
<b>1. GENERAL:</b>  This specification governs technical requirements of Silicone Resin Bonded Polyimide Film Mica Paper sheet. Material shall be made from mica paper bonded to polyimide film using silicone varnish, with polyester film backing. The mica paper used shall be made by mechanical process. The homogeneous insulation produced after pressing and curing shall have a temperature index of at least 220.		
<b>2. APPLICATION:</b>  Used as wrapper insulation in slot portion of armature coils of Class 'H' insulated traction machines.		
<b>3. COMPLIANCE WITH NATIONAL STANDARDS:</b>  There is no Indian Standard covering this material.		
<b>4. DIMENSIONS AND TOLERANCES:</b>		
<b>4.1 <u>Sizes</u> :</b>  The thickness, width and length of the composite shall be as stated on the order.		
<b>4.2 <u>Standard thickness and tolerance</u> :</b>		
Thickness of the composite      0.15 ± 0.01 mm Thickness of Polyimide Film      0.025 mm (Nominal) Thickness of Mica Paper          0.10 mm (Nominal) Thickness of Polyester Film      0.006 mm (Nominal)		
<b>5. SHELF LIFE AND STORAGE:</b>  12 Months (Minimum) at 25 ± 2 deg.C.		
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### 6. TEST METHODS:

Unless otherwise specified, all the tests shall be conducted as per the relevant methods of IEC-60371-2.

### 7. SAMPLE FOR TESTS:

10 sheets of size 300 mm x 300 mm, suitably packed shall be supplied for testing and approval.

### 8. MATERIALS:

8.1 Details and make of mica-paper, polyimide film, polyester film and silicone resin used shall be furnished to BHEL.

#### 8.2 Substance :

When tested as per annexure-I the substance shall be as given below :

Total Substance :  $233 \pm 16 \text{ gm / m}^2$

Wt. of Mica Paper :  $150 \pm 8 \text{ gm / m}^2$

Wt. of Polyimide Film :  $36 \pm 2 \text{ gm / m}^2$

Binder Content :  $40 \pm 5 \text{ gm / m}^2$

Wt. of Polyester film :  $7 \pm 1 \text{ gm / m}^2$

### 9. FINISH:

The sheets shall be flexible, clean, free from wrinkles, voids, blisters and foreign particles. The bonding varnish of the sheets shall be sufficiently dried to 'B - Stage' curing so that the polyester film does not peel off easily and varnish shall not be tacky to touch.

### 10. MECHANICAL PROPERTIES:

#### 10.1 Breaking Strength :

Machine Direction : 4.0 N/mm Width, Min.

Cross Machine Direction : 2.5 N/mm Width, Min.

### 11. ELECTRICAL PROPERTIES:

11.1 Electric Strength (BDV) in air at Room Temp. with 25/75 mm dia electrodes  
50 KV/mm, (Min).





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### 12. TEST CERTIFICATE:

Unless otherwise specified, three copies of test certificate shall be supplied with each consignment.

In addition, the supplier shall ensure to enclose one copy of the test certificate alongwith their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information :

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BHEL Order No.

Batch/Lot No.

Thickness & Width.

Net Weight/No.of rolls.

Test values obtained and Certificate for compliance for clauses 4,8 to 11.

### 13. PACKING AND MARKING:

Silicone Resin Bonded Polyimide Film-Mica Paper Sheets shall be supplied in rolls wound on hollow formers and shall be adequately wrapped to prevent damage during transport, handling and storage.

Each roll shall be clearly and indelibly marked with the following information.

BP 25298: Silicone Bonded Polyimide Film-Mica Paper Sheet (Temperature Index 220).

BHEL Order No.

Manufacturer's Name & Grade.

Batch/Lot No.

Date of Manufacture.

Thickness & Width.

Net Weight.



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**ANNEXURE-I****METHOD FOR DETERMINATION OF SUBSTANCE AND  
COMPOSITION****PREPARATION OF THE SAMPLES:**

10 cm x 10 cm of the sample shall be cut and weighed (W1) to the nearest milligram.

**SUBSTANCE:**

Weight (gm/sq.metre) = 100 W1

**BINDER CONTENT:**

Weighed specimen (mass W1) is placed in the paper tube of a Soxhlet extraction apparatus. Solvent used for extraction purpose is Xylene. The boiling under reflux is continued for 2 hours or longer period if necessary for the complete dissolution of the binder. The treated specimen is taken out of the paper tube and dried for about half an hour at  $135 \pm 2$  deg.C. After cooling in a dessicator weight W2 is determined.

Binder Content (gm/m<sup>2</sup>) = (W1 - W2) x 100

**MICA PAPER, POLYIMIDE FILM AND POLYESTER FILM CONTENT:**

After the above processing, separate out all the three ingredients Viz Mica Paper, Polyimide film and Polyester film and weigh them individually. These weights on multiplying with 100 give substance of respective constituents.