



PRODUCT STANDARD
TME DIVISION, BHOPAL

TM 02353

TME 2011

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SILICONE BONDED GLASS BACKED MICA
PAPER TAPE AND SHEET

1. GENERAL :

This specification governs the quality requirements of silicone bonded Glass backed mica paper tape and sheet. The material shall be made from mica paper with a woven glass fabric backing adherent to one side and evenly impregnated. The homogeneous insulation produced after processing and curing shall have a temperature index of at least 200.

2. APPLICATION :

Used as field coil insulation of stator and other parts of Traction Machines.

3. COMPLIANCE WITH NATIONAL STANDARDS :

There is no Indian Standard covering this type of material.

4. DIMENSIONS AND TOLERANCES :

4.1 Sizes :

The thickness, width and length shall be as stated on the order.

4.2 Thickness :

4.2.1 Standard Thickness :

0.13 mm

4.2.2 Tolerance :

Average Value : + 0.03 mm
- 0.01 mm

Individual Value : + 0.05 mm
- 0.03 mm

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Revision : 00

Distribution

Qty.

Approved

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27.09.2002

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27.09.2002
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4.3 Width :

4.3.1 Standard Width :

Tape : 19, 25 & 30 mm

Sheet : 455 mm

4.3.2 Tolerance :

Tape : ± 0.5 mm

Sheet : $+ 5.0$ mm
 $- 0.0$

4.4 Length/Roll :

Tape : 30 m

Sheet : 1000 mm

However, for special applications, any other size may be ordered.

5. SHELF LIFE AND STORAGE :

At 25 ± 3 deg.C - 12 months, minimum.

6. TEST METHODS

Unless otherwise specified, all the tests shall be conducted as per the relevant methods of IEC/BIS.

7. COMPOSITION :

Mica Paper :

The type of phlogophite mica paper with aramid fibrils used shall be disclosed to BHEL and prior approval obtained. Once approved, it shall not be changed without the concurrence to BHEL.

7.2 Glass Fabric :

The glass fabric backing shall be 0.04 – 0.05 mm thick with a suitable finish, compatible with the resin system used. The type of finish of tape to be disclosed and got approved from BHEL.



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7.3 Resin Bond :

The resin used for bonding should be silicone and the supplier and the grade should be informed to BHEL.

Departure from the formulation may be permitted but the fact of departure must be disclosed to BHEL and it must be supported by appropriate test data before such material is got approved. BHEL reserves the right to test the uncured resin from any lot by any instrumental methods for consistency of supplies.

7.4 Substance :

When tested as per any conventional method the substance shall be as given below.

Thickness	Total Substance (g/m ²)	Mica Content (%)	Binder Content (%)	Aramid Fibrids (%)
0.13	180 ± 20	50 ± 5	30 ± 3	4 ± 1

8.0 PROPERTIES :

8.1 Surface condition & unreeling characteristics

The material should be tack-free, but a minor degree of tackiness is acceptable. The material shall not be blocking after storing at 27 deg.C for 24 hours and it shall be capable of being unreeled in a manner so as not to allow separation of mica paper from the glass cloth. Material shall not stick to the adjacent layers in the absence of inter leaving. The tape shall be suitable for applications hand, taping, machine taping or wrapping.

8.2 Flexibility

The tape shall be sufficiently flexible. When wound on a 3 mm dia mandrel with glass side up, at room temperature there shall be no signs of cracks occurring in the mica paper.

8.3 Breaking Strength

130 N/cm width

8.4 Breakdown Voltage at Room. Temp

Average : 1.3 kV, Min.

Individual Value : 1.0 kV, Min.



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9. **INTER-LEAVING**

A suitable grade plain polythene film can be used for production as an inter leaving between the turns on the tape if required, however roll without interleaving will be preferred.

10. **JOINTS :**

The material shall be supplied in continuous lengths as stated on the order. Rolls having joint shall be packed separately and appropriately marked. 90% of the consignment shall be without joints. Material used for jointing shall not adversely affect the properties of the cured insulation. If the material used for jointing is not compatible with the insulation, the supplier shall notify Accordingly. Per roll, maximum only one joint is permitted.

11. **INSPECTION AT SUPPLIER'S WORK:**

Wherever specified, tests and inspection are to be conducted in the presence of BHEL's representative.

The supplier shall; offer the purchaser's representative all reasonable facilities, without charge to satisfy the latter that the material is being furnished in accordance with this specification. The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangements for carrying out the prescribed tests elsewhere. The supplier shall notify the purchaser (or his representative) in advance about readiness of the material for inspecting and testing.

BHEL reserves the right to test the material at BHEL's works and the final acceptance of the material shall be based on these test results.

12. **TEST CERTIFICATE :**

Unless otherwise stated, three copies of certificates shall be supplied along with each consignment .