

 An ISO 9001:2015 Company	INSULATION SYSTEMS ENGINEERING	IN. SK. 30360
		Rev. No.: 00
	<u>CONDUCTIVE POLYESTER FIBRE FLEECE</u> <u>(FOR RESIN RICH APPLICATION)</u>	Rev. Dt.: 16/10/2019
		Sht. 1 of 5 shts.

1.0 GENERAL :

This specification governs the quality requirements of conducting polyester fleece tape manufactured from non-woven polyester fiber random fleece, impregnated with heat resisting varnish containing carbon black and graphite. The tape is highly resistant to most of the organic and inorganic solvents and can be impregnated with synthetic resin. The material should have a temperature index of at least 130 and after consolidation with resin rich tapes; it should be suitable for use in Class – F machines.

Important

The conducting particles of the tape should not get diffused with the main slot insulation, during the processing.

2.0 APPLICATION :

Used for slot corona protection in high voltage rotating electrical machines with resin rich insulation system (for both inner and outer corona protection application).

3.0 COMPLIANCE WITH NATIONAL STANDARDS :

There is no Indian Standard covering this type of material.

4.0 DIMENSIONS AND TOLERANCES :

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

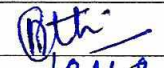
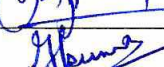
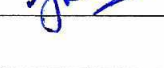
4.1 Preferred Thickness & Tolerance

0.09 ± 0.02 mm

4.2 Preferred Width & Tolerance

40 ± 0.5 mm

However, any other width can also be ordered.

Distribution:	Date of Rev. 00:16/10/2019	Name	Signature
CIM QFD HGE TSD	Prepared by	Abha Otti	
	Checked by	Nidhi Gupta	
	Approved by	Anirudha Tijare	
	Issued by	Gautam Kumar	
BHEL BHOPAL			

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4.3 Length/ Roll

50 meters

5.0 COLOUR

Dark grey to black

6.0 FINISH

The conducting fleece shall be free from folds, wrinkles, hard particles and other irregularities. The surface shall be smooth and uniform. The cutting edges shall be straight & free of cutting marks.

7.0 TEST METHODS

Unless otherwise specified, the tests shall be conducted in accordance with relevant methods of IS 5351/ IEC 60394-2.

8.0 SAMPLE FOR TEST

One tape roll shall be sent to TSD for testing by BHEL QC personnel from every consignment.

9.0 PHYSICAL PROPERTIES

9.1 Substance (by any conventional method)

80 ± 16 g/ m²

10.0 MECHANICAL PROPERTIES

10.1 Tensile strength

3.0 N/mm width (minimum)

10.2 Force for 1.0% Elongation

1.0 N/mm width (minimum)

11.0 ELECTRICAL PROPERTIES

11.1 Electrical Resistance

Test shall be carried out in longitudinal direction as per Annexure – 1/ ASTM D 257.

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11.1.1 As Received

Resistance (Ohm/ unit square) = 100 to 400

11.1.2 After consolidation with resin rich tapes under heat and pressure

After applying as finishing (outer corona protection) layer over resin rich epoxy novolac bonded glass backed mica paper tape layers and consolidation under heat & pressure, the electrical resistance when measured at room temperature shall be in the range of 0.5 to 5 kilo-ohms/ unit square.

12.0 SHELF LIFE

24 months minimum when stored in original sealed packing under dry conditions at room temperature.

13.0 REJECTION

BHEL reserves the right to reject the entire lot of the material if found not conforming to the stipulations of this specification. Parts of the lot not subjected to testing but found not to meet the specification/ found to be defective/ having hidden defects or having shop application problems can be rejected later on also.

14.0 TEST CERTIFICATES

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

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

The test certificate shall bear the following information.

IN.SK.30360 Rev-00 Conducting Polyester Fibre Fleece
BHEL PO No.
Batch/ Lot No.
Test values obtained & certificate for compliance for Cl. 4, 9, 10 and 11.1.1.

15.0 PACKING & MARKING

The tape shall be suitably packed to protect from contamination and damage in transit.

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15.1 <u>On Rolls</u> Each roll shall be legibly marked with the following information: Batch/Lot No. Manufacturer's and/ or Supplier's Name & Grade Thickness, Width & Length Date of Manufacture & Expiry 15.2 <u>On Crate</u> Each crate shall be marked with the following information: IN.SK.30360 Rev 00: Conducting Polyester Fibre Fleece BHEL PO. No. Manufacturer's and/ or Supplier's Name & Grade Batch/ Lot No. Thickness, Width & Length of Roll Quantity of Rolls Date of Manufacture and Expiry Test Certificate Reference		
BHEL BHOPAL		



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Sht. 5 of 5 shts.

Annexure - I

TEST METHOD FOR MEASUREMENT OF ELECTRICAL RESISTANCE

Testing shall be carried out in longitudinal direction on 5 samples of available width (standard width 40 mm). Length of sample shall be ten times the width of tape (400 mm for standard width of 40 mm). Conducting silver paint shall be applied at both the ends throughout the width of tape to serve as electrodes.

Test shall be carried out at 1.5 Volt D.C. using a suitable Ohm Meter or Wheatstone bridge.

Electrical Resistance shall be calculated from the following formula:

$$R = \frac{R_t \times W}{L}$$

Where

- R : Electrical Resistance per Unit Square in Ohms
- R_t : Resistance in ohms of sample under test
- W : Width of sample in mm
- L : Length of sample in mm

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