



संस्थान क्रय विनिर्देश (डीप - हार्डवार)

HW 22894 /
TG 60159

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PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)

CONDUCTIVE POLYESTER FLEECE

1. GENERAL :

This specification covers the requirements of non-woven polyester fleece made electrically semi-conductive by impregnation with suitable varnish. The material shall have a Limit temperature of minimum 130°C as per VDE 0304 part 21.

2. APPLICATION :

The Conductive polyester fleece is used during assembly of stator windings on the bar surface as wrapper by gluing with conductive varnish.

3. COMPLIANCE WITH NATIONAL STANDARDS :

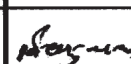
There is no Indian standard covering this type of material. Assistance has been taken from KWU-Siemens norm KUN 569.44 , August 1994 issue..

4. MATERIALS :

4.1 **Polyester fleece :** Quality of this material shall conform to that of grade H 3006 of M/s Freudenberg , Germany

4.2 **Impregnating system :** Graphite or carbon black filled synthetic resin with a Limit Temp. of minimum 130°C as per VDE 0304 ,part 21

सामग्री सूची संख्या INVENTORY NO. P-5616	हस्ताक्षर एवं दिनांक SIGN & DATE 27/09/03	हस्ताक्षर एवं दिनांक SIGN & DATE 27/09/03	हस्ताक्षर एवं दिनांक SIGN & DATE 27/09/03	हस्ताक्षर एवं दिनांक SIGN & DATE 27/09/03	हस्ताक्षर एवं दिनांक SIGN & DATE 27/09/03
TSX	J.C. Kowatra	27/09/03	अनुवादक	TRANSLATED BY	
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EME	B. SINGH	27/09/03	जांचकर्ता	CHECKED BY	V.C. GOYAL
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	V.C. GOYAL	27/09/03
स्वीकृति : संस्थान मानक समिति APPROVED : PLANT STANDARDS COMMITTEE			2/22		
REV. NO. 04 (REAFFIRMED) 27-09-18			निर्माण : PREPARED : ISE & CPL	प्राप्ति : मानक विभाग ISSUED : STANDARDS DIVISION	दिनांक : DATE : 3.5.86

SIGN & DATE 		संस्थान क्रय विनिर्देश (डीप - हरिद्वार) PLANT PURCHASE SPECIFICATION (HEEP - HARDWAR)		HW 22894 / TG 60159 पृष्ठ का Page 2 of 4	
SUPERSEDES INVENTORY NO. सामग्री सूची संख्या को अधिकारित करता		5.0 DIMENSIONS AND PROPERTIES : 5.1 SIZES AND TOLERANCES : 5.1.1 Thickness : Nominal : 0.1 mm Tolerance : + 0.0 , - 0.03 mm 5.1.2 Preferred widths : Approx. 1000 mm Other widths, if required, would be as stated on the purchase order. The required length shall be as stipulated on the purchase order. The supplier shall indicate the minimum length of each roll. 5.2 PROPERTIES : 5.2.1 Physical appearance and freedom from defects : The conductive fleece shall be uniformly impregnated , porous and abrasion resistant. It shall not soften or become sticky on warming. It shall be free from foreign inclusions , wrinkles , cracks and other defects. 5.2.2 Surface resistance per square : 3 to 10 kilo Ohms 5.2.3 Tensile breaking load : a) Lengthwise : $\geq 3 \text{ N / mm}$ b) Crosswise : $\geq 0.7 \text{ N / mm}$ 5.2.4 Elongation at maximum force : a) Lengthwise : $\leq 25 \%$ b) Crosswise : $\leq 15 \%$ 5.2.5 Total substance : $70 \pm 10 \text{ g / m}^2$			
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company		स्वत्वधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं अप्रत्यक्ष रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।			
SIGN & DATE 		REV.NO. 04			
INVENTORY NO. P-5616		निर्माणकर्ता WORKED BY S.A. MIRAJ 		26-09-03	
		जांचकर्ता CHECKED BY V.C. GOYAL 		27-09-03	



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6. SAMPLING :

One sample of approximate length 500 mm from one out of every 3 rolls shall be taken for testing to requirements of clause 5. If the results of these tests do not conform to the requirements of this specification, then two more samples are taken from remaining rolls for repeat testing. When two out of three results of overall testing deviate from the specification, the whole lot is considered as not conforming to this specification.

7. TEST METHODS :

7.1 Thickness : This shall be determined by using a suitable micrometer (having a measuring force of 0.5 to 1.0 kg). An average of minimum 5 readings shall be reported

7.2 Total substance : This shall be determined by weighing a 0.5 m long sample in supplied width.

7.3 Surface resistance : This shall be determined at 5 points along the length and width of the sample at a measuring voltage of 1 to 10 volts using the following electrode arrangement.

The arrangement consists of two sets of metallic spring-tongue electrodes 100 mm long separated by 10 mm gap. Each tongue electrode shall be 0.3mm thick and max. 5 mm long. The gap between two tongues shall be 0.3 mm .

The pressing force shall large enough to press all tongues uniformly to the surface without damaging the surface. Measurement shall be carried out after one minute of voltage application. Ten times the measured value is given as the surface resistance, per square.

7.4 Tensile breaking load and Elongation : These shall be determined on a Universal testing machine. The sample shall have 15 mm width and a length of not less than 170 mm. While the length between grips shall be 120 mm the gauge length shall be 100 mm . The test speed shall be approximately 50 mm / min..

8. SHELF-LIFE :

The material shall have unlimited shelf-life when stored in dry / packed condition at room temperature ($\leq 25^{\circ}\text{C}$).

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स्वाधिकार एवं गोपनीय
इस प्रलेख में दी गई सूचना भारत भारती इलेक्ट्रिकल्स की संपत्ति है इसका प्रयोग एवं अप्रयोग का प्रयोग के बिना न किया जाए

हस्ताक्षर एवं तिनांक
SIGN & DATE

सामग्री सूची संख्या
INVENTORY NO.

REV.NO.

04

निर्माणकर्ता
WORKED BY

S.A. MIRAJ

(Signature)

26.09.03

जांचकर्ता
CHECKED BY

V.C. GOYAL

(Signature)

27.09.03

P-5216

22/09/03



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9. TEST AND COMPLIANCE CERTIFICATE :

The supplier shall furnish certificate of compliance to this specification and Test certificate covering properties stipulated in clause 5 of this specification, with each supply of the material. The Test certificate shall also include information relating to batch / lot No. , date of manufacturing and testing.

10. CRITERIA FOR ACCEPTANCE :

The material shall be accepted on the basis of the following.

- Compliance certificate furnished by the supplier.
- Test certificate furnished by the supplier and / or testing carried out at BHEL end.

11. PACKING & MARKING :

The conductive polyester fleece shall be wound on cores with 40 - 55 mm inner diameter and approximately 5 mm thickness. The roll weight shall be approximately 20 kgs. The packing shall be so selected that the rolls are protected from dirt , dust etc and are not damaged during transportation and storage.

Each roll /package shall be marked giving following information.

- Material name / Specification No.
- BHEL P.O.No. (Optional)
- Thickness / width / length
- Net weight & gross weight
- Manufacturer's name & grade
- Date of manufacture / Batch or Lot No.

12. REJECTION :

BHEL reserves the right to reject the entire lot of the material not conforming to the requirements of this specification. Parts of the lot not subjected to testing but found to be defective or to contain hidden defects can be rejected at a later stage.

13. CROSS REFERRED STANDARDS : VDE 0304 part 21

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हस्ताक्षर एवं दिनांक SIGN & DATE 29/09/03	स्वत्वाधिकार एवं गोपनीय इस प्रलेख में दी गई सूचना भारत देशी प्रोपर्टी का है। इसका प्रयोग एवं अपव्यय रूप से किसी भी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।	संस्थागत और गोपनीय The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company.			
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