

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE'

APPROVED BY

CEE/TM

RAJIV KUMAR BARNWAL	Digitally signed by RAJIV KUMAR BARNWAL Date: 2022.11.22 17:19:06 +05'30'
------------------------------------	---

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE' FOR 3-PHASE TRACTION MOTOR	CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL , INDIA No. 4TMS.096.098 First Issued on: 04.11.2022
---	---

(Prepared & Checked by) Digitally signed by NI HAR RANJAN MONDAL Date: 2022.11.26 11:35:07 IST	NIHAR RANJAN MONDAL	Digitally signed by NIHAR RANJAN MONDAL Date: 2022.11.12 11:27:27 +05'30'	(Reviewed by) Dy.CEE/ TMD 14	RANJAN KUMAR PRAMANIK	Digitally signed by RANJAN KUMAR PRAMANIK Date: 2022.11.15 17:22:43 +05'30'
--	------------------------------------	---	--	--------------------------------------	---

ALTERATION SHEET				
Alt.No	Description of modification	Authority	Signature	Date

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE' FOR 3-PHASE TRACTION MOTOR		CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL , INDIA No. 4TMS.096.098 First Issued on: 04.11.2022		
(Prepared & checked by) SSE/TMDO	NIHAR RANJAN MONDAL Digitally signed by NIHAR RANJAN MONDAL Date: 2022.11.12 11:27:41 +05'30'	(Reviewed by) Dy.CEE/ TMD 15	RANJAN KUMAR PRAMANIK Digitally signed by RANJAN KUMAR PRAMANIK Date: 2022.11.15 17:23:39 +05'30'	

1.0 General:

1.1 Scope :

This specification covers the manufacture and supply of 'Mica Glass Fabric Tape' used in 3-Phase Traction Motor type 6 FRA 6068 & 6FXA 7059. Mica Glass Fabric Tape is used in insulation of Coil during stator coil manufacturing, neutral ring and phase connecting ring..

1.2 Reference:

In the preparation of this specification assistance has been taken from ABB Delivery Instruction HZN 02354.

2.0 Constructional Requirements:

2.1 Mica Glass Fabric Tape is a semi finished product of Mi/GI Gwb 18.

2.2 Mi/GI Gwb 18 is a dry, flexible and impregnatable insulating material in the form of tapes 0.12 mm thick. It consists of aromatic polyamide fibres added mica paper (Muskovit) and glass fabric backing lightly glued together. A hardener –free silicon resin serves as a binder.

3.0 Source of Raw Material:

The tenderer shall use raw material from any reputed source who can supply the raw material strictly as per specification as well as submit documentary proof regarding quantity of raw material during inspection.

4.0 QAP:

The tenderer shall submit the process of manufacturing in the form of QAP which includes quality plan from the stage of raw material procurement, through in process and final tests. The tenderer must submit their QAP along with tender.

After getting order, QAP shall be duly approved by the competent authority before going of prototype inspection.

5.0 Size :

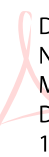

0.12 mm x 15 mm (in roll of 30 m)

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE' FOR 3-PHASE TRACTION MOTOR		CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL , INDIA No. 4TMS.096.098 First Issued on: 04.11.2022	
(Prepared & checked by) SSE/TMDO	NIHAR RANJAN MONDAL Digitally signed by NIHAR RANJAN MONDAL Date: 2022.11.12 11:28:39 +05'30'	(Reviewed by) Dy.CEE/ TMD 16	RANJAN KUMAR PRAMANIK Digitally signed by RANJAN KUMAR PRAMANIK Date: 2022.11.15 17:24:38 +05'30'

6.0 Properties:

SN	Size, Term	Unit	Values	Test Method
01	Thickness	mm	0.12 ± 0.02	IEC 371-2 section 3 (i)
02	Width	mm	$15 \pm 5\%$	
03	Composition	g/m ²		IEC 371-2 section 6 (ii)
	Glass Fabric ⁽ⁱⁱⁱ⁾		32 ± 3	
	Mica Paper		113 ± 8	
	Binder ^(iv)		12 ± 4	
	Aromatic polyamide fibres		7 ± 3	IEC 371-2 (section 6.4)
04	Mass per unit area	g/m ²	164 ± 10	IEC 371-2 (section 6.2)
05	Thread Count (Glass fabric)	cm ⁻¹	\pm	DIN 53853
	Warp		24 ± 2	
	Weft		11 ± 1	
06	Rupture strength per 1 cm of tape width in machine direction	N	≥ 100	IEC 371-2 (section 7)
07	Edge tearing strength	N	≥ 12	IEC 394-2 (section 8)
08	Bending Stiffness in ^(v) machine direction	N/m	≤ 65	IEC 371-2 (section 10)
09	Layer bonding	N/cm ²		GMN 14338
	Individual values		≥ 0.70	
	Average value		≥ 1.0	
10	Permeability to air Individual values	s/100 ml	≤ 3500	ISO 3687 (ASTM D 726)
11	Storage life from delivery date, in original container ^(vi)	Months		
	At room temperature ($\leq 25^{\circ}\text{C}$)		12	
	At 0.....5 ^o C		24	

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE' FOR 3-PHASE TRACTION MOTOR	CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL , INDIA No. 4TMS.096.098 First Issued on: 04.11.2022
---	---

(Prepared & checked by) SSE/TMDO	NIHAR RANJAN MONDAL  Digitally signed by NIHAR RANJAN MONDAL Date: 2022.11.12 11:28:55 +05'30'	(Reviewed by) Dy.CEE/ TMD 17	RANJAN KUMAR PRAMANIK  Digitally signed by RANJAN KUMAR PRAMANIK Date: 2022.11.15 17:25:43 +05'30'
-------------------------------------	---	------------------------------------	---

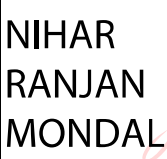
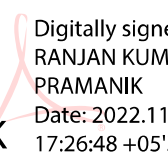
- (i) Measured with a test pressure of 5 N on a measuring area of 0.5 cm²
- (ii) Determine following extraction by quantitative manual separation
- (iii) The glass fabric is size free with a residual size content of ≤ 0.2 %.
- (iv) The binder is a hardener-free silicon resin.
- (v) Glass fabric on the tension side
- (vi) Permissible storage time until expiry date (see section 9.0).

6.1 Additional requirements:

1. Material must not include any foreign bodies.
2. The tapes or widths must not stick to each other so strongly when rolled that mica paper is torn off when unrolling.
3. Each roll must consist of one continuous length of tape. Adhesive joints within in a roll are not permitted.

7.0 TEST:

- 7.1 All the test specified in the specification shall be carried out preferably at manufacturer's works. The manufacturer shall arrange all the necessary machinery, apparatus, labour and assistance required for conducting the tests without Extra cost. If any testing facility is not available at firm's premises, the test has to be done from any NABL lab at own (Firm's) cost.
- 7.2 Inspection authority must check original Challan/invoice of raw material. Quantity of Raw material consumed against P.O under Inspection must be endorsed on Challan/Invoice.
- 7.3 In case of import, the firm must produce original TC,GC & imported document to the Inspection authority.TC should not be older more than one year at the time of Inspection.

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE' FOR 3-PHASE TRACTION MOTOR		CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL , INDIA No. 4TMS.096.098 First Issued on: 04.11.2022	
(Prepared & checked by) SSE/TMDO	NIHAR RANJAN MONDAL  Digitally signed by NIHAR RANJAN MONDAL Date: 2022.11.12 11:29:06 +05'30'	(Reviewed by) Dy.CEE/ TMD 18	RANJAN KUMAR PRAMANIK  Digitally signed by RANJAN KUMAR PRAMANIK Date: 2022.11.15 17:26:48 +05'30'

8.0 Bulk Manufacture:

- 8.1 Only after clear written approval of the results of the tests on the prototype is communicated by the Dy. CEE/TMD, to the manufacture, shall he take-up bulk manufacture of the Mica Glass Fabric Tape which shall be strictly with the same material and process as adopted for the prototype.
- 8.2 Any testing and approval by the purchaser of the design, drawing and prototype shall in no way absolve the supplier of his responsibilities under the terms and conditions of the contract.



9.0 Marking:

Each roll shall be legibly marked at both ends with the following information:-

- Manufacture's name or trademark.
- Purchase order reference and date.
- Item Name, size, Quality, batch no. of mfg. and date of expiry.

10 Packing :

The material shall be supplied in 30 m roll wound on a hard tubular core / spools with an inside diameter of 55 ± 0.5 mm and outside diameter of the roll 95-100 mm and also sufficient tension to form a compact roll without deforming the construction of the tape. The tape shall wound tightly over the core such that the edges are not uneven and shall not get loosened when dropped over a floor from one meter height. The inner edge of the spool should be curved edge. **The mica paper of the tape should be outside of the roll.** Each roll of the material shall be suitably packed (paper separator between two rolls) so that no damage can arise during transportation and it can be unloaded easily.

SPECIFICATION FOR 'MICA GLASS FABRIC TAPE' FOR 3-PHASE TRACTION MOTOR		CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL , INDIA No. 4TMS.096.098 First Issued on: 04.11.2022	
(Prepared & checked by) SSE/TMDO	NIHAR RANJAN MONDAL  Digitally signed by NIHAR RANJAN MONDAL Date: 2022.11.12 11:29:21 +05'30'	(Reviewed by) Dy.CEE/ TMD 19	RANJAN KUMAR PRAMANIK  Digitally signed by RANJAN KUMAR PRAMANIK Date: 2022.11.15 17:28:02 +05'30'