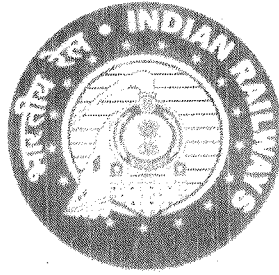


SCHEDULE OF TECHNICAL REQUIREMENTS
FOR MANUFACTURE & SUPPLY OF
POLYAMIDE STRIPS (Four Items)
FOR
3-PHASE TRACTION MOTOR
OF
ELECTRIC LOCOMOTIVES.

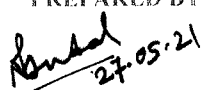
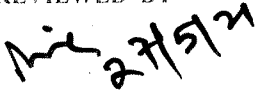

ISSUED ON: May 2021



TRACTION MOTOR DEPARTMENT
CHITTARANJAN LOCOMOTIVE WORKS
CHITTARANJAN-713365, WEST BENGAL

APPROVED BY

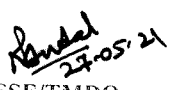
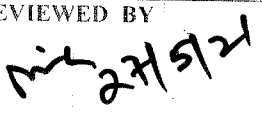
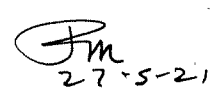

 PCEE 31.05.2021

PREPARED BY  27.05.21 SSE/TMDO	REVIEWED BY  27/5/21 Dy. CEE/TMD	RECOMMENDED BY  27-5-21 CEE/TM
SCHEDULE OF TECHNICAL REQUIREMENTS FOR SUPPLY OF POLYAMIDE STRIPS FOR 3 PHASE TM.	CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN, WEST BENGAL STR NO: CLW/TM/STR/361 (Rev O) DATE: 27.05.2021	

- Size:** (i) Polyamide Strip: 0.25 mm thk x 9 mm wide x 507 mm long.
(ii) Polyamide Strip: 0.13 mm thk x 8.4 mm wide x 90 mm long.
(iii) Polyamide Strip ("U" Shaped Insulation) 5 mil thk x 25 mm wide x 140 mm long.
(iv) Polyamide Strip 0.25 mm thk x 9 mm wide x 417 mm long

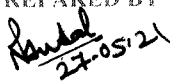
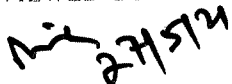
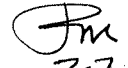
**ALTERATIONSHEET FOR SUPPLY OF "POLYAMIDE STRIPS"
FOR 3-PHASE TRACTION MOTOR .**

Sl. No.	Alt.No.	Authority	Description	Initial	Date

PREPARED BY  SSE/TMDO	REVIEWED BY  Dy. CEE/TMD	RECOMMENDED BY  CEE/TM
SCHEDULE OF TECHNICAL REQUIREMENTS FOR SUPPLY OF POLYAMIDE STRIPS FOR 3 PHASE TM .		CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN, WEST BENGAL STR NO: CLW/TM/STR/861.(Rev O) DATE: 27.05.2021

SCHEDULE OF TECHNICAL REQUIREMENTS FOR SUPPLY OF "POLYAMIDE STRIPS"
FOR 3-PHASE TRACTION MOTOR TYPE 6 FRA 6068 & 6 FXA 7059

1. **SCOPE:-** This schedule of technical requirement (STR) is being issued to serve as guidelines to manufacturers/firms for manufacturing of Polyamide Strips, format of Quality Assurance Plan to be followed, Minimum Machinery and Plant, Testing facilities & Measurement facilities required. This STR should be read in conjunction with the relevant CLW Specification. The firm should satisfy themselves having complied with the requirements of the Specification and STR.
2. **Reference :-** CLW's Specification no. 4TMS.096.091.
3. **General Requirement:-** The firm should be certified to ISO 9001 by an agency accredited by NABCB.
4. **Production Capacity:** Annual production capacity calculation for the full production range must be given on the basis of time required for each process.
5. **Desired aspect in QAP:-** Original QAP to be submitted by the vendor in duplicate as a separate bound booklet and QAP has to be specific for each product as per page 4 of 5.
6. **M&P, Testing & Measuring Instruments:-** List of typical M&P required for manufacturing, testing & measuring instruments furnished at Sheet-5/5 is for minimum requirements and actual manufacturing operations, specific testing & measuring instruments shall be submitted and get approved by the firm as a part of QAP.
7. **Internal Quality Control System:-**
 - 7.1 The manufacturer shall procure all the incoming raw materials from standard brand preferably from RDSO/ CLW approved sources along with test certificates and sources should be available as & when asked for. If RDSO/ CLW Sources are not available, then raw materials from reputed firm shall be procured along with proper test certificate.
 - 7.2 Quality Assurance Process of incoming materials, manufacturing process used for the subject items, including type tests, supply criteria, covering specification acceptance norms, agency if tested from outside Lab, format of records etc.
 - 7.3 Detailed process flow chart indicating process of manufacture and individual product.
 - 7.4 The testing & measuring equipments and the validity of calibration should be current and calibration certificate issued by the calibration agency (NABL/Govt. Approved) should be maintained.
 - 7.5 Relevant standards like IS/BS/IEC/DIN/ ASTM etc. shall be available with the firm.

PREPARED BY  27-05-21 SSE/TMDO	REVIEWED BY  27/5/21 Dy. CEE/TMD	RECOMMENDED BY  27-5-21 CEE/TM
SCHEDULE OF TECHNICAL REQUIREMENTS FOR SUPPLY OF POLYAMIDE STRIPS FOR 3 PHASE TM.	CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN, WEST BENGAL STR NO: CLW/TM/STR/861.(Rev O) DATE: 27.05.2021	

8 Format of QAP Booklet to be submitted by the vendor:-

QAP to be submitted by the vendor in duplicate as a separate bound booklet along with the application form (the Form 'A'). QAP has to be specified for each product and it shall cover the following aspects:-

- 8.1 Index Page.
- 8.2 Copy of ISO 9001 Certificate from NABCB registered body.
- 8.3 Organization Chart clearly bringing out the Quality control setup.
- 8.4 Qualification log sheets of the personnel manning only the quality control setup.
- 8.5 List of M&P and testing & measuring facilities.

All plant & Machinery, Testing and measuring instruments are to be filled up as per following format:-

Sl No	Description of items	Make(Name of the manufacturer & Country.)	Model No	Year of Installation	Capacity / Range	Quantity	Accuracy	Photograph

Note: Vague language like 'available or will install' is not to be considered

- 8.6 Process flow chart indicating step by step process of manufacture of an item or a family of items for which the process is same.

8.7 Details of sub vendors:-

Name of item	Sub vendors	ISO status	Inspection plan of Sub vendors

The Sub vendors should have all the requisite infrastructure of manufacturing and testing facilities preferably under one roof.

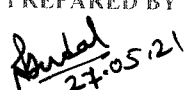
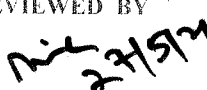
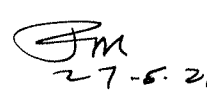
- 8.8 Quality Assurance System: - Inspection and testing plan with formats to be filled up for:-
 - Incoming material.
 - Process Control.
 - Product Control.

This must be furnished in the following formats:-

Subject/ Products/ Process	Sample size & its frequency of inspection	Parameters of Inspections	Mode of inspection/ Equipment used	Acceptance limit/criteria /specified value as per Drg./Specn.	Format No. where records will be kept.

Note:

1. Sample format used for recording must be submitted.
2. Firm must not depend only on TC for incoming material.
3. Record of SN 8.8 above shall be checked during inspection at firm's premises.
4. General ISO 9001 documents not to be submitted.

PREPARED BY  27.05.21 SSE/TMDO	REVIEWED BY  27/5/21 Dy. CEE/TMD	RECOMMENDED BY  27-5-21 CEE/TM
SCHEDULE OF TECHNICAL REQUIREMENTS FOR SUPPLY OF POLYAMIDE STRIPS FOR 3 PHASE TM.		CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN, WEST BENGAL STR NO: CLW/TM/STR/861.(Rev O) DATE: 27.05.2021

REQUIREMENTS FOR POLYAMIDE STRIP**A. Machinery & Plant :**

1. Slitting machine .
2. Cutting machine.
3. Heat sealing gun.
4. Dust free space for working & air condition stores for preserving shelf-life items.

B. Testing facilities :-


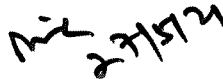
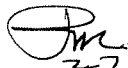
1. Weighing machine with least count (0.001 -200 gram).
2. BDV tester (upto 25 Kv with mA meter.)
3. Tensile Testing Machine.(250 kgf)
4. Muffle Furnace.(600⁰ C)

C. Measuring facilities(Essential):-

1. Vernier calliper (digital).
2. Micrometer(digital) .
3. Steel Scale/Tape

NOTE:-

1. CLW reserves the right to cancel the capacity cum capability assessment without any prior intimation.

PREPARED BY  27.05.21 SSE/TMDO	REVIEWED BY  27/5/21 Dy. CEE/TMD	RECOMMENDED BY  27-5-21 CEE/TM
SCHEDULE OF TECHNICAL REQUIREMENTS FOR SUPPLY OF POLYAMIDE STRIPS FOR 3 PHASE TM .	CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN, WEST BENGAL STR NO: CLW/TM/STR/861.(Rev O) DATE: 27.05.2021	