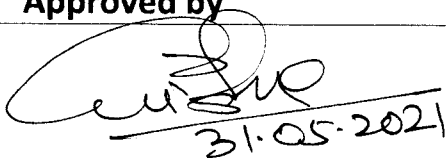
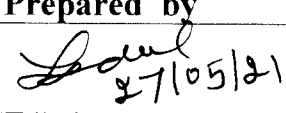
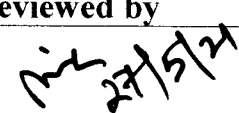
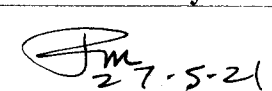


**SCHEDULE OF TECHNICAL REQUIREMENTS FOR  
MANUFACTURE & SUPPLY OF CONFORMAL COATING RESIN  
COMBINATION (SILICON RESIN, HARDENER/ACCLERATOR AND  
SUITABLE THINNER) FOR TRACTION MOTOR TYPE  
6FRA- 6068 & 6FXA-7059 OF 3-PHASE ELECTRIC LOCOMOTIVES**


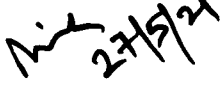
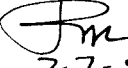
**May '2021**

**ISSUED BY  
TRACTION MOTOR DEPARTMENT  
CHITTARANJAN LOCOMOTIVE WORKS  
CHITTARANJAN.713331  
WEST BENGAL**

<b>Approved by</b>		
 31.05.2021 <b>PCEE</b>		
<b>Prepared by</b>	<b>Reviewed by</b>	<b>Recommended by</b>
 27/05/21 <b>SSE/D&amp;D/TMDO</b>	 27/5/21 <b>Dy. CEE/TMD</b>	 27-5-21 <b>CEE/TM</b>

**ALTERATION SHEET FOR MANUFACTURE & SUPPLY OF CONFORMAL COATING RESIN COMBINATION (SILICON RESIN, HARDENER/ ACCLERATOR AND SUITABLE THINNER) FOR TRACTION MOTOR TYPE 6FRA- 6068 & 6FXA-7059 OF 3-PHASE ELECTRIC LOCOMOTIVES**

Sl. No.	Alteration No.	Authority	Description	Initial	Date

Prepared by	Reviewed by	Recommended by
 27/05/21 SSE/D&D/TMDO	 27/5/21 Dy. CEE/TMD	 27-5-21 CEE/TM

1. **Scope:-**The Schedule of Technical Requirements mentioned here under is issued to serve as a guideline to the manufacturers and should be read in conjunction with specification No. HTAT 20 315 (latest). The firm should satisfy themselves about having complied the requirements of the Specification and the Schedule of Technical Requirements. The Technical Requirements are meant to serve as guideline only and are not exhaustive. The firm should have currently valid ISO certification including the subject item under its range of manufacture.

**2. Reference :-**

SN	DESCRIPTION & C&D No.	Drg.No./Specification
1.	BASIC RESIN SI-32 5716/019, 5816/022	HIFE 650004 Alt.0
2	ACCELERATOR -27, 5716/020, 5816/023	4TMS.096.016 (Latest Version)
3	TOLUOLE (Industrial grade)/SUITABLE THINNER 5716/062, 5816/051	As per IS or Firms suitable formulation

**General Requirement :-**The firm should be certified to ISO 9001 by an agency accredited by NABCB.

**Production Capacity:-**Annual production capacity calculation for the full production range must be given on the basis of time required for each process.

**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.

**M&P, Testing and Measuring instrument:-** List of typical M&P required for manufacture, testing and measuring instruments furnished in page 5 of 6 & 6 of 6 is for general guidance only 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:-**

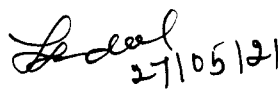
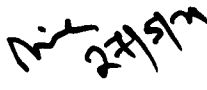
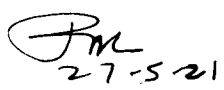
7.1 The manufacturer shall procure all the raw materials from standard brand preferably from RDSO /CLW approved sources along with test certificates and sources should be available as and when asked for. If RDSO/CLW sources are not available then raw material from reputed firm shall be procured along with proper test certificates.

7.2 Quality Assurance Process of incoming materials, manufacturing process used for the subject items including type test, supply criteria covering specn. 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. be available with the firm.

7.4 The testing and measuring equipments and 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/ASTM etc. shall be available with the firm.

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**QAP to be submitted by the vendor shall cover the following aspects:-**

1. Index pages.
2. Copy of ISO 9001 certificate from NABCB registered body.
3. Organisation Chart clearly bringing out the quality control set up.
4. Qualification of the personnel manning only the quality control set up.
5. List of M&P, testing and measuring facilities.

**A. All Plant & Machinery, testing and measuring instruments are to be filled up as per following format.**

SL No.	Description of plant & machinery & etc	Make (Name of manufacturer & country)	Year of Installation	Capacity/ Range	Quantity	Accuracy

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.

7. Details of sub- vendors:-

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

The sub-vendor should have all the requisite infrastructure of manufacturing and testing facilities preferably under one roof.

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 format:-

Subject/ Product/ Process	Sample size & its frequency of Inspection.	Parameters of Inspection	Mode of Inspection / Equipment Used	Acceptance Limit/criteria/ Specified value as per Drg./Specn.	Format No. where record will be kept

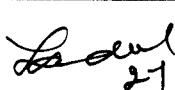
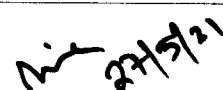
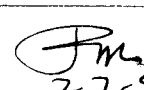
Notes: - 1. Sample formats used for recording must be submitted.

2. General ISO 9001 documents not to be submitted.

3. Firm must not depend only on TC for incoming material.

4. Record of SN (8) above shall be checked during inspections at firm's premises.

5. QAP has to be specified for each product.

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**Details of Machinery & Plants**

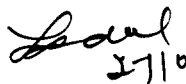
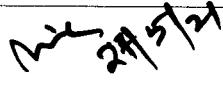
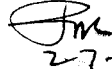
SN	M&P	Purpose
1	Mixer/ Sigma Mixer	Production of Conformal coating resin combination (Silicon resin, Hardener/ Accelerator and suitable Thinner). In different stages.
2	Reactor	
3	Compressor Chiller	
4	Variable speed Mixer/ Agitator	
5	Tray Dryer Oven	
6	Stacker / Material Handling Trolley	Note: M&Ps should be of required capacity/capability and size as per production target/procedure.
7	Container Sealing Machine	
8	DG Set	

**Details of Testing Equipment****General Measuring & Testing facilities:**

SN	Details of Measuring & Testing facilities	Range & Capacity
1	Universal tensile testing machine*	0-25KN, LC-2KN
2	Shore A Hardness tester	0-100 HV, LC-0.1HV
3	B.D.V. tester*	0-20 KV, LC±1%
4	Electronic balance	0-200gms
5	Brooke Field Viscosity Meter	----
6	Digital Refractometer *	1-2
7	Laboratory Oven & Electronic Balance	0-250°C LC-±1°C %
8	Digital Physical balance	0-20 Kg
9	Micrometer	0-25mm LC-0.01mm
10	Digital Vernier Calliper	0-100mm LC-0.01mm
11	Laboratory Distillation Plant	---

\*Optional can be tested from NABL accredited lab.

Note: Vague language like available or will install is not to be considered. CLW reserves the right to cancel capacity assessment without any prior intimation.

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