

**Government of  
India Ministry  
Railways of**

**STR No.  
TI/STR/031(Rev.1)  
Schedule of Technical Requirements  
For  
Manufacturing of Galvanized Steel Stranded Traction  
Bond (Stranded type)  
As per Specification No. TI/SPC/OHE/GALSTB/0040  
(Rev.1) (or latest)**

**ISSUED BY  
Traction Installation Directorate  
Research Designs & Standards Organization  
Manak Nagar, Lucknow - 226011**

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**1.0 SCOPE:**

This Schedule covers the technical requirements for manufacture and supply of Galvanized steel traction bond (stranded type).

**2.0 GENERAL INFRASTRUCTURE, MANUFACTURING & TESTING FACILITIES:**

- (i) Manufacturer should have adequate covered accommodation for storing raw material, finished products and also for carrying out inspections. Manufacturer should ensure that product conforms to requirements of the specification No. TI/SPC/OHE/GALSTB/0040 (Rev.1) or latest.
- (ii) The "Make in India" policy of government of India shall be applicable.

**3.0 MACHINERY & PLANT:**

The following machinery and plant of suitable capacity should be essentially available with the manufacturer.

- (iii) Wire spooling machines (2.0,1.0,1.35,1.61&1.71 mm dia. wires)
- (iv) Wire Stranding machines with performing heads for the above wire sizes Construction [(5x15(7/7/1) WSC].
- (v) Galvanized steel stranded wire abrasive cutter
- (vi) Welding machine, grinder
- (vii) Hydraulic press/ other arrangements for making samples of Galvanized Steel stranded type traction bond.
- (viii) Arrangement for identification marking on Galvanized steel stranded wire.
- (ix) Adequate tools & tackles.

**4.0 TESTING FACILITIES:**

The following testing facilities should be essentially available with the manufacture.

- 4.1 All measuring instruments for measurement of dimensions, diameter, strand, lay length of galvanized steel stranded type traction bond.
- 4.2 Tensile testing machine of 100 kg/1 tonne capacity for tensile testing of wires.
- 4.3 Tensile testing machine of 20 tonne capacity (minimum) for tensile of bond.
- 4.4 Chemical lab for analysis of element of the bond i.e. S, P, C, Si & Mn etc.
- 4.5 Test set up for measurements of length of galvanized steel stranded wire.
- 4.6 Test facility for conducting galvanizing test.
- 4.7 Set up for packing and marking as per requirement of specification.
- 4.8 Digital micro ohm-meter.
- 4.9 Short circuit test at NABL.

**5.0 QUALITY CONTROL EQUIPMENTS:**

- 5.1 The firm should ensure compliance of RDSO ISO procedure 'QM-RF-8.1-3 Version No: 1.0 Date Effective: 28.08.2018 (latest)' & it covers

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Quality Assurance Plan (QAP). This document may be referred from RDSO website. The QAP shall be submitted to RDSO and got approved.

- 5.2 The firm should have acquired **ISO: 9001:2015** series certification from IAF accredited certification agency for the product for which an approval is sought and the product should be broadly covered in the scope of the certification for manufacture & supply.
- 5.3 The firm should have its own "Quality Assurance Plan (QAP)" to ensure product quality which should cover the following aspects.
- 5.3.1 Inward raw material inspection details.
- 5.3.2 Stage inspection details.
- 5.3.3 Finished product testing details as per specification.
- 5.3.4 Policy of disposal of rejected material and maintenance of record for documentary evidence.
- 5.4 At least a diploma/Degree holder must be head of the quality control section with minimum 5 year experience in the relevant field.
- 5.5 There should be a "quality manual" of the firm indicating the extent of control over production and testing.
- 5.6 There should be a system of documentation in respect of rejection at Customer end and warranty replacement.
- 5.7 System should exist for documentation of the following:
- 5.7.1 Incoming raw material with Test Certificate reference of supplier as well as internal test/audit checking from outside agency.
- 5.7.2 Stage inspection and testing.
- 5.7.3 Calibration of testing & measuring Equipments i.e. list of calibrated Equipment along with validity of calibration should be available.
- 5.6.4 Finished goods inspection by manufacturer as well as by outside agency.

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