

STR No TI/STR/009 (Rev.2)



सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

TI/STR/009 (Rev.2)

Schedule of Technical Requirements
For
Manufacture of stainless steel wire ropes
As per Specification No TI/SPC/OHE/WR/1060 (latest)For
25 k V ac OHE System

ISSUED BY

RESEARCH DESIGNS & STANDARDS ORGANISATION,
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	Prepared By	Checked By	Approved By
Signature			
Designation	JE/TI (OHE)	DTI-2	EDTI

1.0 SCOPE: This Schedule covers the technical requirement for manufacture and supply of Stainless Steel wire ropes of size 8.65 mm and 5.5 mm.

2.0 GENERAL INFRASTRUCTURE & MANUFACTURING FACILITIES

- (i) Manufacturer should have adequate covered accommodation for storing raw material, finished items awaiting dispatch and arranging inspection. Manufacturer should have system to ensure that product conform to requirements of the specification No TI/SPC/OHE/WR/1060 (or latest).
- (ii) The "Make in India" policy of government of India shall be applicable.

2.1 MACHINERY & PLANT

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

- (i) Wire spooling machines (0.41 mm & 0.46 mm) -(For 8.65 mm dia of wire only) - 2 Nos.
- (ii) Wire Spooling machines (0.6 mm & 0.6 mm) - (For 5.5 mm dia of wire only) -2 Nos.
- (iii) Wire Stranding machines with performing heads for the above wire sizes (6/1 construction) 1+6 spools to one - 2Nos.
- (iv) Wire strands cum rope closing machines with performing heads upto 10-mm diameter for 34(6/11/17-Fibre core) x7 (6/1) construction. - 2 Nos.
- (v) Wire rope abrasive cutter`1 Nos.
- (vi) Welding machine, grinder etc 1 Nos.
- (vii) Hydraulic press/ other arrangements for making samples for tensile testing of wire rope - one set.
- (viii) Arrangement for Identification marking on S.S. ropes as laid down - One set.
- (ix) Arrangement for lubrication of wires at stranding stage as well as at the stage of closing of strands, during manufacturing of wire ropes.
- (x) Adequate tools & tackles.

3.0 TESTING FACILITIES

The following testing facilities should be essentially available.

- (i) All measuring instruments as required for measurement of diameter of wire & wire rope, lay length of S.S. wire rope.
- (ii) Tensile testing machine of 50 kg. capacity for tensile testing of wires of sizes 0.41 mm, 0.46 mm & 0.6 mm (For 5.5 mm dia of Wire only).
- (iii) Tensile testing machine of 20 tone & capacity for tensile breaking load of S.S.Wire rope & tensile testing of end fitting.
- (iv) Endurance testing rig complete with two 3 pulley ATDs/two 3 pulley high tension ATDs/ two 5 pulley ATDs load cell with digital indicator for measurement of tension, motorized arrangement with reversal switch, measuring counter, counter weights etc.
- (v) Weighing machine of at least 200 kg capacities for verification of counter Weights.
- (vi) Chemical lab for analysis of element C, Ni, Cr, S, P, Si, Mn, & Mo & Lubrication test.
- (vii) Test set up for Inter crystalline corrosion bend test for the stainless steel wire of diameter 0.41, 0.46 mm & 0.6 mm as per EN 10090:1998.
- (viii) Permeability meter for measurement of relative magnetic permeability upto 10.
- (ix) Microscope 100-X capacity for microscopic surface examination of wires.
- (x) Test set up for measurement of length of S.S. wire rope.
- (xi) 3X Magnifying glass.
- (xii) Mandrel winding tester with mandrel of size 0.41mm, 0.46mm & 0.6 mm. Set up for packing and marking as per specification.
- (xiii) Set up for packing and marking as per specification.

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4.0 QUALITY CONTROL REQUIREMENTS:

- 4.1. 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 Quality Assurance Plan (QAP). This document may be referred from RDSO website. The QAP shall be submitted to RDSO and got approved.
- 4.2 **The firm should have ISO 9001 series certification for the product for which an approval is sought and the product should be broadly covered in the scope of the certification for manufacture and supply.**
- 4.3 The firm should have its own quality assurance plan to ensure quality of product which should cover the following aspects.
- Inward raw material inspection.
 - Stage inspection details.
 - Finished product testing.
 - Policy of disposal of rejected material and maintenance of record for documentary evidence.
- 4.4 At least a diploma/Degree holder must be head of the inspection quality control section with 5 year experience in the relevant field.
- 4.5 There should be a quality manual of the firm indicating the extent of control over production and testing.
- 4.6 There should be a system of documentation in respect of rejection at customer end and warranty replacement.
- 4.7 System should exist for documentation of the following.
- Incoming raw material with Test Certificate reference of supplier as well as internal test/audit checking from outside agency.
 - Stage inspection and testing.
 - Calibration of testing & measuring Equipments.
 - Finished goods inspection by manufacturer as well as by outside agency.
- 5.0 Drawing office facilities should be equipped preferably with AUTO CAD Software.

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