

REVISION OF SPECIFICATION / STR

Item Name: SCHEDULE OF TECHNICAL REQUIREMENTS FOR CENTRE PIVOT LINERS & HALF CYLINDER WEARS FOR LOCOMOTIVES.

STR No: MP.STR.VL-04.09.11

1. RDSO is reviewing the STR to cater to the latest technological developments in the field, modify clauses not relevant in the present context and making them more enabling with focus on functional requirements.
2. It is requested that your comments / suggestions with regard to improvements /modifications in STR of the abovementioned item may be submitted in the following format along with the justification for the changes required.

Part A: Basic Information

SN	Particulars	Information
1.	Name	
2.	Designation	
3.	Professional Qualification	
4.	Organization / Firm's Name	
5.	Address for Correspondence	
6.	Contact No.	
7.	Email ID	
8.	Whether firm is registered with RDSO for the subject item. If yes, details like date of registration, current status etc. If no, firm's experience in manufacturing of subject item or similar item	
8.	Whether any technical document/Report/Study to support suggested changes is available / enclosed for better appreciation	

Part B: Comments / suggestions on the specification

SN	Clause No. of RDSO STR/ Spec	Clause, as it exists in RDSO STR/ Spec	Clause , as it should read after incorporation of comments /suggestions in the RDSO Spec / STR	Justification for changes

Comments may be sent to following address within one month from the date of publication on rdso.indianrailways.gov.in

Jt. Director/MP(VDG)
Research Designs and Standards Organization,
Manak Nagar, Lucknow – 226011
Email: sanjai.govil@gov.in



भारत सरकार रेल मन्त्रालय
GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

SCHEDULE OF TECHNICAL REQUIREMENTS
FOR
CENTRE PIVOT LINERS & HALF CYLINDER WEARS
FOR LOCOMOTIVES

STR No. MP.STR.VL-04.09.11 (Rev.-01)

March' 2021

अनुसंधान अभिकल्प और मानक संगठन
लखनऊ-226 011
RESEARCH DESIGNS & STANDARDS ORGANISATION
LUCKNOW - 226 011

Cost (Rs).....

MINIMUM INFRASTRUCTURE, MANUFACTURING, TESTING AND QUALITY CONTROL REQUIREMENTS FOR THE FIRM FOR APPROVAL:

1.0 GENERAL

The firm shall have acquired ISO: 9000 series certification and shall have a well structured quality control system. The Scope of Certification shall cover their manufacturing and testing facilities for engineering plastic products.

2.0 REFERENCE DOCUMENTS AND STANDARDS

The firm shall have a copy of latest versions of following specifications & Standards /codes:

Sl. No.	Specification No.	Description
1.	ASTM D 256	Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
2.	ASTM D 792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
3.	ASTM D 2240	Standard Test Method for Rubber Property—Durometer Hardness
4.	ASTM D 638	Standard Test Method for Tensile Properties of plastics
5.	ASTM D 695	Standard Test Method for Compressive Properties of Rigid Plastics
6.	ASTM D 789	Standard Test Methods for Determination of Solution Viscosities of Polyamide (PA)
7.	ASTM D 790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
8.	ASTM D 570	Standard Test Method for Water Absorption of Plastics
9.	ISO 815-1:2019	Rubber, vulcanized or thermoplastic — Determination of compression set — Part 1: At ambient or elevated temperatures
10.	ISO 7148-2	Plain bearings - Testing of the tribological behavior of bearing materials - Part 2: Testing of polymer-based bearing materials
11.	ASTM D 1894	Standard Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheeting
12.	IS: 3400 (Part 6)	Methods of test for vulcanized Rubbers-Determination of the effect of liquids

3.0 INFRASTRUCTURE AND MANUFACTURING FACILITIES

The manufacturer shall have at least the following infrastructure and manufacturing facilities:

- .1 Adequate space and covered area with cemented floor to accommodate the following:
 - a. Damp-free space for storage of raw materials
 - b. Manufacturing Activities
 - c. Assembly
 - d. Finishing
 - e. Inspection and Testing
 - f. Storage and dispatch of finished products
- .2 Injection Moulding Machine or Casting Machine
 - (i) One Injection Moulding Machine of adequate shot volume having control panel equipped with the following features:
 - a. Microprocessor/Computer Controlled machine operation.
 - b. Minimum clamping force (locking tonnage) of 150 tonnes
(Minimum clamping force shall be adequate to manufacture the product)
 - c. Auto temperature Controller for injection material
 - d. Auto Loader/ Hopper Dryer
 - e. Hot Air Oven for Annealing the Finished Product
 - f. Availability of cooling system
 - g. Desiccant Dryer or Dehumidifier Attached with Dew Point Meter
 - (ii) If casting method is used for manufacturing, in lieu of injection moulding machine mentioned above, the following casting machines shall be required:
 - a. For Horizontal Liners: Casting Machine of appropriate capacity.
 - b. For Vertical Liners and Half Cylinder Wear: Centrifugal Casting Machine.The casting machines shall have the required facilities to ensure proper auto temperature control. The manufacturer shall also have the required facilities for demoulding, reheating, cooling and annealing as per the requirement of the process of casting.
- .3 The vendor shall have at least one set of Injection / casting mould.
- .4 The Vendor shall have a suitable material and mould handling facilities like Chain Pulleys, trolleys, Electric Hoists or other suitable equipment shall be available.
- .5 The vendor shall have suitable tools, cutters, polishing files and Buffing Machine for deflashing of moulded products
- .6 Weighing Machine (of least count not more than 10 gram) of minimum 5 Kg capacity Digital weighing machine is desirable.
- .7 The firm shall have facilities for machining.
- .8 The firm shall have facilities for maintenance and polishing of dies and moulds.

4.0 TESTING FACILITIES

- .1 The manufacturer shall have at least the following testing facilities and other equipment installed in the laboratory with controlled temperature and humidity for carrying out various tests specified in the specification.
 - a. Tensile Testing Machine of adequate capacity
 - b. Izod Impact Testing Machine of adequate capacity
 - c. Equipment for humidity control of Laboratory

- d. Shore 'D' Hardness Tester
 - e. Weighing Balance with Specific Gravity determination Kit
 - f. Equipment to test Compression Set as per ASTM D 395
 - g. Equipment for water absorption test at 23°C for 24 hrs.
 - h. Melt Flow Index Tester (in case of firm having Injection Moulding Machine)
- .2 Dies / moulds for preparation of various test specimens for the relevant tests shall be available.
- .3 All gauges required for checking of dimensions of Centre Pivot Liners / Half Cylinder Wear shall be available.

5.0 QUALITY CONTROL REQUIREMENTS

- .1 The firm should have a system of easy traceability of the product from raw material stage to finished product stage.
- .2 Quality Assurance Plan (QAP) for the product detailing various aspects and duly approved, should be available. The record of implementation of QAP should be maintained for documentary evidence.
- .3 The firm shall have a system to ensure that moulds are checked at regular intervals. Also, it is ensured that dies/moulds are checked dimensionally prior to release for production and records of these checks are maintained.
- .4 The calibration of the Testing/ Measuring Equipments / Weighing machines should be done at least once in a year unless stated otherwise.
- .5 The firm should have a Quality Manual indicating the extent of control over manufacturing and testing.
- .6 The firm should have a system of regular submission of rejections, detailing rejection rate, cause of rejection, corrective action taken etc. on quarterly basis.
- .7 The firm should have a system of documentation in respect of rejection at customer end, warranty replacement and failure of centre pivot liners in service.
- .8 The firm should have a system of recording plant, machinery & control equipments remaining out of service, nature of repairs done etc.
- .9 Latest versions of relevant specifications and drawings shall be available with the firm.

6.0 QUALIFICATION AND TRAINING

- .1 Training needs for all personnel should be identified. Regular training should be organized covering personnel identified for a particular period.
- .2 The Inspection / Quality Control Section should be headed by a graduate Engineer with at least 5 years experience or a Diploma holder with at least 10 years experience.
- .3 Inspection staff conducting non-destructive testing should be adequately trained & qualified by recognized agency and should have adequate experience.
- .4 Laboratory and Shift Engineers shall have a minimum qualification either a Diploma or a Degree in Engineering (Plastic, Mechanical or Electrical).

7.0 APPROVAL OF FIRM FOR MANUFACTURE AND SUPPLY OF CENTRE PIVOT LINERS / HALF CYLINDER WEAR FOR LOCOMOTIVES

After successful completion of field trial of one year, approval of a firm for supply of Centre pivot liners / Half Cylinder Wear for locomotive bogies to Railways, may be considered.