



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन

Government of India - Ministry of Railways
RESEARCH DESIGNS & STANDARDS ORGANISATION

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**INFRASTRUCTURE, MANUFACTURING, TESTING
AND QUALITY CONTROL REQUIREMENTS FOR
GROOVED RUBBER SOLE PLATES FOR
10 MM THICK**

Price: Rs. 660/-

गुणवत्ता आश्वासन सिविल निदेशालय
अनुसंधान अभिकल्प और मानक संगठन
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**INFRASTRUCTURE, MANUFACTURING, TESTING AND QUALITY CONTROL REQUIREMENTS
FOR GROOVED RUBBER SOLE PLATES FOR 10 MM THICK**

1.0 SCOPE

1.1 The schedule of technical requirements covers the norms for manufacture and supply of Rubber sole plates.

1.2 REQUIREMENTS

The vendors seeking approval shall comply all the below mentioned requirements.

2.0 GENERAL AND MANUFACTURING FACILITIES

2.1 Covered area free from dampness and humidity with adequate space for storage of raw rubber, carbon and chemicals.

2.2 The weighing facilities for measuring various raw material constituents and the product at various stages.

2.3 Facilities for storage of Mixed rubber compound batch-wise.

2.4 Facilities for mixing rubber compound.

2.5 Facilities for extrusion (optional)

2.6 Facilities for curing and molding the Grooved rubber sole plates (curing hydraulic press)

2.6.1 An automatic thermic heating moulding press equipped with temperature controllers, digital temperature indicators and the timers. There should be a provision to set the press in such a way that the required pressure, the time period and the temperature can be synchronized for subsequent series in manufacture of a particular product without disturbing the setting on the machine.

2.6.2 Minimum two nos. suitably designed discs and transfer moulds for the product.

2.6.3 It is to be ensured that the moulds are measured for their accuracy for various dimensions and profile at least on weekly basis or after a production of 500 pads which ever is later and the observations of the mould are recorded.

2.6.4 It is to be ensured that the system for checking the dimensional accuracy of the mould exists in case it is being used after a gap of considerable time period.

2.6.5 In house availability of minimum infrastructure for maintenance and polishing of discs and moulds.

2.6.6 Facilities for measuring and recording temperature of surface.

2.6.7 Facilities for maintenance and repairs of equipment and moulds.

2.6.8 Facility for adequate storage of finished product, batch-wise to avoid mix up (Bond room).

3.0 TESTING FACILITIES.

Following testing facilities and measuring instruments should be available with the firm.

- 3.1 A separate laboratory, mixing mill and testing hydraulic press equipped with temperature control, digital indicator, timer and pressure gauge.
- 3.2 Tensile testing machines capable to read the load and elongation as per the requirement of the product.
- 3.3 Minimum two numbers of ovens.
- 3.4 Muffle furnace.
- 3.5 Shore 'A' hardness testing machine with standard test pieces.
- 3.6 Specific gravity and Ash content testing apparatus.
- 3.7 Chemical balance and crucibles for measuring Ash Content.
- 3.8 Sufficient number of compression set equipment with suitable steel separators.
- 3.9 Sufficient tensioning device with suitable self tightening grip.
- 3.10 A suitable air oven and other facilities as per requirement of test method given in the specification.
- 3.11 Load compression testing equipment, capacity 50 with two dial gauges capable of reading 1/100mm to be mounted on the opposite sides of the equipment so as to measure the compression.
- 3.12 Million Megaohm meter or any other suitable equipment, capable of measuring electrical resistance more than 500 Megaohm along facilities for calibration of standard box of electrical resistance.
- 3.13 Go and No Go gauges are calibrated on due date and the record there of.
- 3.14 Any other facility acquired for testing methods given in the specification.
- 3.15 The follow measuring instruments in adequate number:
 - i) Dial gauges
 - ii) Vernier Calipers
 - iii) Dumbbell and test specimen cutter
 - iv) Two sets of Go, No-Go, gauge for all the important dimensions marked with firm's initial, set no. of gauge and drg. No. of the product.
 - v) Steel Scale (Linear)
 - vi) Hygrometer (Humidity Recorder) of suitable range.
 - vii) Dry & Wet thermometer of suitable range.

4.0 QUALITY CONTROL REQUIREMENTS :

- 4.1 There should be a system to ensure the traceability of the product from raw material sample to finished product stage. This system should also facilitate to identify the raw material composition from the finished product stage.
- 4.2 There should be QAP for the product detailing following aspects.
 - i) Organizational Chart
 - ii Flow Process Chart
 - iii) Stage inspection details
- 4.3 All the relevant specifications and IS Standards should be available with the firm.

GUIDELINES FOR 10MM THICK G.R.SOLE PLATES

- 1.0 The machinery and equipment required for manufacture of 10 mm thick G.R. Sole plates are same as that required for 6mm thick G.R. Sole Plates. So the firms which are approved for 6 mm thick G.R. Sole Plates can be considered to have necessary equipment and infrastructure to manufacture 10 mm thick grooved rubber pads also.
- 2.0 In view of above fact, the firms which are approved for 6 mm thick G.R. Sole Plates and approach RDSO for development of their unit for manufacturing and supply of 10 mm thick G.R. Sole plates, will be considered for approval for manufacturing of 10 mm thick G.R. Sole Plates irrespective of the fact whether order is placed on them or not.
- 3.0 The firms approved for 6mm thick G.R. Sole Plates will be asked to submit internal test results of the product. On finding the internal test results satisfactory the samples will be drawn from the works premises of the firms for testing at RDSO. Based on the results of the test conducted at RDSO, the approval will be accorded to the firm in Part-II list of the manufactures for 10 mm thick G.R. Sole Plates for a period of two years.
- 4.0 The vendor placed in list of Part-II suppliers will be considered for upgradation to the list of 'Part –I supplies' after the following criteria are fulfilled.
 - i) Completion of at least one years in the category of Part-II.
 - ii) Supply of minimum quantity of 10,000 no. of pads.
 - iii) Implementation of approved QAP.
 - iv) Possessing ISO certification.
 - v) Results of reassessment/quality audit which would be carried out after all the above conditions are fulfilled being found satisfactory.
- 5.0 In case of new firms which have been placed with order for 10mm thick G.R. Sole Plates by the Railway Board or Zonal Railways and which are not approved for 6 mm thick G.R. Sole Plates, will have to first get approved itself for 6 mm thick G.R. Sole Plates after getting the developmental order from Railway Board for 6mm thick G.R. Sole Plates first. The process of approval will be taken up only once the firm has been approved for 6 mm thick G.R. Sole Plates.

**PROFORMA FOR TECHNICAL CAPABILITY ASSESSMENT FOR
MANUFACTURE AND SUPPLY OF GROOVED RUBBER SOLE PLATES**

(To be filled in by the firm in triplicate. Attach extra sheets wherever necessary)

1. SECTION-1: GENERAL INFORMATION

- 1.1 Name of the firm
- 1.2 Address
- (a) Head Office
- (b) Works
- (c) Location of works Km.
From Railway Station
- 1.3 Factory Area (Sq. m)
- 4.1.1 Covered
- 4.1.2 Uncovered
- 4.1.3 Is the factory site in your name or on rental basis?
Support with documents.
- 4.1.4 Telephone No.
- (i) Head Office
- (ii) Works
- 4.1.5 Telegraphic address/Telex/Address/FAX address.
- (iii) Head Office
- (iv) Works
- 1.4 SSIC/NSIC Registration No. (Enclose Copy)
- 1.5 Power availability (KVA)
- (a) General allotted capacity
- (b) Standby generator and its capacity, If available.
- (c) Name the party / person in whose name the power is sanctioned and your agreement with the part / person. (Support with documents)
- 1.6 Name of any other units located in the above premises.
- 1.7 Man Power Management :
- (a) Managerial staff
- (b) Shop floor Engineers / Supervisors
(Their Nos. with their qualifications and service experience)

- (c) Laboratory In-charge whether full time or part time.
Indicate their names, qualifications and service experience.
- (d) Inspection & quality control staff,
give their name, qualifications and service experience.
- (e) Workmen
 - i) Highly skilled
 - ii) Semi-skilled
 - iii) Un-skilled.

2. SECTION-II : TECHNICAL INFORMATION

2.1 Infrastructure for Production of Grooved rubber sole plates.

- 2.1(a) (i) Facility for storage of raw material
- (ii) Facility for weighing of raw material and storage of weighed raw material batchwise as well as mixed rubber compound batchwise.

2.1.1 Facility for mixing rubber compound.

- (a) Mixing mills (b) Internal mixer (optional)
- (i) Nos.
- (ii) Type
- (iii) Size
- (iv) Capacity
- (v) Make
- (vi) Temperature control system

2.1.2 Facilities for extrusion (optional)

- (a) Extruder
- (i) Nos.
- (ii) Size
- (iii) Type
- (iv) Capacity
- (v) Make
- (vi) Temperature Control system

2.1.3 Facilities for curing and moulding the Grooved rubber sole plate Curing Hydraulic press.

- (i) Nos.
- (ii) Type
- (iii) Make
- (iv) Day lights

- (v) Size
- (vi) Capacity
- (vii) Clamping pressure
- (viii) Mode of heating for press (Steam / electrical)
- (ix) Temperature Control system

2.1.4 Facilities for measuring and recording temperature of :
Surface

2.1.5 Facilities for maintenance and repairs of equipment and moulds (optional)

- (a) Tool room M&P
- (b) Mould and dies.

2.1.6 Rated production capacity planned for sole plates.

2.1.7 Arrangement for storing finished sole plates, batch-wise to avoid mix up (Bond room)

2.2 Test facilities cum quality control measures.

2.2.1 Laboratory room

- (a) Size
- (b) Air conditioning arrangement for controlling temperature and humidity in the room.

2.2.2 Test Facilities

	Test	Requirement	Indicate availability in detail
(i)	Hardness (Shore A)	<ul style="list-style-type: none"> (a) Hardness tester Shore 'A' Durometer (b) Other test facilities as per the requirement of test method given in the specification. 	
(ii)	Tensile strength	<ul style="list-style-type: none"> a) Tensile machine with suitable grips capacity up to 250 kg and operating speed 450-600 mm/min. The testing machine shall be suitable For relaxed modulus testing. 	

(b) Elongation at break	Other test facilities such as preparation of test specimens and facilities as per the requirement of test method given in the specification.
Modulus relaxed at 100 % elongation	(c) Measurement of elongation.
(iii) Compression set at 50 % compression	(a) Compression set equipment with suitable steel spacers. (b) Air oven and other facilities as per requirement of test method given in the specification.
(iv) Tension set at 50 % stretch	(a) Tensioning device with suitable self tightening grips. (b) Air oven and other facilities as per requirement of test method given in the specification.
(v) Load compression Characteristic	(a) Hydraulic press, 50t capacity mounted with two dial gauges capable of reading 1/100 mm. To be mounted on the opposite sides of the equipment so as to measure the compression (b) Other facilities as per requirement of test method given in the specification
(vi) Electrical resistance	(a) Million mega ohm meter or any other suitable equipment, capable of measuring electrical resistance more than 500 mega ohms. (b) Test facilities and arrangements as per the requirements of the specification. (c) Standard resistant box of 100 to 500 mega ohms.
(vii) Dimensional check	Two sets of inspection gauges

- 2.2.3 Facility for accelerating ageing of the rubber pad. Electrical oven with provision of Air circulation and continuous temperature / time recorder
- 2.2.4 Facilities for checking Calibration of Tensile Testing machine and the periodicity of calibration.
- 2.2.5 Facilities for checking the Calibration of the hydraulic press for the load compression Characteristics test and the Periodicity of checking Calibration
- 2.2.6 Staff strength
- (a) Production staff
 - (b) Quality assurance staff
 - (c) Staff for quality monitoring at production stage
 - (i) Staff for laboratory testing.

Requirement

Indicate availability in detail

- 2.2.7 Give a list of the relevant IRS, I.S. and ASTM specification as available with you relevant for grooved rubber sole plates and Nylon cord elastomeric pad.
- 2.2.8 Submit quality assurance programme, if any being followed or proposed to be introduced covering information, audit check, points pertaining to various stages, such as raw material control, chemical weighing room mixing, performing, curing, finishing, Inspection and packing stages. Formats being used / proposed to be used for the documentation of quality control system also be submitted.

3. SECTION- III : EXPERIENCE

- 3.1 Indicate various types of items being manufactured in your works and the name of the agency/client for whom it is being manufactured.
- 3.2 Indicate important customers for the last three years both Govt. and non

Govt. if any, for information furnished in your reply to 3.1

- 3.3 Indicate details (contract reference, item and quantity manufactured and supplies of important orders executed in the past three years for the following. Indicate the inspecting agency for each.
 - (i) Govt. Department, Central, State and Govt. undertaking other than Railway.
 - (ii) Directly to the Railways.
 - (iii) Outside important firms.
- 3.4 Please specify current orders in hand on your firm (Contract reference, client, Item, Quantity under manufacture and supply)
- 3.5 Whether you are already registered with RDSO for other P.Way Items. If so, name the item supported by documents.
- 3.6 Whether you are already registered with RDSO for other than Items. If so, name the item & depts. With which you are registered. Supported by documents.
- 3.7 Indicate annual turnover of your company.

4 DECLARATION

- 4.1 We do hereby declare that the above that the above particulars are correct and no discrepancy shall be found during actual investigation before and during execution of order on our firm.
- 4.2 Any change in the plant and machinery and change of place of office and of works site shall be brought to the notice of RDSO for clearance and approval.
- 4.3 We also declare that our concern has not been black-listed by Railway/Railway Board / RDSO for business with the Railways.
- 4.4 We hereby undertake that all our equipments for manufacturing and testing as listed above shall be maintained in good working order at all times.
- 4.5 We hereby declare that the contents and the instructions of latest "General Guidelines for Vendors Approval" effective from have been read and understood by us and our firm shall agree abide by all the stipulations laid therein.

Signature

Name in full of Signing Authority

Status in the Firm

Place :

Date :

Stamp of the firm.