



Government of India
Ministry of Railways

***Schedule of Technical Requirements
for Infrastructure, Manufacture, Test Facilities
& Quality Control***

For

**Graphite Grease Grade "0" to IS: 408 - 1981 -
Reaffirmed -2019 for Elastic Rail Clips**

**Metallurgical & Chemical Directorate
Research Designs & Standards Organization
Manak Nagar, Lucknow –226011**

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1.0 SCOPE

The schedule of technical requirement covers the optimum facility required for manufacture and quality control of Graphite Grease Grade '0' to the composition as described in Clause 2.2.1 with the physical property of mineral oil to Clause 2.2 of IS: 408 –81 (reaffirmed- 2019) for use on Elastic Rail Clips

2.0 REQUIREMENTS

Vendor seeking approval shall comply with all the requirements described in this STR.

2.1 GENERAL MANUFACTURING FACILITIES

2.2 The firm should have well illuminated and ventilated covered shed with sufficient height and adequate space for manufacture, proper storage of raw materials, finished product and packing material. It should be free from dust, dampness, humidity and exposure to sunlight in excess. There should be one lockable bond house for storage of finished product for purchase inspection as & when required.

2.3 Earmarked area for rejected material should available.

2.4 The firm should have following manufacturing facilities:

S.No.	Item	Qty.(Min.)
1.	Grease kettle having heating & cooling arrangement with proper temperature measuring device, agitator /stirrer Min. Size 500kgs	1No.
2.	Pilot manufacturing set up for preparation of sample/master batch (Min. Size 10 kgs)	1No.
3.	Storage tank of adequate capacity	2Nos.
4.	Barrel filling arrangement having weight control facility	1No.
5.	Barrel sealing Machine	1No.
6.	Air Compressor	1No.
7.	Transfer Pump	2Nos.
8.	Trolley	1No.
9.	Stock lifter	1No.
10.	Weighing Balance (i)Electronic Weighing Balance Capacity- 5Kg. (ii)Heavy Duty Balance capacity- 300Kg.	1No. 1No.
11.	Diesel Generator Set of adequate capacity	1No.
12.	Blending tank	1No.

2.5 The firm's premises should be neat, clean and hygienic.

2.6 The Firm should have minimum annual turnover of one (01) crore.

2.7 Minimum quantity required for upgradation from the list of Developmental Order to the list of Approved Vendor is 25 MT (25000KG) and other terms and conditions as per relevant ISO Apex documents.

2.8 The firm should have pollution control and fire protection certificates from authorized agency.

2.9 Firm should also submit the documents such as ownership, latest electricity bills, latest factory license and valid ISO 9001 certificate.

- 2.10 Firm should submit latest audited balance sheet along with profit and loss account for last 3 years and latest income tax return copy.
- 2.11 Firm should submit internal test reports of the applied item and latest calibration certificates of quality control and testing equipment.
- 3.0 The firm must have test facilities attached to the manufacturing plant for all mandatory tests specified in the relevant specifications for the product for which they are seeking approval, together with raw materials to the relevant specifications.

3.1 **TESTING FACILITIES**

Quality Control & Test Facilities: The firm should have proper air-conditioned laboratory for testing of raw materials in process, and finished products having following optimum in-house test facilities as per relevant specification of the applied products.

S. No.	Test Equipment	Qty. (Min.)
1.	Viscometer bath with temp. controller @ of 40°C	1No.
2.	Viscometer bath with temp. controller @ of 100°C	1No.
3.	Viscometer tubes	6 Nos.
4.	Stop watch	2 Nos.
5.	Flash Point (COC)	1No.
6.	Air oven (up to 150 ±1°C)	1 No.
7.	Air oven (up to 350±2°C)	1 No.
8.	Muffle furnace (100°C to 1200°C)	1 No.
9.	Thermometer (Calibrated)	Adequate quantity
10.	Copper strip corrosion test set	1 No.
11.	Acidity (organic + inorganic)apparatus	1 No.
12.	Drop point apparatus	1 No.
13.	Set for Oil separation test facility to P:85 of IS 1448	1 No.
14.	Hot plate	1 No
15.	Chemical balance up to accuracy 4 decimal	1 No.
16.	Physical balance of necessary accuracy	1 No.
17.	Heating mantle	1 No.
18.	One grease penetrometer with two number of Cups having lid with stroke facility and Cones as per relevant specification	1 Set
19.	vacuum pump	1 No.
20.	Hydrometer, Desiccators(2 Nos.), Crucible(6 Nos.), Magnifying glass of proper resolution to observe graphite flakes, Heat resistance glass apparatus (beaker, flask, funnel, condenser, measuring cylinder, separating funnel, titration arrangement TAN/TBN test facility), Gooch crucible, chemical reagent, solvent etc.	Adequate quantity

4.0 QUALITY CONTROL REQUIREMENTS

- 4.1 There should be a system to ensure the traceability of products from raw material to finished product stage
- 4.2 Ensure that the system of 'first in first out (FIFO)' is followed for raw material and intermediate stage product
- 4.3 Guidelines for preparing Quality Assurance Plan (QAP) during registration should be as per QM-RF-8.1.3 for the product detailing various aspects. The prepared QAP should be submitted in duplicate at the time of registration for approval by RDSO.
- 4.4 The firm should have qualified technical persons having adequate experience in the relevant field to look after the production, quality check and testing activities of the products. They should be able to take the corrective & preventive step in case of difficulties in maintaining quality. They should also take step to comply with QAP
- 4.5 Firm should have R&D facilities where approved by Department of Science & Technology or other Government University copy of valid certificate should be available otherwise the firm should tie up with Govt. R&D Laboratory.
- 4.6 The firm should have all the latest relevant specifications of IS Standards, ASTM and other relevant documents
- 4.7 The firm should submit Master blend recipe with an undertaking that they should not change the recipe during regular supply without informing RDSO.
- 4.8 The firm should have Bond house facility for keeping the finished products with adequate area.