

**GOVERNMENT OF INDIA
(Ministry of Railways)**

**SPECIFICATION FOR
FERRO MANGANESE
(PL No. 90790704)**

Issued by

**MECHANICAL DRAWING OFFICE
RAIL WHEEL FACTORY
YELAHANKA, BANGALORE-560 064
INDIA**

<i>Rajiv Gupta 18/8/14</i>	<i>J.P. 16/9/14</i>	<i>S.Pa 14.8.14</i>	<i>Chanda 14.08.14</i>
CME	CWE/W	Dy. CME/Mfg.	SSE/D
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SPECIFICATION OF FERRO MANGANESE

1.0 SCOPE

This specification covers the requirements for Ferro Manganese used in Steel Melt Shop, Rail Wheel Factory, Yelahanka, Bangalore-560 064.

2.0 USAGE OF FERRO MANGANESE

Ferro Manganese is used as furnace addition in the making of steel from Electric Arc Furnaces for casting of Railway steel wheels.

The material shall be reasonably free from non- metallic/slag/sand inclusions. RWF has no facilities for secondary refining or vacuum degassing or Argon purging in the ladle.

3.0 MANUFACTURE AND QUALITY ASSURANCE PLAN (QAP)

3.1 CHARACTERISTICS OF RAW MATERIALS USED

The manufacturer/supplier has to disclose the details of the grade, source, specification and acceptance criteria of all raw materials used for manufacturing Ferro Manganese to satisfy uses of the material as mentioned above.

3.2 MANUFACTURING FACILITIES REQUIRED

The manufacturer shall have adequate manufacturing facilities such as manufacturing, crushing, sieving and packing.

3.3 TESTING FACILITIES

The manufacturer shall have all facilities to test the properties of Ferro Manganese specified in this specification.

3.4 QUALITY ASSURANCE PLAN

The manufacturer shall submit their QAP that will be followed in the manufacturing of Ferro Manganese to achieve the performance requirement described in clause 2.0. The QAP shall consider the following requirement.

- a) Details on grade, source, specification and acceptance criteria of all raw materials
- b) In-process control parameter norms.

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- c) Finished product testing
d) After sales service

Other details like M&P, technical manpower, testing facilities etc shall be given as per the tender document.

4.0 CHEMICAL COMPOSITION

- 4.1 Chemical Composition shall be in accordance with High Carbon Ferro Manganese Grade Fe Mn 68 of IS 1171:1996, i.e. as shown below:

Manganese	65 - 70%
Silicon	1.50% Max.
Carbon	6 - 8%
Phosphorus	0.40% Max.
Sulphur	0.05% Max

Chemical composition shall be ensured by drawing samples for testing as per clauses 6.1 and testing the samples as per clause 7.0.

5.0 SIZE RANGE

- 5.1 The material will be supplied in lumps or as crushed and screened particle. Size ranges and tolerance is given below.

Size Range : 25 – 100 mm.
Undersize percent total by mass : 10% (maximum)
Oversize percent total by mass : 10% (maximum)

Oversize shall not be more than 125mm.

Fines : Fines below 5mm are not acceptable.

6.0 SAMPLING NORM

- 6.1 The sampling for clause 4.1 and 5.1 shall be done as per IS 1472: 1997 (Method for sampling Ferro Alloys for determination of chemical composition).

7.0 METHOD OF CHEMICAL ANALYSIS AND TESTING

As indicated in relevant parts of the latest specification IS 1559.

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8.0 ACCEPTANCE CRITERIA

If the material fails to meet the requirement against clauses 3.1, 4.1 & 5.1 in first sampling, then another sample of double the size of first sample shall be taken for ensuring conformity of the material against clauses 3.1, 4.1 and 5.1. If any one of this sample fails to meet the clauses 3.1, 4.1 and 5.1, the lot stands rejected.

9.0 TEST CERTIFICATE

The supplier shall submit a test certificate pertaining to the lot intended for supply to Rail Wheel Factory, Bangalore showing conformance to the requirements.

10.0 PACKING

The material shall be packed in double walled gunny bags weighing 20 kg each. Each bag shall be marked with Supplier's name and, the name & grade of material.

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