



CORPORATE PURCHASING SPECIFICATION

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INOCULANTS FOR CAST IRONS

1.0 GENERAL:

This specification governs the quality requirements of inoculants used in foundries for inoculating liquid melts of flake graphite iron castings. Inoculating agents shall be based on ferro-silicon, calcium silicate, graphite or suitable blend of these agents along with other elements like barium.

2.0 APPLICATION:

The flake graphite iron castings are inoculated to facilitate achieving the following objectives:

- a) Promote type A graphite
- b) Prevent formation of carbides in the matrix in thin section also.
- c) Improvement in the tensile strength of the base iron.
- d) Increase in number of eutectic cells.
- e) Good solubility even at low pouring temperatures.
- f) Reduce fading of inoculants.

3.0 COMPLIANCE WITH NATIONAL STANDARDS:

There is no national standard covering this type of material.

4.0 GRADE OF METAL:

To be suitable for treatment of cast iron grades FG 200, FG 220, FG 260 and FG 300 as per IS: 210 and their equivalent grades.

5.0 SHAPE AND SIZE:

The inoculants shall be in the form of granules of size 1 to 3 mm with percentage of undersize and oversize materials restricted to 10% maximum.

6.0 PROPERTIES:

6.1 Carbon Equivalent: Suitable for treatment of irons with carbon equivalents in the range from 3.4 to 4.2

6.2 Rate of addition: 0.1 to 0.3% of liquid metal by weight.

6.3 Temperature of Treatment:

To be suitable of treatment of melts at temperature 1370°C and above.

Revisions: Clause No. 25.03 of MOM of MRC-FN			APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE - MRC(FN)		
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- 6.4 Fading Time:** To be effective for a minimum period of 15 minutes.
- 6.5 Mechanical Properties:** Liquid grey iron shall be inoculated with the inoculant at a temperature of 1400 ± 20°C. 30 mm dia test bars as per IS: 210 will be cast and when tested for tensile strength shall show a value of 260 N/mm², minimum.
- 7.0 INSPECTION DEVIATION AND REPLACEMENT:**
- 7.1** BHEL reserves the right to witness the testing of the material at supplier works and therefore the supplier shall notify BHEL in advance about the readiness of the material for inspection and testing.
- 7.2** BHEL may also opt for third party inspection. If so, BHEL may either specify a third party or else give a list of third party inspection agencies, out of which supplier may select one of his choice BHEL may, at its discretion, test the material after receipt and acceptance of the material will be based on the BHEL's test results.
- 7.3** The supplier shall offer BHEL's representative all reasonable facilities, without charge to satisfy the latter that the material is being furnished in accordance with this specification. The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his works, the supplier shall make necessary arrangements for carrying out the prescribed tests elsewhere.
- 7.4** Supplier shall ensure that the material is free from extraneous material. The material shall be rejected if it is not free from extraneous material.
- 7.5** For result of analysis and properties of material the decision of BHEL shall be final and binding on the supplier.
- 7.6** If the material received is not found suitable according to the requirements, it shall be replaced free of cost by the supplier.
- 7.7** For any deviation, demanded by the supplier from the specification, prior approval of BHEL must be obtained.
- 8.0 TEST CERTIFICATES:**
- Unless and otherwise stated, one original and three copies of certificates from the original manufacturer shall be supplied along with each consignment.
- In addition the supplier shall ensure to enclose one copy of test certificate along with the despatch documents to facilitate quick clearance of the material.
- Manufacturer supplying material directly to BHEL should include BHEL PO No. in the Test Certificate. Any other supplier should provide a covering letter along with original manufacturer Test Certificate as above mentioning BHEL PO No.
- The test certificates shall bear the followings information:
- AA11316, Rev.02: INOCULANTS FOR CAST IRONS
 - BHEL Order No.
 - Manufacturer's/ Supplier's Name.
 - Trade mark, if any.
 - Batch No.
 - Quantity Supplied.
 - Date of manufacture
 - Test Results of clauses 4.0, 5.0 and 6.0



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9.0 PACKING AND MARKING:

The material shall be packed in air tight, moisture and tamper proof steel drums of 100 kg capacity. Original Manufacturer packing is acceptable. Each container shall be legibly marked or labelled with the following information.

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BHEL Order No.

Manufacturer's/ Supplier's Name.

Batch/ Lot No.

Size and quantity supplied

Date of manufacture

10.0 Referred Standards (Latest publications including amendments):

- 1) IS: 210