


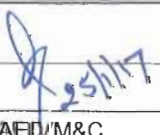
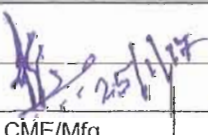
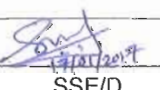
**GOVERNMENT OF INDIA
(Ministry of Railways)**

**SPECIFICATION FOR
AIR SETTING MORTAR
(SUPER-3000)**

PL No. 81981612

Issued by

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

			
CWE/W	AED/M&C	Dy. CME/Mfg.	SSE/D
APPROVED BY	REVIEWED BY	VERIFIED BY	PREPARED BY

SPECIFICATION FOR AIR SETTING MORTAR (SUPER-3000)

1.0 SCOPE

The specification covers the manufacture and supply of Air Setting Mortar to Rail Wheel Factory, Yelahanka, Bangalore - 560 064, Karnataka State, India as per instructions and conditions of contract and Tender papers.

2.0 GENERAL DESCRIPTION

Alumina base, low iron, air setting, super duty bonding mortar with high strength at low, intermediate and high temperatures.

3.0 JOB REQUIREMENT

The air setting mortar is required to assemble ceramic pouring tube in the holding casting. After final setting, the pouring tube is dipped in a glazing tank containing glaze material. It is subsequently heated to 990°C at the rate of around 110°C rise in temperature per hour. The preheated pouring tube assembly is mounted on the pouring cone at the centre of the pouring cover and the tube is immersed in liquid steel at a temperature of about 1600°C. The holding casting in which the super 3000 is used for mounting the pouring tube is not in contact with the liquid metal during usage. The mould assembly, weighing 4-5 MT approx., sits on the pouring cone. The tube assembly is used for pouring in more than one heat. The Super 3000 mortar shall have adequate binding strength so that the pouring tube top edge should not sink from the level when it is fitted and used continuously for 2 heats (64 castings approx.) at least. The mortar doesn't come in contact with molten metal.

4.0 MANUFACTURING AND QUALITY ASSURANCE PLAN (QAP)

4.1 CHARACTERISTICS OF RAW MATERIALS USED

Supplier has to disclose the details of the grade, source, specification and acceptance criteria of all raw materials used for manufacturing of Air Setting Mortar to satisfy uses of material as mentioned above

4.2 MANUFACTURING FACILITIES REQUIRED


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

4.3 TESTING FACILITIES

The manufacturer shall have all the facilities to test the properties of Air Setting Mortar specified in this specification. If testing is carried out at outside laboratories, it shall be clearly spelt out in the offer.

4.4 QUALITY ASSURANCE PLAN (QAP)

The supplier shall submit their **Quality Assurance Plan (QAP)** along with their


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bid for approval by RWF, which will be followed in the processing of air setting mortar to satisfy the technical requirement as required under this specification. Supplier shall get their QAP approved from RWF in advance, unless a waiver is given to this effect.

5.0 TECHNICAL DATA

- 5.1 Usable upto temperature : 1400°C
- 5.2 Pyrometric Cone Equivalent (min.) : 33 (Orton) (1746°C)
(when tested as per ASTM C 24 - 09)
- 5.3 Binding Strength after firing & cooling, when tested as per ASTM C 198 – 76, shall be as follows:

<u>Temperature in °C</u>	<u>Bonding Strength in kg/cm² (PSI)</u>
104	< 91.4 (1300)
760	< 77.3 (1100)
1205	< 77.3 (1100)

- 5.4 Lap Joint Strength, when tested as per ASTM C 606- 1976, shall be as follows:

<u>Temperature in °C</u>	<u>Lap joint Strength in kg/cm² (PSI)</u>
24	< 21.8 (310) (approx.)
1371	< 2.5 (35) (approx.)


- 5.5 Chemical analysis Calcined basis (%) (For manufacturer's guidance only)

Alumina	49.08
Silica	41.30
Ferric oxide	0.20
Alkali	3.40
Loss on ignition	6.00 max.

- 5.6 The mortar should have expanding characteristics during setting, so that the pouring tube is held tight and does not go down in the holding casting during pouring operations when the mould weight comes on the tube.
- 5.7 The supplier shall produce evidence as adequate proof for performance of product in similar application as in RWF for approved vender status.

6.0 SAMPLING NORMS

The supplier or manufacturer shall follow his own sampling norm for the determination of technical characteristics and the supply shall accompany test certificates. Sampling norm followed shall be indicated in MTC.


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7.0 PACKING

Shall be packed in high-density airtight plastic containers with provision for handling, each weighing 50 kgs.

Month and Year of manufacture should be clearly stamped on the packing container.

8.0 SHELF LIFE

12 months from the date of supply.

9.0 MANUFACTURER'S TEST CERTIFICATE (MTC)

The supply shall accompany with Manufacturer's Test Certificate (MTC). The MTC shall contain the test results for characteristics specified in clause 5.1, 5.2, 5.3, 5.4 & 5.5 and test method (standard) followed against each characteristic.

10.0 INSPECTION & ACCEPTANCE

Shall be based on the Manufacturer's test certificate. For first time suppliers, in addition to the manufacturer's test certificate, the material will be subjected to field tests to adjudge its suitability for the application before granting final acceptance.

11.0 WARRANTY

The supplier shall warrant the performance stated in clause 3.0 under standard operating conditions of RWF. In case any batch of material fails to perform on account of the manufacturer/supplier, the supplier shall replace complete batch of material free of cost.

12.0 TRIAL OF THE SUPPLY

The material for trial shall necessarily meet all the requirements mentioned elsewhere in this specification prior to shop floor trial. Only after this, the material will be taken up for shop floor trial by RWF as per trial scheme at Annexure-1 and the corresponding trial report shall be prepared as per Annexure-2.


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TRIAL SCHEME OF AIR SETTING MORTAR

1	Trial scheme No.	RWF/M/SPECN-1/031/1989 alt --- / Trial Scheme PL NO.....
2	Objective of Trial	To establish the suitability of Air Setting Mortar as per above specification.
3	Description of Material PO Number & PO date PO Qty. Supplier	AIR SETTING MORTAR
4	IDN Number & Date IDN Qty.
5	Authority for conducting Trial	Dy. CME/ Mfg
6	Earlier trial details	First Time Supply/ Second time/ Third time/...../.....
7	Trial Parameters	As mentioned in Trial Scheme.
8	Specification	RWF/M/SPECN-1/031/1989 alt ---
9	Pre-trial Testing details	Met. Lab Report & MTC
10	Trial qty	Full IDN Qty/ 5% of the tendered quantity.
11	Equipment / Station process	Tube preparation station.

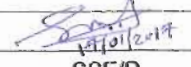
(..... to be filled by Team Members)

Trial Parameters:

1. Total quantity of Air Setting Mortar to be drawn and trial conducted on the entire quantity under the purchase order/5% of the tendered quantity, whichever is less.
2. Inspection & testing by shop and whenever required by laboratory completely in line (not in part) with the specification. Sampling for inspection as per specification.
3. Examination of MTC (Manufacturer's Test Certificate) and comments on its suitability.

Specific Requirements:

1. The Air Setting Mortar shall have sufficient bonding strength and withstand the actual working condition in matching number of other established makes by ensuring same process parameter during use and in the same period (or just preceding/succeeding period).

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TRIAL REPORT OF AIR SETTING MORTAR

1	Trial No.	RWF/M/SPECN-1/031/1989 alt ---- / Trial Scheme PL NO.....
2	Objective of Trial	To establish the suitability of Air Setting Mortar as per above specification.
3	Description of Material PO Number & PO date PO Qty. Supplier	AIR SETTING MORTAR
4	IDN Number & Date IDN Qty.
5	Authority for conducting Trial	Dy. CME/ Mfg
6	Earlier trial details	First Time Supply/ Second time/ Third time/...../.....
7	Trial Parameters	As mentioned in Trial Scheme
8	Specification	RWF/M/SPECN-1/031/1989 alt ---
9	Pre-trial Testing details	Met. Lab Report & MTC
10	Trial qty	Full IDN Qty/ 5% of the tendered quantity.
11	Equipment / Station process	EAF - A,B,C
12	Nominated Officers	ACMT/W & AWM/SMS

(..... to be filled by Team Members)

Application Test: Shop Floor test conducted from date ____ to date ____ & H. No. _**Trial Parameters:**

- Total quantity Air Setting Mortar to be drawn and trial conducted on the entire quantity under the purchase order/5% of the tendered quantity, whichever is less.

Comments:

- Inspection & testing by shop and whenever required by laboratory completely in line (not in part) with the specification. Sampling for inspection as per specification.


Enclosure Details:

- ination of M Lab report & MTC (Manufacturer's Test Certificate) and comments on its suitability.

Comments :

Specific Requirements:

- The Air Setting Mortar shall have sufficient bonding strength and withstand the actual working condition in matching number of other established makes by ensuring same process parameter during use and in the same period (or just preceding/succeeding period).


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Observations:

AWM/WM

ACMT/W

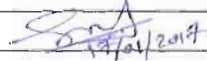
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Remarks of Dy CME/Mfg.

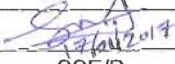
Remarks of AED/M&C

CWE/W

 07/01/2019
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AMENDMENT SHEET

Alt. 'h' Clause No.	Alt. 'i' Clause No.	Description	Job No.	Sign
4.4	4.4	Clause modified: 4.4 QUALITY ASSURANCE PLAN The supplier shall submit their Quality Assurance Plan (QAP) along with their bid for approval by RWF, which will be followed in the processing of air setting mortar to satisfy the technical requirement as required under this specification. Supplier shall get their QAP approved from RWF in advance, unless a waiver is given to this effect.	6914	
-	12	Clause added: 12.0 TRIAL OF THE SUPPLY The material for trial shall necessarily meet all the requirements mentioned elsewhere in this specification prior to shop floor trial. Only after this, the material will be taken up for shop floor trial by RWF as per trial scheme at Annexure-1 and the corresponding trial report shall be prepared as per Annexure-2.		
--	Annexure-1	Added Annexure-1 TRIAL SCHEME OF AIR SETTING MORTAR		
-	Annexure-2	Added Annexure-2 TRIAL REPORT OF AIR SETTING MORTAR		


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