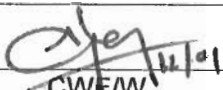
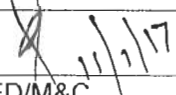
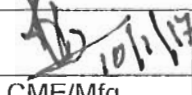
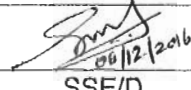


**GOVERNMENT OF INDIA  
(Ministry of Railways)**

**SPECIFICATION FOR  
LADLE INSULATION MATERIAL  
(PL No. 41980013)**

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

**Issued by  
SSE/D**

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

## SPECIFICATION FOR LADLE INSULATION MATERIAL

### 1.0 SCOPE

The specification covers the manufacture and supply of Ladle Insulation Material to Rail Wheel Factory, Yelahanka, Bangalore - 64, Karnataka, India.

### 2.0 DESCRIPTION

The Ladle Insulation Material is an exothermic compound in powder or granular form to minimise heat dissipation.

### 3.0 CHEMICAL COMPOSITION

#### 3.1 RESTRICTIVE CHARACTERISTICS

1. Carbon content (as estimated by loss on ignition): 15 - 30%
2. Moisture content (max) : 1%

#### 3.2 INDICATIVE CHARACTERISTICS FOR MANUFACTURING GUIDANCE

In addition to restrictive characteristics, the following chemical composition is stipulated as indicative for the purpose of the guidance of the manufacturers

- |  |             |
|--|-------------|
| 1. Al <sub>2</sub> O <sub>3</sub>      | : 10 ± 3%   |
| 2. Fe <sub>2</sub> O <sub>3</sub>      | : 5 ± 3%    |
| 3. CaO                                 | : 5 ± 3%    |
| 4. Sulphur                             | : Traces    |
| 5. Metallic Aluminium                  | : Nil       |
| 6. SiO <sub>2</sub> (in combined form) | : Remainder |
| 7. Alkalis                             | : Traces    |

#### 4.0 OTHER TECHNICAL DATA

1. Moisture content : 1% max.
2. Volatiles : 5% max.
3. Material when added for insulation purposes in the ladle should not introduce impurities into the molten metal.
4. It should be in powder or granular form, capable of being spread over surface of molten steel.

#### 5.0 GRAIN SIZE

The grain size shall be from 0.5 mm to 4.75 mm. Variation shall be permitted as per the following:


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Size less than 0.5 mm	:15% max.
Size greater than 4.75 mm	:15% max.
Maximum size allowed	: 5.6 mm

## 6.0 SAMPLING NORMS

The number of lined jute bags, to be selected, shall be according to column 1 and 2 of table below:

No. of bags in the lot (1)	No. of bags to be selected (2)
Up to 100	5
101 to 300	8
301 to 500	13
501 and above	20

6.1 The bags shall be selected at random. For this purpose the provisions given in IS 4905: 1968 (Methods for random sampling) shall be used.

## 7.0 SHELF LIFE

The Ladle Insulation Material should possess a minimum shelf life of 2 years.

## 8.0 PACKING

The material shall be supplied in 10 kg polythene lined jute bags to prevent moisture absorption.

## 9.0 QUALITY ASSURANCE PLAN (QAP)

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 ladle insulation material 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.

## 10.0 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 LADLE INSULATION MATERIAL**

1	Trial scheme No.	RWF/M/SPECN-1/021/1998 alt --- / Trial Scheme PL NO.....
2	Objective of Trial	To establish the suitability of Ladle Insulation Material as per above specification.
3	Description of Material PO Number & PO date PO Qty. Supplier	LADLE INSULATION MATERIAL ..... ..... .....
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-1/021/1998 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	Pouring Station.

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

**Trial Parameters:**

1. Total quantity of Ladle Insulation Material 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 Ladle Insulation Material shall have sufficient insulating property so as to avoid temperature drop in ladle 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 LADLE INSULATION MATERIAL

1	Trial No.	RWF/M/SPECN-1/021/1998 alt --- / Trial Scheme PL NO.....
2	Objective of Trial	To establish the suitability of f Ladle Insulation Material as per above specification.
3	Description of Material PO Number & PO date PO Qty. Supplier	LADLE INSULATION MATERIAL ..... ..... .....
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-1/021/1998 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	Pouring Station
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 ladle insulating material 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:

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

Comments :

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**Specific Requirements:**

1. The Ladle Insulation Material shall have sufficient insulating property so as to avoid temperature drop in ladle in matching number of other established makes by ensuring same process parameter during use and in the same period (or just preceding/succeeding period)

**Observations:**


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ACMT/W

SSE/SMS

WM/W


Remarks of Dy CME/Mfg.

Remarks of AED/M&C

CWE/W

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**AMENDMENT SHEET**

Alt. 'j' Clause No.	Alt. 'k' Clause No.	Description	Job No.	Sign
--	9	Clause added: 9.0 QUALITY ASSURANCE PLAN (QAP) 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 ladle insulation material 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.	6894	
--	10	Clause added: 10.0 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 LADLE INSULATION MATERIAL		
--	Annexure-2	Added Annexure-2 TRIAL REPORT OF LADLE INSULATION MATERIAL		

  
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