

भारतीय मानक  
अग्निसह दुर्गलनीय ईंटें बिछाने के लिए अग्निसह  
मसाले — विशिष्ट  
( तीसरा पुनरीक्षण )

*Indian Standard*

FIRECLAY MORTAR FOR  
LAYING FIRECLAY REFRACTORY  
BRICKS — SPECIFICATION

( *Third Revision* )

---

First Reprint OCTOBER 1998

UDC 666'767 : 666'76216 - 431

© BIS 1991

BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

## FOREWORD

This Indian Standard ( Third Revision ) was adopted by the Bureau of Indian Standards, after the draft finalised by the Refractories Sectional Committee had been approved by the Metallurgical Engineering Division Council.

Fireclay mortar is mainly a suitable mixture of plastic fireclay and fireclay grog ( calcined fireclay or broken fireclay refractories ). Fireclay mortar specified in this standard is used for laying fireclay refractory bricks conforming to :

- IS 6 : 1983      Moderate heat duty fireclay refractories, Group A ( *fourth revision* )
- IS 7 : 1980      Moderate heat duty fireclay refractories, Group B ( *fourth revision* )
- IS 8 : 1983      High heat duty fireclay refractories ( *fourth revision* )
- IS 483 : 1972    Fireclay refractories for oil-fired boiler furnaces on naval ships ( *first revision* )
- IS 2043 : 1984   Siliceous fireclay refractories ( *first revision* )

For determining fineness of fireclay mortar the aperture sizes are based on IS 460 ( Part 2 ) : 1985 'Test sieves: Part 2 Perforated plate test sieves ( *third revision* )'. Where these sieves are not available other equivalent standard sieves may be used.

In the preparation of this standard, the Sectional Committee, kept in view the manufacturing and trade practices followed in the country in this field.

Wherever a reference to any Indian Standard appears in this specification, it shall be taken as a reference to the latest version of the standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( *revised* )'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## *Indian Standard*

# FIRECLAY MORTAR FOR LAYING FIRECLAY REFRACTORY BRICKS — SPECIFICATION

( *Third Revision* )

### 1 SCOPE

This standard covers the requirements for mortar used for laying fireclay refractories.

### 2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
6 : 1983	Moderate heat duty fireclay refractories, group A ( <i>fourth revision</i> )
7 : 1980	Moderate heat duty fireclay refractories, group B ( <i>fourth revision</i> )
8 : 1983	High heat duty fireclay refractories ( <i>fourth revision</i> )
460 (Part 2) : 1985	Test sieves : Part 2 Perforated plate test sieves ( <i>third revision</i> )
483 : 1972	Fireclay refractories for oilfired boiler furnaces of naval ships ( <i>first revision</i> )
1387 : 1967	General requirements for the supply of metallurgical materials
1527 : 1972	Methods for chemical analysis of high silica refractory materials
1528 (Part 1) : 1980	Method of sampling and physical test for refractory materials: Part 1 Determination of pyrometric cone equivalent (PCE) or softening point ( <i>second revision</i> )
1528 (Part 7) : 1974	Method of sampling and physical test for refractory materials: Part 7 Methods of sampling and criteria for conformity ( <i>first revision</i> )

### 3 SUPPLY OF MATERIAL

**3.1** General requirements relating to the supply of fireclay mortar shall be as laid down in IS 1387 : 1967.

**3.2** The material shall be ground evenly and shall be of such quality and plasticity as would enable it to be spread satisfactorily with a trowel when tempered with an adequate amount of water.

### 4 SAMPLING

**4.1** Representative samples shall be drawn according to the scheme of sampling given in IS 1528 (Part 7) : 1974.

### 5 CHEMICAL COMPOSITION

The chemical composition of different grades of fireclay mortar with respect to  $Al_2O_3$  and  $Fe_2O_3$  content when tested in accordance with the method given in IS 1527 : 1972, shall be as given in Table 1.

### 6 PHYSICAL REQUIREMENTS

#### 6.1 Drying and Firing Shrinkage

The drying and firing shrinkage of different types of fireclay mortar shall be as given in Table 1.

**6.1.1** Drying and firing shrinkage shall be measured on hand moulded briquettes made after thorough mixing of mortar with 10-20 percent of water. Samples to be prepared by casting.

**6.1.2** The size of the briquettes should be 160 mm × 40 mm × 40 mm. The other size of briquettes may also be used. The same briquettes as for firing test, may be used subsequently.

#### 6.2 Fineness

**6.2.1** The fineness of different grades of fireclay mortar shall be as given in Table 1.

**6.2.2** No particle of fireclay mortar shall be so large as to be retained on IS-sieve 1.6 mm.

#### 6.3 Refractoriness

**6.3.1** Fireclay mortar when tested in accordance with the method given in IS 1528 (Part 1) : 1980 for pyrometric cone equivalent shall conform to the values given in Table 1.

### 7 PACKING

**7.1** Unless otherwise specified, the material shall be supplied in gunny bags each containing 50 kg fire clay mortar.

### 8 MARKING

**8.1** The containers shall be clearly marked with manufacturer's name or trade-mark, and grade and type of the material.

#### 8.2 Standard Marking

Product may also be marked with Standard Mark.

**Table 1 Physical Test Requirements**  
( *Clauses 5, 6.1, 6.2.1 and 6.3.1* )

Sl No.	Characteristics	Requirements		Test Method ( Ref to IS 1528 )
		Grade 1	Grade 2	
( 1 )	( 2 )	( 3 )	( 4 )	( 5 )
i)	Al <sub>2</sub> O <sub>3</sub> percent, <i>Min</i>	37	30	—
ii)	Fe <sub>2</sub> O <sub>3</sub> percent, <i>Max</i>	3	2.5	—
iii)	Pyrometric cone equivalent ( ASTM ), Standard Cone No., <i>Min</i>	31	29	Part 1
iv)	Drying shrinkage at 110°C, percent, <i>Max</i>	2	2	—
v)	Firing shrinkage at temperature, percent, <i>Max</i>	0.5 ( at 1400°C for 2 hours )	3.0 ( at 1350°C for 2 hours )	—
vi)	95 percent passing through IS sieve, micron, <i>Min</i>	150	842	—

## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

### Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publication), BIS.

### Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'.

This Indian Standard has been developed from Doc: No. MTD 15 ( 3693 )

### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

## BUREAU OF INDIAN STANDARDS

### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002  
Telephones: 323 01 31, 323 33 75, 323 94 02

Telegrams: Manaksanstha  
(Common to all offices)

### Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg  
NEW DELHI 110002

Telephone  
323 76 17, 323 38 41

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola  
CALCUTTA 700054

{ 337 84 99, 337 85 61  
{ 337 86 26, 337 91 20

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43  
{ 60 20 25

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113

{ 235 02 16, 235 04 42  
{ 235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)  
MUMBAI 400093

{ 832 92 95, 832 78 58  
{ 832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR.  
COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI.  
HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR.  
PATNA. PUNE. THIRUVANANTHAPURAM.