इंटरनेट मानक

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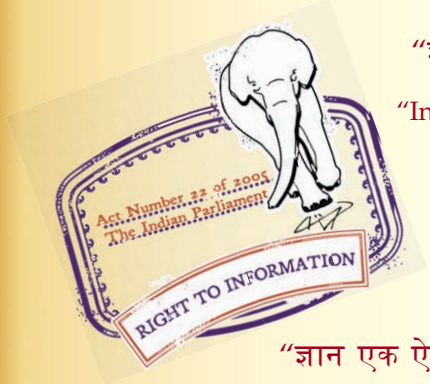
"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 3115 (1992): lime based blocks [CED 4: Building Limes and Gypsum Products]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"



"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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IS 3115 : 1992
(Reaffirmed 2003)

भारतीय मानक

चूने से बने ब्लाक — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

LIME BASED BLOCKS — SPECIFICATION

(Second Revision)

UDC 666·924-431 : 692·2

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

September 1992

Price Group 2

Building Lime and Lime Products Sectional Committee, CED 4

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Building Limes and Lime Products Sectional Committee had been approved by the Civil Engineering Division Council.

This standard was first published in 1965 and subsequently revised in 1978. During its first revision, the provisions given in IS 5498 : 1969 'Specification for lime cement-cinder hollow concrete blocks' were incorporated in this standard and IS 5498 was withdrawn. Most of the Indian Standards referred to in the first revision of this standard had undergone revision and, therefore, in this revision all the references had been updated in addition to modifying some other requirements like tolerances on dimensions, sampling and criteria for conformity, etc. A clause on manufacturer's certificate has also been incorporated in this revision.

Lime based blocks are made from lime, lime and 33 grade ordinary Portland cement or slag cement or Portland Pozzolana cement, lime and pozzolana, and lime pozzolana mixture. The blocks are manufactured by various processes developed by Central Building Research Institute; Khadi and Village Industries Commission; Central Road Research Institute; and other agencies. These blocks are economical because it ensures rapid construction helps in saving of mortar, and does not require plastering. However, it can be given an attractive appearance, if needed, due to wide variety of finishes both for interior and exterior walls.

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.

AMENDMENT NO. 1 JULY 2011
TO
IS 3115 : 1992 LIME BASED BLOCKS — SPECIFICATION

(Second Revision)

(*Page* 1, *clause* **5.5**) — Substitute the following for the existing:

'**5.5 Pulverized Fuel Ash**

Pulverized fuel ash shall conform to IS 15648.'

(*Page* 4, *Annex* A) — Delete the entry '3812 : 1981' along with its title.

(*Page* 4, *Annex* A) — Include the following new entry at the end:

'15648 : 2006 Pulverized fuel ash for lime pozzolana mixture applications — Specification'

(CED 4)

Reprography Unit, BIS, New Delhi, India

Indian Standard

LIME BASED BLOCKS — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers dimension, quality and strength requirement of lime based blocks (both hollow and solid) used for walls, internal partitions and filler walls.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Block

A masonry unit, either solid or hollow, any one of the external dimensions of which is greater than the corresponding dimension of a brick as specified in IS 3952 : 1988, and of such size and mass as to permit it to be handled by one man. Furthermore, to avoid confusion with slabs and panels, the height of the block shall not exceed either its length or six times its width.

3.2 Solid Block

A block which is hundred percent solid.

3.3 Hollow Block

A block in which hollow area is greater than 25 percent but not greater than 50 percent of the gross cross-sectional area.

3.4 Gross Area

The total area occupied by a block on its bedding face, including areas of the hollow portions and end recesses.

3.5 Block Density

The density calculated by dividing the mass of a block by the overall volume, including holes or cavities and end recesses.

3.6 Drying Shrinkage

The difference between the length of a specimen which has been immersed in water and then subsequently dried to constant length, all under specified conditions, expressed as a percentage of the dry length of the specimen.

3.7 Moisture Movement

The difference between the length of the specimen when dried to constant length and the length when subsequently immersed in water, all under specified condition, expressed as a percentage of the dry length of the specimen.

4 GENERAL REQUIREMENTS

All blocks shall be sound, free from cracks, broken edges, distortion and other defects that would interfere with the proper placing of the unit.

The bedding surface shall be at right angles to the face of blocks. The ends of the blocks which form the vertical joints may be plain, tongued and grooved or double grooved as shown in Fig. 1.

5 MATERIALS

5.1 Lime

Lime shall conform to IS 712 : 1984.

5.2 Cement

The cement shall conform to IS 269 : 1989 or IS 455 : 1989 or IS 1489 (Parts 1 and 2) : 1991.

5.3 Calcined Clay Pozzolana

This shall conform to IS 1344 : 1981.

5.4 Lime Pozzolana Mixture

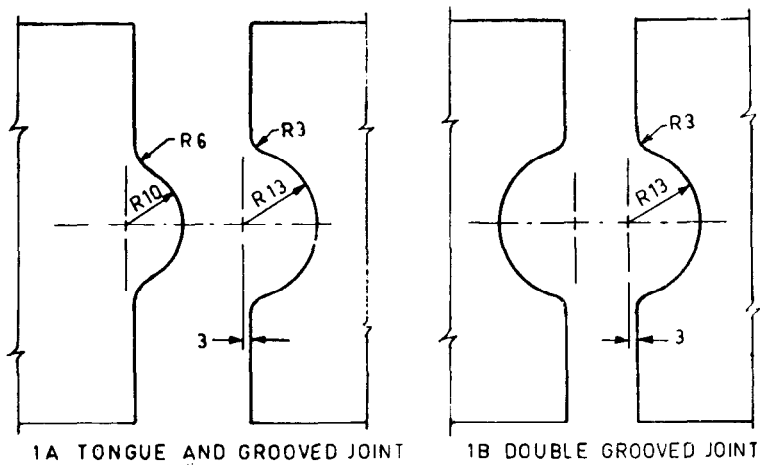
The mixture shall conform to IS 4098 : 1983.

5.5 Fly Ash

This shall conform to IS 3812 : 1981.

5.6 Coarse Aggregate

The coarse aggregate to be used in the manufacture of blocks shall be either natural stone aggregate conforming to IS 383 : 1970 or broken brick (burnt clay) aggregate conforming to IS 3068 : 1986 or cinder aggregate conforming to IS 2686 : 1977 depending on the situation of use. Any other suitable aggregate of proven quality and performance may also be used for the purpose.



All dimensions in millimetres.

FIG. 1 PLAN OF JOINTS IN LIME BASED BLOCKS

5.7 Water

The water to be used in the manufacture of blocks shall be fresh, clean and free from acids, alkalis, salt or other deleterious matter.

6 TYPES

The block shall be of foilowing types:

Type A — Block with both faces keyed for plastering,

Type B — Block with both faces smooth and suitable for use without plastering or rendering on either side, and

Type C — Blocks with one face keyed and one face smooth.

7 DIMENSIONS AND TOLERANCES

7.1 Dimensions

The actual size of the blocks when measured according to the procedure given in Appendix A of IS 2185 (Part 1) : 1979 shall be as follows:

Length	390 mm
Width	90, 190, 290 mm
Height	90, 190 mm

The dimensions of the units are so designed that taking account of the thickness of mortar joints, they will produce wall lengths and heights which will conform to the principles of modular co-ordination.

7.1.1 Sizes other than those mentioned in 7.1 may be supplied by mutual agreement between the supplier and the purchaser.

7.2 Tolerances

The maximum variation in length of a block shall not be more than ±5 mm and the maximum variation in height and width shall not be more than ±3 mm.

7.3 Hollow block shall be made with one or more cavities and the wall thickness at any point shall not be less than 40 mm.

8 BLOCK DENSITY

The block density when determined according to Appendix B of IS 2185 (Part 1) : 1979 shall not be less than 1 000 kg/m^3.

9 COMPRESSIVE STRENGTH

9.1 The minimum average compressive strength of eight blocks when determined in accordance with the procedure laid down in Appendix C of IS 2185 (Part 1) : 1979 shall be 3·5 MPa.

NOTES

1 The blocks shall be tested in saturated state after immersion in water at room temperature for 24 hours.

2 While calculating the compressive strength, the gross area of the specimen shall be taken.

9.2 The compressive strength of any individual block shall not fall below the minimum specified average compressive strength by more than 20 percent.

10 DRYING SHRINKAGE

The drying shrinkage of each of the blocks, when determined according to the procedure given in Appendix E of IS 2185 (Part 1) : 1979 shall not exceed 0·1 percent.

NOTE — While preparing the specimen from hollow blocks for testing, the specimen with largest possible dimension that can be obtained may be used.

11 MOISTURE MOVEMENT

The moisture movement of each of the three dried units on immersion in water, when determined in the manner described in Appendix F of IS 2185 (Part 1) : 1979 shall not exceed 0·05 percent.

12 SAMPLING AND CRITERIA FOR CONFORMITY

12.1 Lot

In any consignment, all the blocks of the same size and from the same batch of manufacture shall be grouped together into a minimum number of groups of 5 000 blocks or less. Each group shall constitute a lot.

12.2 From each lot a sample of 20 blocks shall be selected at random. In order to ensure the randomness of selection, all the blocks in the lot may be arranged in a serial order. Starting from any random block every *r*th block may be selected till the requisite number is obtained, being the integral part of N/20, where N is the lot size.

12.3 Number of Tests

12.3.1 All the 20 blocks shall be checked for dimensions (*see* **7**) and then inspected for visual defects (*see* **4**).

12.3.2 Out of the 20 blocks, 3 blocks shall be subjected to the test for block density (*see* **8**), 8 blocks to the test for compressive strength (*see* **9**) and 3 blocks to the test for drying shrinkage (*see* **10**) and later to the test for moisture movement (*see* **11**). The remaining blocks shall be reserved for retest for drying shrinkage and moisture movement if a need arises.

12.4 Criteria for Conformity

The lot shall be considered as conforming to the requirements of this specification if the conditions mentioned in **12.4.1** to **12.4.3** are satisfied.

12.4.1 The number of blocks with dimensions outside the tolerance limit and/or visual defects, among those inspected shall be not more than two.

12.4.2 For block density and compressive strength, the mean value determined shall not be less than the minimum limit specified in **8.1** and **9.1** respectively.

12.4.3 For drying shrinkage and moisture movement, all the test specimens shall satisfy the requirement of the test specified in **10** and **11**. If one or more specimens fail to satisfy the requirements, another 3 blocks shall be subjected to these tests. All these blocks shall satisfy the requirements.

13 MANUFACTURER'S CERTIFICATE

The manufacturer shall satisfy himself that the blocks conform to the requirements of this specification and, if requested, shall supply a certificate to this effect to the purchaser or his representative.

14 MARKING

14.1 Each block shall be clearly and permanently marked with the following information:

a) Indication of the source of manufacture; and

b) Year of manufacture, if required.

14.2 Each block may also be marked with the Standard Mark.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
269 : 1989	33 grade ordinary Portland cement (*fourth revision*)
383 : 1971	Coarse and fine aggregates from natural sources for concrete (*second revision*)
455 : 1989	Portland slag cement (*fourth revision*)
712 : 1984	Building limes (*third revision*)
1344 : 1981	Calcined clay pozzolana (*second revision*)
1489 (Parts 1 & 2) : 1991	Portland pozzolana cement (*third revision*)
2185 (Part 1) : 1979	Concrete masonry units : Part 1 Solid and hollow concrete blocks (*second revision*)
2686 : 1977	Cinder aggregates for use in lime concrete (*first revision*)
3068 : 1986	Broken brick (burnt clay) coarse aggregates for use in lime concrete (*first revision*)
3812 : 1981	Fly ash for use as pozzolana and admixture (*first revision*)
3952 : 1988	Burnt clay hollow bricks for walls and partitions (*second revision*)
4098 : 1983	Lime pozzolana mixture (*first revision*)

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. CED 4 (5002)

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Amend No.	Date of Issue	Text Affected

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