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IS 10360 (1982): lime-pozzolana concrete blocks for paving
[CED 4: Building Limes and Gypsum Products]



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Indian Standard

**SPECIFICATION FOR
LIME-POZZOLANA CONCRETE
BLOCKS FOR PAVING**

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

Indian Standard

SPECIFICATION FOR LIME-POZZOLANA CONCRETE BLOCKS FOR PAVING

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Indian Standard

SPECIFICATION FOR LIME-POZZOLANA CONCRETE BLOCKS FOR PAVING

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 October 1982, after the draft finalized by the Lime Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 In urban areas, it is a common practice to construct footpaths for safe movement of the pedestrians. Such footpaths are conventionally made with a variety of construction materials, such as cement concrete, cast *in situ* or precast blocks, stone tiles, burnt clay bricks or water-bound macadam with bituminous top, etc. In addition, blocks made by using lime and pozzolana or lime-pozzolana mixture can also be conveniently used for use in footpaths, pavements, passenger waiting sheds at bus stops and other places. Pozzolanas used for such purpose may be either flyash available in large quantity as a waste material from coal-based thermal power stations or burnt clay pozzolana. The method of manufacture and curing of such blocks has been covered separately. This standard is intended to provide guidance with regard to dimensions, and physical properties.

0.3 This standard contains clause 5.1.1 which permits the purchaser to use his option for selection to suit his requirements.

0.4 In the preparation of this standard, considerable assistance has been rendered by the Central Road Research Institute, New Delhi.

0.5 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard covers dimensions, quality and strength requirements of lime-pozzolana concrete blocks for use in paving.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 3115-1978* and IS : 6508-1972† shall apply.

3. MATERIALS

3.1 Lime — Shall conform to class C (hydrated) of IS : 712-1973‡.

3.2 Fly Ash — Shall conform to grade I of IS : 3812-1981§.

3.3 Burnt Clay Pozzolana — Shall conform to IS : 1344-1982||.

3.4 Lime Pozzolana Mixture — Shall conform to IS : 4098-1967¶.

3.5 Coarse and Fine Aggregates — Shall be either natural or crushed stone conforming to IS : 383-1970**.

3.6 Water — Water used in the manufacture of the blocks shall be clean and free from harmful amount of deleterious material. Potable water is generally considered satisfactory.

4. GENERAL REQUIREMENTS

4.1 The lime pozzolana concrete blocks for paving shall be manufactured from lime, flyash or burnt clay pozzolana or lime-pozzolana mixture and coarse and fine aggregates in accordance with the provision given in IS : 10359-1982††. All blocks shall be sound, free from cracks, broken edges and other defects that would interfere with the proper placing of the unit.

*Specification for lime based blocks (*first revision*).

†Glossary of terms relating to building lime.

‡Specification for building limes (*second revision*).

§Specification for fly ash for use as pozzolana and admixtures (*first revision*).

||Specification for calcined clay pozzolana (*second revision*).

¶Specification for lime-pozzolana mixture.

**Coarse and fine aggregates from natural sources for concrete (*second revision*).

††Code of practice for manufacture and use of lime pozzolana concrete block for paving

5. DIMENSIONS AND TOLERANCES

5.1 Dimensions — The standard size of the blocks when measured according to the procedure given in Appendix A of IS : 2185 (Part I)-1979* shall be as follows:

Length	— 300 mm
Width	— 300 mm
Height	— 100 mm

NOTE — In view of low abrasive resistance of lime pozzolana concrete (see 6), the blocks shall be provided with a thin wearing coarse of cement sand mortar cast integrally with the lime pozzolana concrete.

NOTE 2 — Of the total height of 100 mm, the bottom 90 mm shall consist of lime pozzolana concrete and top 10 mm of cement sand mortar.

5.1.1 Sizes other than those mentioned in 5.1 may be supplied as agreed between the supplier and the purchaser.

5.2 Tolerances — The maximum variation in length, width and height of a block shall not be more than ± 5 mm, ± 5 mm and ± 1.50 mm respectively.

6. PHYSICAL REQUIREMENTS

6.1 Compressive Strength — The minimum average compressive strength of the blocks when tested in accordance with the procedure laid down in Appendix C of IS : 2185 (Part I)-1979* shall be 3.5 N/mm^2 (35 kgf/cm^2).

6.2 Drying Shrinkage — The drying shrinkage of the blocks when determined according to the procedure given in Appendix E of IS : 2185 (Part I)-1979* shall not exceed 0.1 percent.

6.3 Moisture Movement — The moisture movement of the dried blocks on immersion in water when determined in the manner described in Appendix F of IS : 2185 (Part I)-1979* shall not exceed 0.05 percent.

6.4 Abrasion Resistance — The abrasion resistance of the top wearing course surface (1:3 cement-sand mortar) of the blocks shall be tested in accordance with the procedure laid down in IS : 9284-1979†. The maximum value of abrasion loss shall be 0.4 percent.

*Specification for concrete masonry units : Part I Hollow and solid concrete blocks (second revision).

†Methods of determination of resistance to wear by abrasion of concrete.

6.5 Flexural Strength — When tested in accordance with the method given in IS : 2690 (Part II)-1975*, the minimum average modulus of rupture shall be 0.5 N/mm² (5 kgf/cm²).

7. MARKING

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

- a) Manufacturer's name or trade-mark, if any; and
- b) Year of manufacture, if required.

7.1.1 The product may also be marked with Standard mark.

7.2 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 details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8. SAMPLING AND CRITERIA FOR CONFORMITY

8.1 The method of selecting blocks and the criterion for conformity shall be as given in Appendix A.

A P P E N D I X A

(Clause 8.1)

SAMPLING AND CRITERION FOR CONFORMITY

A-1. LOT

A-1.1 In any consignment, all the blocks of the same size and from the same batch of manufacture shall be grouped together into group of 1 000 blocks or less. Each such group shall constitute a lot.

A-2. SAMPLE SIZE

A-2.1 From each lot, a sample of 15 blocks shall be selected at random. In order to ensure randomness of selection, random number tables as agreed between the purchaser and the supplier shall be used.

*Specification for burnt clay flat terracing tiles : Part II Hand made (first revision).

A-3. NUMBER OF TEST

A-3.1 All the 15 blocks shall be checked for dimensions (*see 5*) and then inspected for visual defects (*see 4*).

A-3.2 Out of the 15 blocks, three blocks shall be subjected to the test for compressive strength (*see 6.1*) three blocks to the test for drying shrinkage (*see 6.2*) and later to the test for moisture movement (*see 6.3*) three blocks to the test for abrasion resistance (*see 6.4*) and three blocks to the test for flexural strength (*see 6.5*) the remaining 3 blocks shall be reserved for retest for drying shrinkage and moisture movement if a need arises.

A-4. CRITERIA FOR CONFORMITY

A-4.1 The lot shall be considered as conforming to the requirements of this standard if the conditions mentioned in the respective clauses are satisfied.

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AMENDMENT NO. 1 NOVEMBER 1994
TO
**IS 10360 : 1982 SPECIFICATION FOR LIME-
POZZOLANA CONCRETE BLOCKS FOR PAVING**

(Page 4, clause 2.1) — Substitute 'IS 3115 : 1992*' for 'IS : 3115 - 1978*' and 'IS 6508 : 1988†' for 'IS : 6508 - 1972‡'.

(Page 4, clause 3.1) — Substitute 'IS 712 : 1984‡' for 'IS : 712 - 1973‡'.

(Page 4, clause 3.3) — Substitute 'IS 1344 : 1981||' for 'IS : 1344 - 1982||'.

(Page 4, clause 3.4) — Substitute 'IS 4098 : 1983¶' for 'IS : 4098 - 1967¶'.

(Page 4, clause 3.6) — Add the following at the end:

'For the limits of deleterious materials permitted in water, reference may be made to IS 456 : 1978††.'

(Page 4, foot-notes with '*', '†', '‡', '||', '¶', and '††' marks) — Substitute the existing for the following:

*Specification for lime based blocks (*second revision*).

†Glossary of terms relating to building lime (*first revision*).

‡Specification for building limes (*third revision*).

||Specification for calcined clay pozzolana (*second revision*).

¶Specification for lime-pozzolana mixture (*first revision*).

††Code of practice for plain and reinforced concrete (*third revision*).'

AMENDMENT NO. 2 DECEMBER 1999
TO
IS 10360 : 1982 SPECIFICATION FOR
LIME-POZZOLANA CONCRETE BLOCKS FOR PAVING

(*Page 5, footnote marked '†'*) — Substitute the following for the existing footnote :

'†Methods of test for abrasion resistance of concrete.'

(*Page 6, clause 6.5*) — Substitute 'IS 2690 (Part 2) : 1993*' for 'IS 2690 (Part II) : 1975*'.

(*Page 6, footnote marked '**'*) — Substitute the following for the existing footnote:

*'**Specification for burnt clay flat terracing tiles: Part 2 Handmade (second revision).'*

(CED 04)

AMENDMENT NO. 3 SEPTEMBER 2007
TO
IS 10360 : 1982 SPECIFICATION FOR LIME-
POZZOLANA CONCRETE BLOCKS
FOR PAVING

(Page 4, clause 3.2) — Substitute the following for the existing clause:

‘3.2 Fly Ash – Shall conform to IS 3812 (Part 1) : 2003§.’

(Page 4, footnote marked §) — Substitute the following for the existing footnote:

‘§Pulverized fuel ash — Specification: Part 1 For use as pozzolana in cement, cement mortar and concrete (*second revision*).’

(Page 4, clause 3.4) — Insert the following new clause 3.5 and renumber the subsequent clauses:

‘3.5 Cement — Shall conform to IS 269:1989†† or IS 1489 (Part 1) : 1991§§ or IS 1489 (Part 2) : 1991§§.’

(Page 4, footnotes) — Insert the following footnotes at the end:

††Specification for 33 grade ordinary Portland cement.

§§Specification for Portland pozzolana cement:

Part 1 Fly ash based (*third revision*).

Part 2 Calcined clay based (*third revision*).’

AMENDMENT NO. 4 JULY 2011
TO
IS 10360 : 1982 SPECIFICATION FOR LIME-POZZOLANA
CONCRETE BLOCKS FOR PAVING

[Page 4, clause **3.2** (see also Amendment No. 3)] — Substitute the following for the existing:

‘3.2 Pulverized Fuel Ash — Shall conform to IS15648 : 2006§.’

[Page 4, clause **3.6**, line 5 (see also Amendment No. 1)] —Substitute ‘IS 456 : 2000††’ for ‘IS 456 : 1978††’.

[Page 4, footnote marked § (see also Amendment No. 3)] — Substitute the following for the existing:

‘§Pulverized fuel ash for lime pozzolana mixture applications — Specification.’

(Page 4, footnote marked ††) — Substitute ‘(fourth revision)’ for ‘(third revision)’.

(Page 5, clause **6.1**, line 3) — Substitute ‘2005*’ for ‘1979*’.

(Page 5, footnote marked with *) — Substitute ‘(third revision)’ for ‘(second revision)’.

[Page 6, clause **6.5**, line 2 (see also Amendment No. 2)] — Substitute ‘1992*’ for ‘1993*’.

(CED 4)