

# इंटरनेट

# मानक

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“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*  
**SPECIFICATION FOR  
SEWER BRICKS**  
*(First Revision)*

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

# Indian Standard

## SPECIFICATION FOR SEWER BRICKS

### ( First Revision )

#### 0. FOREWORD

**0.1** This Indian Standard ( First Revision ) was adopted by the Bureau of Indian Standards on 24 February 1988, after the draft finalized by the Clay Products for Building Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** This standard was first published in 1968. The first revision of this standard has been taken up due to experience gained by usage of this standard during the course of these years. In this revision, tolerances on dimensions of bricks have been reduced. The method of determination of dimensions and tolerances has been specified on the basis of measurement of dimensions of a minimum of 20 bricks. The dimensions of the bricks have been specified in millimetres and the compressive strength values of bricks have been indicated in  $N/mm^2$ .

**0.3** Sewer bricks are intended for the lining of walls, roofs and floors of sewers used for ordinary sanitary ( domestic ) sewage. The general practice in the country is also to utilize common building bricks in the construction of sewers which is not satisfactory. This standard has been, therefore, formulated to lay down the essential requirements regarding dimensions, compressive strength, percentage of water absorption, etc, for burnt clay sewer bricks suitable for use in sewers of ordinary sanitary ( domestic ) sewage. However, these sewer bricks may not

be suitable for sewers dealing with industrial effluent ( sewage ) for which the use of acid resistant bricks in accordance with IS : 4860-1968\* may be considered.

**0.3.1** Although sanitary ( domestic ) sewage is not corrosive to the brick sewers, there is a possibility of this sewage turning septic owing to various reasons and thus leading to formation of hydrogen sulphide and sulphuric acid through biochemical action. Such conditions should be avoided in the proper design of sewer system with suitable slopes and necessary provision of adequate ventilation, etc.

**0.4** In the formulation of this standard, due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

**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.

\*Specification for acid-resistant bricks.

†Rules for rounding off numerical values ( revised ).

#### 1. SCOPE

**1.1** This standard specifies dimensions, quality and strength, and methods of sampling and test for burnt clay sewer bricks used for sewers of sanitary ( domestic ) sewage.

#### 2. MANUFACTURE

**2.1** The bricks shall be manufactured from suitable soil. The composition shall be such that the finished bricks are free from coarse grains, stones, pebbles, or visible grains of lime.

#### 3. DIMENSIONS AND TOLERANCES

**3.1 Dimensions** — The standard sizes of the sewer bricks shall be as follows:

Length	Width	Height
mm	mm	mm
190	90	90
190	90	40

**3.1.1** For sewers of special shapes, such as the oval sewers, the bricks may have to be suitably tapered to conform to the radii of curvature of the arches and barrels and sides of sewers.

**3.2 Tolerance** — The permissible tolerance on the dimensions specified in 3.1 shall be as follows:

Dimensions	Total Tolerance for 20 Bricks
mm	mm
190	± 80
90	± 40
40	± 40

**3.2.1** Twenty (or more according to the size of stack) whole bricks shall be selected at random from the sample selected under 8. All blisters, loose particles of clay and small projections shall be removed. They shall then be arranged upon

broken, sewer bricks shall show a fracture of uniformly fine grained and compact structure throughout.

## 5. COMPRESSIVE STRENGTH

**5.1** The average compressive strength obtained on a sample of sewer bricks when tested in accordance with the procedure laid down in IS : 3495 (Part 1)-1976\* shall be not less than 17.5 N/mm<sup>2</sup> (175 kgf/cm<sup>2</sup> approximately) and the individual strength of any brick shall be not less than 16 N/mm<sup>2</sup> (160 kgf/cm<sup>2</sup> approximately).

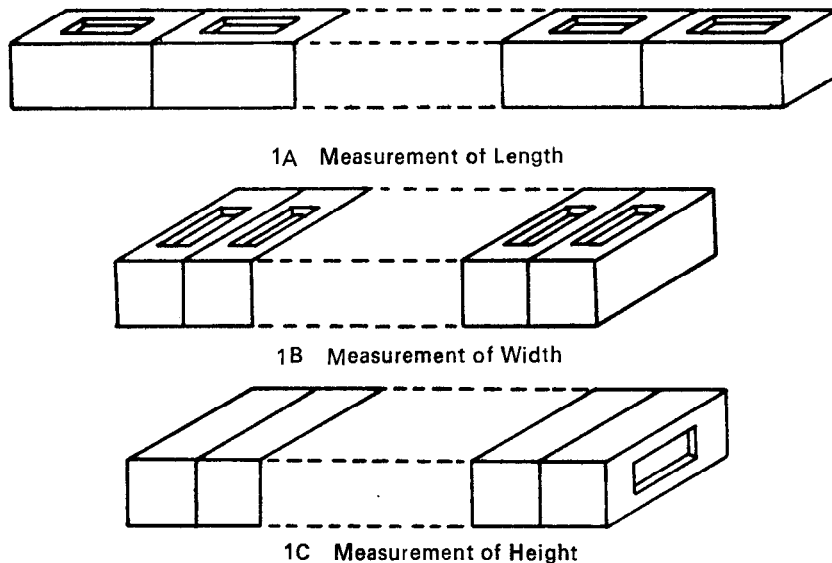


FIG. 1 MEASUREMENT OF TOLERANCE OF SEWER BRICKS

a level surface successively as indicated in Fig. 1A, 1B and 1C in contact with each other and in a straight line. The overall length of the assembled bricks shall be measured with a steel tape or other suitable inextensible measure sufficiently long to measure the whole row at one stretch. Measurement by repeated application of short rule or measure shall not be permitted. If for any reason, it is found impracticable to measure bricks in one row, the sample may be divided into rows of 10 bricks each which shall be measured separately to the nearest millimetre. All these dimensions shall be added together.

**3.3 Warp**age — Tolerance for distortion or warpage of face or edges of individual brick from a plane surface and from a straight line, respectively, shall not be more than 2.5 mm.

## 4. GENERAL QUALITY

**4.1** The bricks shall be free from cracks, flaws and nodules of lime. They shall be thoroughly burnt and shall have plane rectangular faces with sharp edges and corners. The ends and at least one edge shall have smooth plane surfaces. Kiln marks not exceeding 3 mm in depth shall be permitted on the opposite edges. When

## 6. WATER ABSORPTION

**6.1** The average value of water absorption for five bricks after 24 h cold water immersion test when tested in accordance with IS : 3495 (Part 2)-1976\* shall not exceed 10 percent of the average dry weight of the brick and the absorption for any individual brick shall not exceed 12 percent.

**6.2** The purchaser may also, where specially needed, specify water absorption requirement by the 5 h immersion in boiling water in accordance with the test procedure laid down in IS : 3495 (Part 2)-1976\*.

## 7. EFFLORESCENCE

**7.1** When the bricks are tested in accordance with the method laid down in IS : 3495 (Part 3)-1976\*, the rating of efflorescence shall not be more than 'slight'.

\*Methods of tests of burnt clay building bricks:

- Part 1 Determination of compressive strength.
- Part 2 Determination of water absorption.
- Part 3 Determination of efflorescence.

## 8. SAMPLING

**8.1** Sampling of sewer bricks shall be done in accordance with the procedure laid down in IS : 5454-1978\*.

## 9. MARKING

**9.1** Each brick shall be marked in a suitable manner with the manufacturer's identification mark or initials.

**9.1.1** Each brick may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Standard 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.

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\*Methods for sampling of clay building bricks ( *first revision* ).

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