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  Mazdoor Kisan Shakti Sangathan
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  Jawaharlal Nehru
  “Step Out From the Old to the New”

Indian Standard

BURNT CLAY FLY ASH BUILDING BRICKS — SPECIFICATION

UDC 691.421.431
AMENDMENT NO. 1 MARCH 2008
TO
IS 13757 : 1993 BURNT CLAY FLY ASH BUILDING
BRICKS — SPECIFICATION

(Page 2, clause 7.1.1, fourth line) — Insert 'by more than 15 percent' after 'class of brick'.

(CED 30)

Reprography Unit, BIS, New Delhi, India
FOREWORD

Increasing number of thermal power plants have been coming up in the country and bringing with them an acute environmental problem in the form of flyash. Dumping of dry flyash on land devours large areas of fertile land and also flies off in the air to places near the dumping, making the atmosphere dusty and unhealthy. Wet dumping with water creates problems like polluting the ground water in addition to devouring the land where this flyash slurry is disposed off in ponds.

To overcome these problems, many new uses for flyash have been found out through research. One such use is the use of flyash for making building bricks in conjunction with clay. This use of flyash has the added advantage of conserving the fertile top soil in brick manufacturing areas. Further, addition of flyash even improves the brick making qualities of certain types of soils.

The standard has been prepared on similar lines to the Indian Standard IS 1077: 1992, Specification for common burnt clay building bricks (fifth revision), keeping in view the same end use to which these two types of bricks are put.

Keeping in view the advantages of modular co-ordination, Indian standards specify the dimensions of standards bricks in 100 mm module as the basis of all dimensional standardization in regard to building components. This is also in conformity with the decision of Government of India to adopt metric system in the country. Considering the various issues regarding the manufacturing and other practices followed in the country, the Sectional Committee responsible for the preparation of this standard had specified modular size of the brick. Advantages that a modular brick has over traditional brick are many, such as:

a) requires less drying area;
b) saving in space of floor area;
c) economy in cost of brick masonry;
d) saving in labour cost;
e) less losses during handling etc; and
f) less consumption of mortar.

However, it was brought to the notice of committee that there was sufficient demand for sizes other than modular sizes and that the manufacturers were meeting such demands at present. This had led to a situation where bricks satisfying other requirements of the standard, but not the requirements regarding dimensions were classified as not satisfying the requirements of the standard. Therefore, the Committee has decided to include the non-modular size of the brick in addition to the modular size. This relaxation will be for a period of four years from the publication of this standard and it is intended that the manufacturers and consumer organization can gradually switch over within this period to the modular sizes, which are the preferred sizes.

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 (revisted)'. 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

BURNT CLAY FLY ASH BUILDING BRICKS — SPECIFICATION

1 SCOPE

1.1 This standard lays down requirements for classification, general quality, dimensions and physical requirements of common burnt clay building bricks used in buildings.

NOTE — Burnt clay flyash bricks having compressive strength less than 30 N/mm² approximately 300 kgf/cm² are covered in this standard and for higher strength, see IS 2180 : 1988 and IS 1077 : 1992.

2 REFERENCES

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

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 2248 : 1981 (under revision) shall apply.

4 CLASSIFICATION

4.1 Burnt clay fly ash bricks shall be classified on the basis of average compressive strength as given in Table 1.

<table>
<thead>
<tr>
<th>Class Designation</th>
<th>Average Compressive Strength Not Less than</th>
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<tbody>
<tr>
<td></td>
<td>N/mm²</td>
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<tr>
<td>30</td>
<td>30.0</td>
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<td>25</td>
<td>25.0</td>
</tr>
<tr>
<td>20</td>
<td>20.0</td>
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<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>12.5</td>
<td>12.5</td>
</tr>
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<td>10</td>
<td>10.0</td>
</tr>
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<td>7.5</td>
<td>7.5</td>
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<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>3.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

6 DIMENSIONS AND TOLERANCES

6.1 Dimensions

6.1.1 The standard modular sizes of clay building fly ash bricks shall be as follows (Fig. 1A and 1B):

- **Length (L)**: 190 mm
- **Width (W)**: 90 mm
- **Height (H)**: 90 mm

6.1.2 The following non-modular sizes of the bricks may also be used (Fig. 1A and Fig. 1B):

- **Length (L)**: 100 mm
- **Width (W)**: 110 mm
- **Height (H)**: 70 mm

All dimensions in millimetres.
6.1.2.1 For obtaining proper bond arrangement and modular dimensions for the brickwork, with the non-modular sizes, the following sizes of the bricks may also be used:

<table>
<thead>
<tr>
<th>70</th>
<th>110</th>
<th>70</th>
<th>1/3 length brick</th>
</tr>
</thead>
<tbody>
<tr>
<td>230</td>
<td>50</td>
<td>70</td>
<td>1/2 width brick</td>
</tr>
</tbody>
</table>

6.2 Tolerances

The dimensions of bricks when tested in accordance with 6.2.1 shall be within the following limits per 20 bricks:

a) For modular size
   - Length 3720 to 3880 mm (3800 ± 80 mm)
   - Width 1760 to 1840 mm (1800 ± 40 mm)
   - Height 1760 to 1840 mm (1800 ± 40 mm)
     (For 90 mm high bricks)
   - 760 to 840 mm (800 ± 40 mm)
     (For 40 mm high bricks)

b) For non-modular size
   - Length 4520 to 4680 mm (4600 ± 80 mm)
   - Width 2240 to 2160 mm (2200 ± 40 mm)
   - Height 1440 to 1360 mm (1400 ± 40 mm)
     (For 70 mm high bricks)
   - 640 to 560 mm (600 ± 40 mm)
     (For 30 mm high bricks)

6.2.1 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 a level surface successively as indicated in Fig. 2A, 2B and 2C 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.

7 PHYSICAL REQUIREMENTS

7.1 Compressive Strength

The bricks, when tested in accordance with the procedure laid down in IS 3495 (Part 1) : 1992 shall have a minimum average compressive strength for various classes as given in 4.1.

7.1.1 The compressive strength of any individual brick tested shall not fall below the minimum compressive strength specified for the corresponding class of brick. The lot shall be then checked for next lower class of brick.

7.2 Water Absorption

The bricks, when tested in accordance with the procedure laid down in IS 3495 (Part 2) : 1992 after immersion in cold water for 24 hours, water absorption shall not be more than 20 per-

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2A MEASUREMENT OF LENGTH

2B MEASUREMENT OF WIDTH

2C MEASUREMENT OF HEIGHT

FIG. 2 MEASUREMENT OF TOLERANCES OF COMMON BUILDING BRICKS
cent by weight up to class 12.5 and 15 percent by weight for higher classes.

7.3 Efflorescence
The bricks when tested in accordance with the procedure laid down in IS 3495 (Part 3): 1992, the rating of efflorescence shall not be more than 'moderate' up to class 12.5 and 'slight' for higher classes.

8 SAMPLING AND CRITERION FOR CONFORMITY

8.1 Sampling of clay-flyash building bricks shall be done in accordance with the procedure laid down in IS 5454: 1978. The criterion for conformity shall be as given in IS 5454: 1978.

9 MARKING

9.1 Each brick shall be marked (in the frog where provided) with the manufacturer's identification mark or initials.

9.1.1 The manufacturer may also use the Standard mark.

ANNEX A
(Clause 2.1)

LIST OF REFERRED INDIAN STANDARDS

<table>
<thead>
<tr>
<th>IS No.</th>
<th>Title</th>
<th>IS No.</th>
<th>Title</th>
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3
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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

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Doc : No. CED 30 (4978)

Amendments Issued Since Publication

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<th>Amend No.</th>
<th>Date of Issue</th>
<th>Text Affected</th>
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