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IS 13000 (1990): Silica-asbestos-cement Flat Sheets - [CED
53: Cement Matrix Products]



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IS 13000 : 1990
Reaffirmed 2010

भारतीय मानक

सिलिका ऐस्बेस्टॉस सीमेंट की सपाट चद्दरें—विशिष्ट

Indian Standard

**SILICA-ASBESTOS-CEMENT FLAT SHEETS —
SPECIFICATION**

UDC 691'328'5-41

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BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1991

Price Group 2

AMENDMENT NO. 1 AUGUST 1997
TO
IS 13000 : 1990 SILICA-ASBESTOS-CEMENT FLAT
SHEETS — SPECIFICATION

(*Page 1, clause 3.1, line 4*) — Insert 'or 43 grade ordinary Portland cement conforming to IS 8112 : 1989 or 53 grade ordinary Portland cement conforming to IS 12269 : 1987' after 'IS 269 : 1989'.

(*Page 1, clause 7.2*) — Substitute the following for existing clause:

'7.2 The nominal lengths and widths of silica-asbestos-cement flat sheets shall conform to the values specified in Table 2.

Table 2 Nominal Dimensions of Asbestos Cement Sheets

Length	Width	
	1 200	1 220
(1)	(2)	(3)
mm	mm	mm
600	x	—
610	—	x
1 200	x	—
1 220	—	x
1 800	x	—
1 830	—	x
2 400	x	—
2 440	—	x
3 000	x	—
3 050	—	x

NOTE — By mutual agreement between the purchaser and the manufacturer, the sheets may be supplied in dimensions other than those specified in 7.2.

(*Page 2, clause 8.2*) — Substitute the following for the existing clause:

'8.2 Thickness

Amend No. 1 to IS 13000 : 1990

Carry out three measurements at one end cover width at approximately 20 mm from the edge by means of a gauge having a flat anvil of not less than 19 mm diameter accurate to measure 0.1 mm. The average of the three measurements shall correspond to the nominal thickness and the tolerance specified in 7.1 and 7.3.'

(Page 2, Annex A) — Insert the following after '7639 : 1975 Methods of sampling of asbestos cement products':

'8112 : 1989 43 Grade ordinary Portland cement (*first revision*)'.

(Page 2, Annex A) — Insert the following at the end:

'12269 : 1987 53 Grade ordinary Portland cement'.

(CED 53)

Cement and Concrete Sectional Committee, CED 2

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 12 June 1990, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

For the past several years, silica-asbestos-cement flat sheets are being manufactured and used in India. These sheets are cured by high pressure steam curing process known as autoclaving and are different from water or humid cured asbestos cement flat sheets conforming to IS 2096 : 1966 'Specification for asbestos cement flat sheets'. Silica-asbestos-cement sheets are mainly used for false ceilings, partitions, block boards, sign boards, outdoor hoarding, wall panelling, cladding and for cable trays.

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. Assistance has also been derived from ISO 396/2 : 1980 Products in Fibre Reinforced Cement : Part 2 Silica-Asbestos-Cement Flat Sheets.

This composition of the technical committee responsible for the formulation of this standard is given in Annex B.

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

SILICA-ASBESTOS-CEMENT FLAT SHEETS — SPECIFICATION

1 SCOPE

1.1 This standard covers the requirements for materials, classification, dimensions and tests for silica-asbestos-cement flat sheets.

2 REFERENCES

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

3 COMPOSITION

3.1 The materials used in the manufacture of silica-asbestos-cement flat sheets shall consist essentially of 33 grade ordinary Portland cement conforming to IS 269 : 1989 or Portland pozzolana cement conforming to IS 1489 : 1976 or blast furnace slag cement conforming to IS 455 : 1989 and silica in chemical combination (calcium silicate reaction) reinforced by asbestos fibre to which other fibres may be added. Pozzolanic materials, fillers and pigments which are compatible with asbestos cement may be added.

4 COLOURING MATTER

4.1 The sheets may be left in their natural colour or colouring matter may be added in the composition. They may also receive adherent coloured or uncoloured coatings on their surfaces. Pigments which are embodied in the asbestos cement for colouring purposes shall be of permanent colour and shall conform to the relevant Indian Standards. For guidance in ascertaining the colour and staining power of the pigments, IS 5913 : 1989 may be referred to.

5 CLASSIFICATION

5.1 Silica-asbestos-cement flat sheets shall be classified as Class I and II according to bending stress and density as given in Table 1.

Table 1 Classification of Silica-Asbestos-Cement Flat Sheets
(Clauses 5.1, 8.2 and 8.4)

Class of Sheets	Bending Stress, N/mm ² , Min		Density g/cm ³ , Min
	Loading Parallel to the Asbestos Fibres of the Sheet	Loading at Right Angles to the Asbestos Fibres of the Sheet	
(1)	(2)	(3)	(4)
I	13	16	1.2
2	20	28	1.6

NOTE — In the case where the direction of the fibres is difficult to identify, the lower value obtained shall be more than the value of the second column and the higher value shall not be less than the corresponding value of the third column.

6 GENERAL APPEARANCE AND FINISH

6.1 The finished product, when delivered, shall be free from visible defects that impair its appearance or serviceability. The surface of the sheets shall be of uniform texture and shall have at least one smooth surface. They shall be flat, rectangular and shall have neatly trimmed straight and regular edges and shall be square at the corners.

7 DIMENSIONS AND TOLERANCES

7.1 The nominal thickness of silica-asbestos-cement flat sheets shall be 3, 4, 5, 6, 8, 10, 12 and 15 mm.

7.2 The nominal lengths of silica-asbestos-cement flat sheets shall be 3 000, 2 700, 2 400, 1 800, 1 200 and 600 mm and nominal width shall be 1 200 mm.

NOTE — By mutual agreement between the purchaser and the manufacturer, the sheets may be supplied in dimensions other than those specified in 7.2.

7.3 Tolerance on Thickness

From 3 mm to 5 mm : ± 0.5 mm

From 6 mm and above : $\pm 0.1 e$ mm,

where e is nominal thickness of sheet

The maximum difference between extreme values of the thickness measurements within a sheet shall not exceed 10 percent of the maximum measured value.

7.4 Tolerance on Length and Width

Silica-asbestos-cement flat sheets shall not vary from the nominal dimensions for length and width specified in 7.2 by more than ± 5 mm.

7.5 Tolerance on Shape

7.5.1 Straightness of Edges

The tolerance on the straightness of edges shall be not more than 2 mm/m for the relevant dimension (length or width).

7.5.2 Squareness of Edges

The tolerance on squareness of the edges shall be not more than 3 mm/m.

8 TESTS

8.1 The samples of sheets taken as described in 9 and tested for the various characteristics shall

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conform to the requirements specified in 8.2 to 8.6.

8.2 Thickness

The average thickness of the sheet when measured at four points in the sheet at approximately 20 mm from the edge by means of a gauge having a 10 mm diameter metal plate and reading to 0.1 mm shall correspond to the nominal thickness specified in 7.1 subject to the tolerances specified in 7.3.

8.3 Straightness of Edges

Apply the edge to the relevant arm of the square. Measure to the nearest 0.5 mm, by means of a steel rule, the greatest separation between the edge of the sheet and the arm of the square. This shall not be more than the value specified in 7.5.1.

8.4 Squareness of Edges

Place each of the four corners of the sheet in succession between the arms of the square keeping on the one hand the large side against the large arm and on the other hand the small side in contact with the small arm. In this position, measure the distance of the apex of the corner from the small arm of the square. This shall not be more than the value specified in 7.5.2.

8.5 Bending Stress

The values of the bending stress which determine the class of the sheet, shall be not less than the values given in Table 1, when tested in accordance with IS 5913 : 1989.

8.6 Measurement of Density

The density of sheets which along with bending stress determine the class of the sheet, shall be

not less than the values specified in Table 1, when tested in accordance with IS 5913 : 1989.

9 SAMPLING AND CRITERIA FOR CONFORMITY

9.1 The sampling, inspection and acceptance shall be in accordance with IS 7639 : 1975. Unless otherwise agreed to between the manufacturer and the purchaser, the maximum and minimum inspection lots shall be 3 000 and 400 sheets respectively.

10 MANUFACTURER'S CERTIFICATE

10.1 The manufacturer shall satisfy himself that the sheets conform to the requirements of this standard and, if requested, shall furnish a certificate to this effect to the purchaser or his representative, clearly stating the class of the sheet.

11 MARKING

11.1 Each sheet shall be legibly and indelibly stamped or marked by any suitable method with the following information.

- a) Class of sheet (*see* 5),
- b) Indication of the source of manufacture,
- c) Year and date of manufacture,
- d) Nominal thickness of sheet in bold letters, and
- e) Pictorial warning sign as given in IS 12081 (Part 2) : 1987.

11.2 Each sheet may also be marked with the Standard Mark.

12 SAFETY RULES SHEET

12.1 All delivery of silica-asbestos-cement flat sheets by the manufacturers shall be accompanied by safety rules sheet as given in IS 11769 (Part 1) : 1987.

ANNEX A (Clause 2.1)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No	Title
269 : 1989	33 Grade ordinary Portland cement (<i>fourth revision</i>)	7639 : 1975	Methods of sampling of asbestos cement products
455 : 1989	Specification for Portland slag cement (<i>fourth revision</i>)	11769 (Part 1) : 1987	Guidelines for safe use of products containing asbestos : Part 1 Asbestos cement products
1489 : 1976	Portland pozzolana cement (<i>second revision</i>)	12081 (Part 2) : 1987	Recommendations for pictorial warning signs and precautionary notices for asbestos and products containing asbestos : Part 2 Asbestos and its products.
5913 : 1989	Methods of test for asbestos cement products (<i>first revision</i>)		

ANNEX B (Foreword)

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