

# इंटरनेट

# मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 1626-3 (1994): Asbestos Cement Building types and Pipe Fittings, Gutters and Gutter Fittings and Roofing Fittings, Part 3: Roofing Fittings [CED 53: Cement Matrix 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”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक

एसबेस्टॉस सीमेंट के भवन निर्माण पाइप तथा पाइप फिटिंग, गटर  
तथा गटर फिटिंग तथा छत निर्माण फिटिंग — विशिष्ट

भाग 3 छत निर्माण फिटिंग

( दूसरा पुनरीक्षण )

*Indian Standard*

ASBESTOS CEMENT BUILDING TYPES AND PIPE  
FITTINGS, GUTTER AND GUTTER FITTINGS  
AND ROOFING FITTINGS — SPECIFICATION

PART 3 ROOFING FITTINGS

(Second Revision)

First Reprint NOVEMBER 1996

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

## FOREWORD

This Indian Standard ( Part 3 ) ( Second Revision ) was adopted by the Bureau of Indian Standards, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

Asbestos cement roofing fittings are used extensively in conjunction with asbestos cement corrugated and semi-corrugated sheet conforming to IS 459 : 1992 'Specification for unreinforced corrugated and semi-corrugated asbestos cement sheets ( *third revision* )'.

This standard was first published in 1960 and subsequently revised in 1981. In the first revision the standard was split into three parts for ease in the use of the standard. Part 1 of this standard covers building pipes and pipe fittings, Part 2 covers gutters and gutter fittings and Part 3 covers roofing fittings.

This part ( Part 3 ) has been prepared to provide guidelines in the manufacture and use of standard asbestos cement roofing fittings used in conjunction with asbestos cement sheets conforming to IS 459 : 1992. Methods of fixing of these fittings are dealt with in IS 3007 ( Part 1 ) : 1964 'Code of practice for laying of asbestos cement sheets: Part 1 Corrugated sheets' and IS 3007 ) Part 2 ) : 1965 'Code of practice for laying of asbestos cement sheets: Part 2 Semi-corrugated' ( both *under revision* ).

The present revision has been taken up in the light of experience gained in its use and also with a view to bringing it in line with current practices in the manufacture of asbestos cement roofing fittings. In this revision water absorption test and acid resistance test have been deleted. In this revision tolerances on dimensions and sampling clause have also been modified and some new fittings have been incorporated.

The composition of the 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***ASBESTOS CEMENT BUILDING PIPES AND PIPE FITTINGS, GUTTERS AND GUTTER FITTINGS AND ROOFING FITTINGS — SPECIFICATION****PART 3 ROOFING FITTINGS***( Second Revision )***1 SCOPE**

**1.1** This standard ( Part 3 ) covers the requirements of asbestos cement roofing fittings, to be used in conjunction with corrugated and semi-corrugated asbestos cement sheets conforming to IS 459 : 1992.

**1.2** The following roofing fittings are covered in this standard:

- a) Ridges:
  - 1) Serrated adjustable ridges,
  - 2) Plain wing adjustable ridges,
  - 3) One piece plain angular ridges,
  - 4) Unserrated adjustable ridges for hips,
  - 5) Close fitting adjustable ridges, and
  - 6) Northlight adjustable ridges.
- b) Eaves filler pieces,
- c) Ridge finials,
- d) Apron pieces,
- e) Barge boards or corner pieces, curved barge boards,
- f) Rooflights,
- g) North light curves or ventilator curves,
- h) Cowl type ventilators,
- j) Expansion joints for semi-corrugated sheets and fittings like ridges and north-light curve,
- k) Louvres, S type,
- m) Radial exhaust, and
- n) Curved sheets.

**2 REFERENCES**

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

**3 COMPOSITION**

The material used in the manufacture of asbestos cement roofing fittings shall be composed of an inert aggregate consisting of clean asbestos fibre including suitable other fibres cemented

together by ordinary Portland cement conforming to IS 269 : 1989 or IS 8112 : 1989 or IS 12269 : 1987 or Portland slag cement conforming to IS 455 : 1989 or Portland pozzolana cement conforming to IS 1489 ( Part 1 ) : 1991 or IS 1489 ( Part 2 ) : 1991 or rapid hardening Portland cement conforming to IS 8041 : 1990. Pozzolanic material fillers and pigments which are compatible with asbestos cement may be added.

NOTE — In case of Portland pozzolana cement and Portland slag cement, addition of pozzolanic materials shall not be permitted.

**4 COLOURING MATTER**

The roofing fittings may be left in their natural colour or colouring matter may be added in the composition. They may receive coloured or uncoloured coatings on their surface. Pigments which are embodied in 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 SHAPE, DIMENSIONS AND TOLERANCES****5.1 Shapes**

The shapes of the various fittings shall be as detailed in Table 1 read with appropriate figures.

**5.2 Dimensions**

Dimensions of various fittings shall be declared by the manufacturer.

**5.3 Tolerances****5.3.1 Tolerance on Length and Thickness**

The linear dimensions of fittings shall not vary by more than  $\pm 10$  mm.

**5.3.2 Tolerance on Thickness**

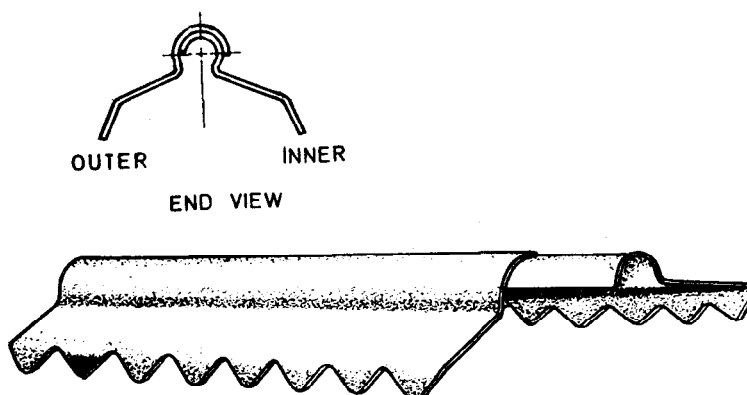
Thickness of fittings shall not vary by more than  $\pm$  free, — 1.0 mm.

NOTE — For the purpose of measuring thickness, a thickness gauge having an anvil of not less than 9 mm diameter may be used.

**Table 1 Details of Figures for Asbestos Cement Roofing Fittings**  
( *Clases 5.1 and 10.1* )

Sl No.	Name of Fitting	Code No.	Figure No.
<i>a) For Use with Fully Corrugated Sheets</i>			
1.	Corrugated serrated adjustable ridges	C1 <sup>1)</sup>	1
2.	Plain wing adjustable ridge <sup>1)</sup>	C2 <sup>2)</sup>	2
3.	One piece plain angular ridge <sup>1)</sup>	C3 <sup>1)</sup>	3
4.	Unserrated adjustable ridge for hips <sup>1)</sup>	C4 <sup>2)</sup>	4
5.	Corrugated eaves filler piece	C5	5
6.	Corrugated apron piece	C6	6
7.	Barge board or corner piece <sup>1)</sup>	C7	7
8.	Corrugated roof light	C8	8
9.	Corrugated north light curve	C9	9
10.	'S' type louvre <sup>1)</sup>	C10	10
11.	Corrugated cowl type ventilator	C11	11
12.	Corrugated close fitting adjustable ridge	C12 <sup>2)</sup>	12
13.	North light adjustable ridge	C13 <sup>2)</sup>	13
14.	Curved barge board <sup>1)</sup>	C14	14
15.	Radial exhaust	C15	15
16.	Curved sheet	C16	16
<i>b) For Use with Semi-Corrugated Sheets</i>			
17.	Semi-corrugated serrated adjustable ridge	SC1 <sup>2)</sup>	17
18.	Semi-corrugated eaves filler piece	SC2	18
19.	Semi-corrugated ridge finials	SC3	19
20.	Semi-corrugated apron piece	SC4	20
21.	Semi-corrugated roof light	SC5	21
22.	Semi-corrugated north light curve	SC6	22
23.	Expansion joint for semi-corrugated sheets	SC7	23
24.	Semi-corrugated cowl type ventilator	SC8	24
25.	Expansion joint for semi-corrugated north light or ventilator curve	SC9	25
26.	Expansion joint for semi-corrugated serrated ridge	SC10	26
27.	Semi-corrugated ventilator curve	SC11	27
28.	Ridge finials	SC12	28

<sup>1)</sup>These items are also used with semi-corrugated sheets.  
<sup>2)</sup>These items are generally supplied in pairs ( inner and outer ).



NOTE — Serrations to suit corrugated sheets conforming to IS 459 : 1992.

**FIG. 1 CORRUGATED SERRATED ADJUSTABLE RIDGES**

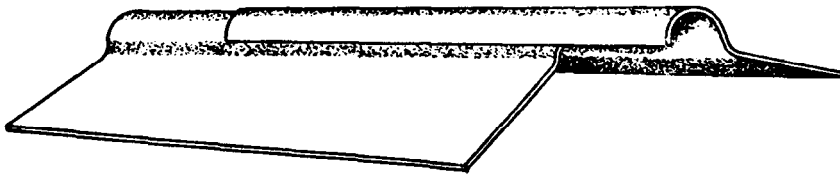
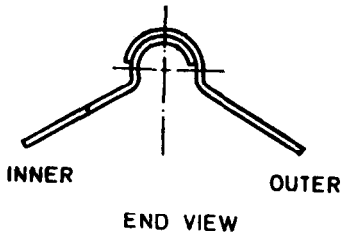


FIG. 2 PLAIN WING ADJUSTABLE RIDGE

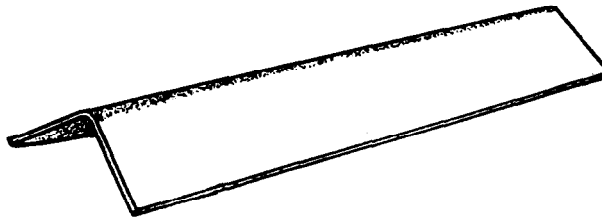
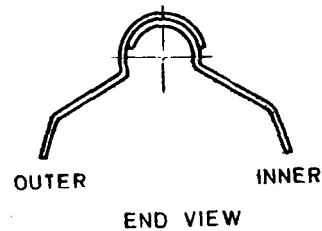
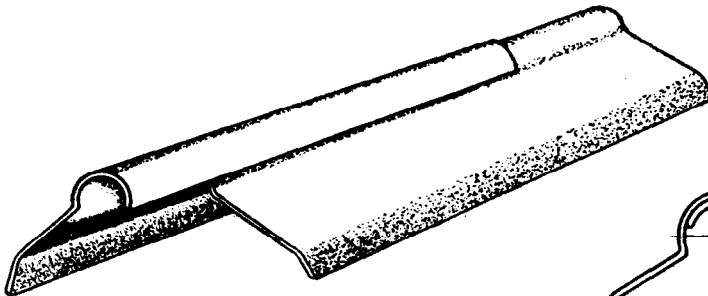
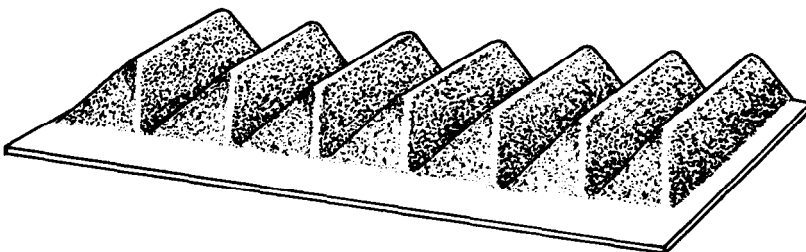


FIG. 3 ONE PIECE PLAIN ANGULAR RIDGE



NOTE — Serrations, as desired, should be cut at site to fit corrugations at hip slopes.

FIG. 4 UNSERRATED ADJUSTABLE RIDGE FOR HIPPS



NOTE — Profile to suit corrugated sheets as per IS 459 : 1992.

FIG. 5 CORRUGATED EAVES FILLER PIECE



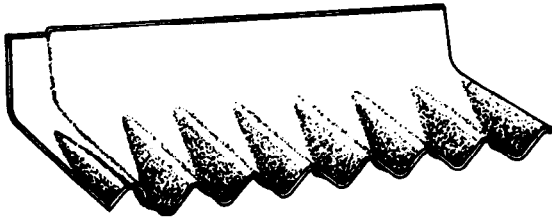


FIG. 6 CORRUGATED APRON PIECE

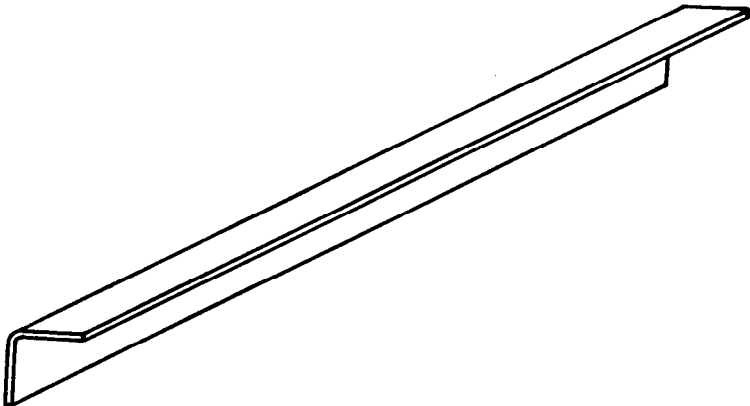


FIG. 7 BARGE BOARD OR CORNER PIECE

OPENING TO SUIT WIRED GLASS OF SIZES  
680x400x6 mm OR 800x580x6 mm

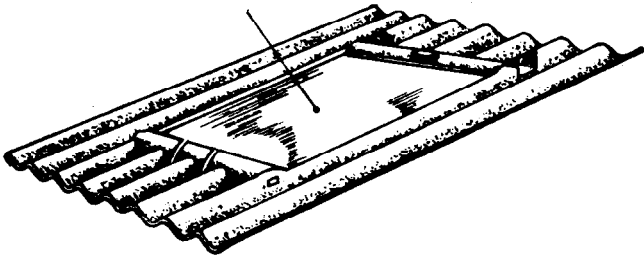


FIG. 8 SEMI-CORRUGATED ROOF LIGHT

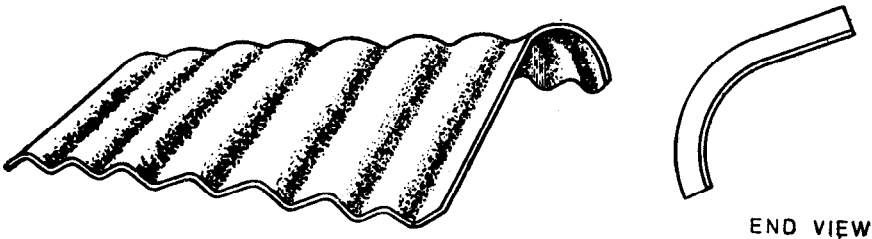


FIG. 9 CORRUGATED NORTH LIGHT CURVES

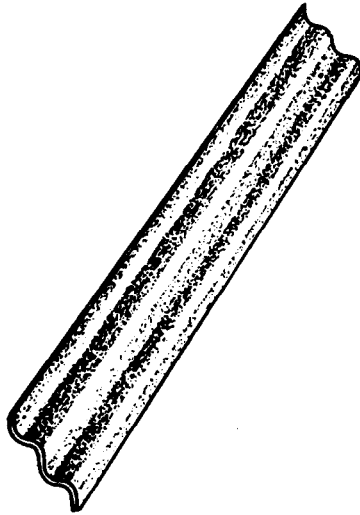


FIG. 10 'S' TYPE LOUVRE

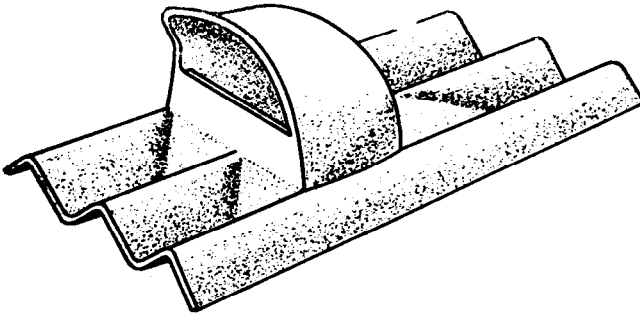


FIG. 11 CORRUGATED COWL TYPE VENTILATOR

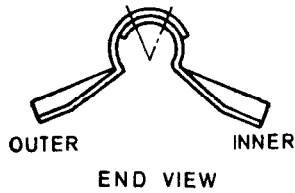


FIG. 12 CORRUGATED CLOSE FITTING ADJUSTABLE RIDGE

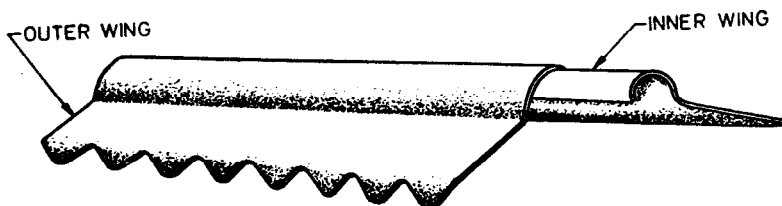
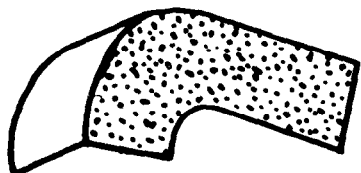
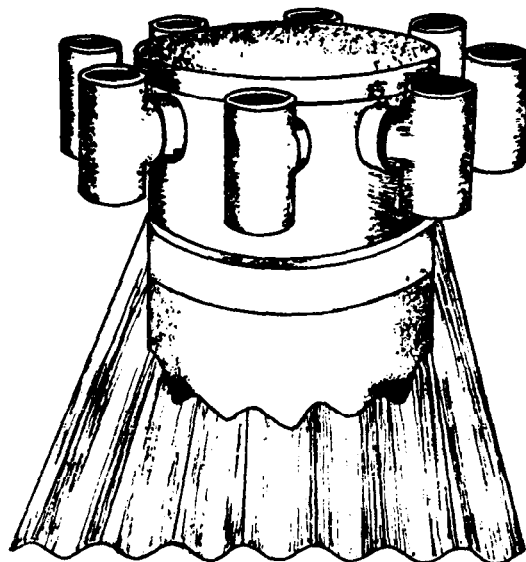


FIG. 13 TYPICAL NORTH LIGHT TWO-PIECE ADJUSTABLE RIDGE

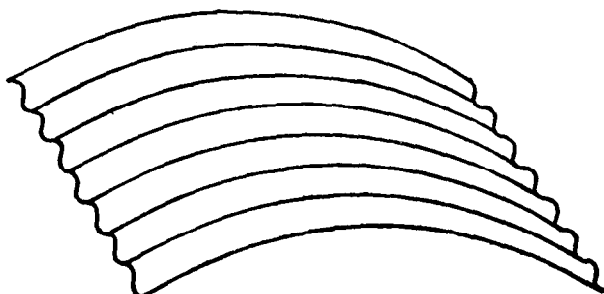


**CURVED BARGE BOARDS  
FOR NORTHLIGHT CURVES  
LEFT HAND  
RIGHT HAND**

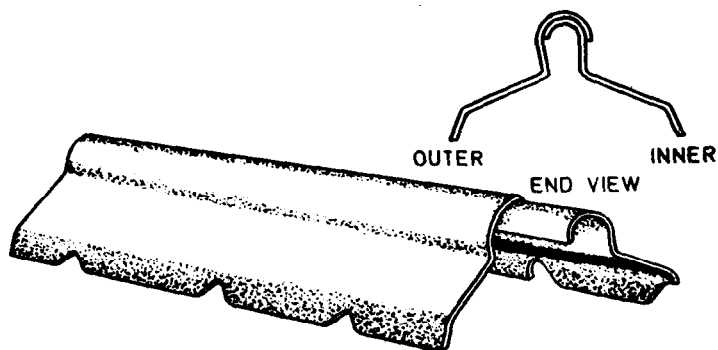
**FIG. 14 CURVED BARGE BOARD**



**FIG. 15 RADIAL EXHAUST**

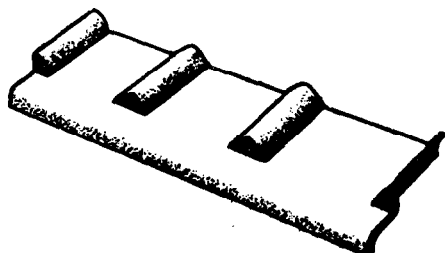


**FIG. 16 CURVED SHEET**

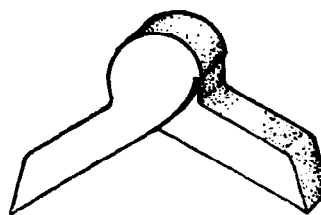


NOTE — Serrations to suit semi-corrugated sheets conforming to IS 459 : 1992.

**FIG. 17 SEMI-CORRUGATED SERRATED ADJUSTABLE RIDGE**



**FIG. 18 SEMI-CORRUGATED EAVES FILLER PIECE**



**FIG. 19 SEMI-CORRUGATED RIDGE FINIALS**

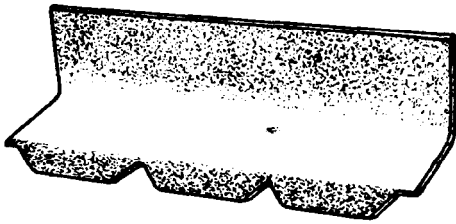
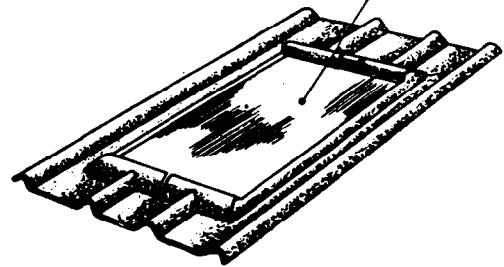


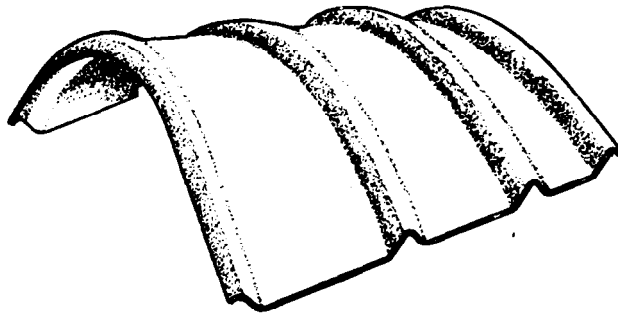
FIG. 20 SEMI-CORRUGATED APRON  
PIECES

OPENING TO SUIT WIRED GLASS OF SIZES:  
680 x 400 x 6 mm OR 800 x 580 x 6 mm



NOTE -- The word 'Top' may be engraved to point  
towards the ridge.

FIG. 21 CORRUGATED ROOF LIGHT



END VIEW

FIG. 22 SEMI-CORRUGATED NORTH LIGHT CURVE

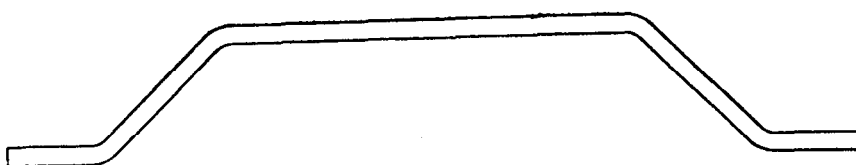


FIG. 23 EXPANSION JOINT FOR SEMI-CORRUGATED SHEETS

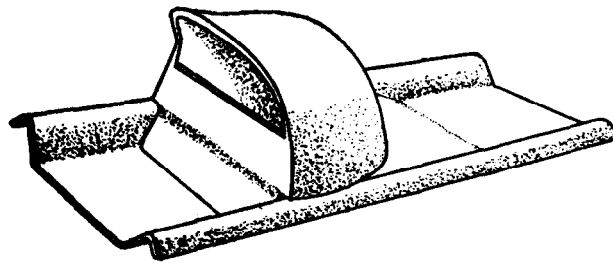


FIG. 24 SEMI-CORRUGATED COWL TYPE VENTILATOR

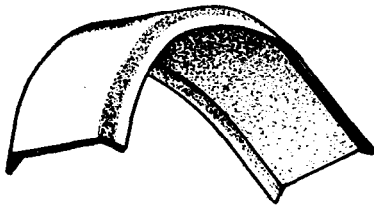


FIG. 25 EXPANSION JOINT FOR SEMI-CORRUGATED NORTH LIGHT CURVE OR VENTILATOR CURVE

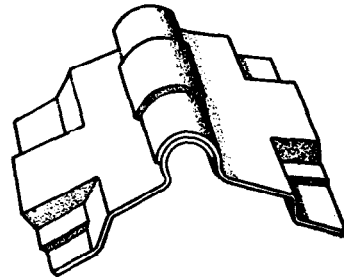


FIG. 26 EXPANSION JOINT FOR SEMI-CORRUGATED SERRATED RIDGE

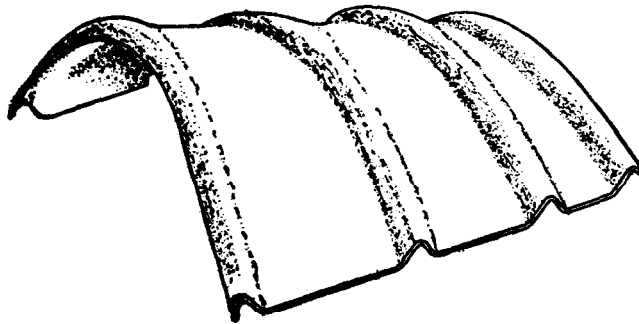


FIG. 27 SEMI-CORRUGATED VENTILATOR CURVE

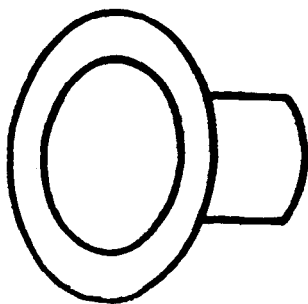


FIG. 28 RIDGE FINIAL

## 6 PHYSICAL REQUIREMENTS

6.1 All the finished products shall be inspected for freedom from visual defects.

6.2 When tested for impermeability as per the Method 1 described in IS 5913 : 1989, the specimens shall not show during 24 hours of test any formation of drops of water, except traces of moisture on the lower surface. This test on roofing fittings may be done at any suitable place on the fittings without cutting any separate test piece.

6.3 The manufacturer shall ensure that the roofing fittings reasonably match with the roofing sheets intended to be fitted.

## 7 GENERAL APPEARANCE AND FINISH

The surface of fittings intended to be exposed to the weather shall be generally of smooth finish and the finish should permit any minor

variation of the surface appearance due to the method of manufacture, which does not impair the performance of the fittings.

The fittings shall be clean with straight and regular edges.

## 8 SAMPLING AND NUMBER OF TESTS

### 8.1 Scale of Sampling

#### 8.1.1 Lot

In any consignment, all the fittings of the same type and of the same thickness and manufactured under similar conditions of production shall be grouped together to constitute a lot.

**8.1.1.1** The conformity of a lot to the requirements of this specification shall be ascertained on the basis of tests on the fittings selected from it.

**8.1.1.2** The number of fitting to be selected at random from the lot shall be in accordance with Table 2.

**Table 2 Sample Size**

Lot Size (1)	Sample Size (2)
Up to 500	3
501 to 1 000	5
1 001 to 1 500	7
1 501 and above	10

### 8.2 Number of Tests

All the fittings selected as in 8.1.1.2 shall be examined for visual defects and impermeability.

## 9 MANUFACTURER'S CERTIFICATE

The manufacturer shall satisfy himself that his asbestos cement roofing fittings conform to the requirements of this standard, and if required, shall furnish a certificate to this effect to the purchaser or his representative.

## 10 MARKING

**10.1** Each item shall be stamped or marked by any suitable method with the following information:

- Indication of the source of manufacture,
- Code No. according to Table 1,
- Date of manufacture, and
- Pictorial warning signs as given in IS 12081 ( Part 2 ) : 1987.

### 10.2 BIS Certification Marking

Each fitting may also be marked with the Standard Mark.

**10.2.1** 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.

## 11 SAFETY RULES SHEET

All delivery of asbestos cement roofing fittings shall be accompanied by a safety rules sheets as given in IS 11769 ( Part 1 ) : 1987.

## ANNEX A

( Clause 2 )

### LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
269 : 1989	33 Grade ordinary Portland cement ( <i>fourth revision</i> )	8041 : 1990	Rapid hardening Portland cement ( <i>second revision</i> )
455 : 1989	Portland slag cement ( <i>fourth revision</i> )	8112 : 1989	43 Grade ordinary Portland cement ( <i>first revision</i> )
459 : 1992	Corrugated and semi-corrugated asbestos cement sheets ( <i>third revision</i> )	11769 ( Part 1 ) : 1987	Guidelines for safe use of products containing asbestos: Part 1 Asbestos cement products
1489 ( Part 1 ) : 1991	Portland pozzolana cement: Part 1 Fly ash based ( <i>third 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
1489 ( Part 2 ) : 1991	Portland pozzolana cement: Part 2 Calcined clay based ( <i>third revision</i> )	12269 : 1987	53 Grade ordinary Portland cement
5913 : 1989	Methods of tests for asbestos cement products ( <i>first revision</i> )		

# ANNEX B

## ( Foreword )

### COMMITTEE COMPOSITION

#### Cement and Concrete Sectional Committee, CED 2

##### Chairman

DR H. C. VISVESVARAYA  
University of Roorkee, Roorkee 247 667

##### Members

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Central Water Commission, New Delhi  
Hyderabad Industries Ltd, Hyderabad  
Structural Engineering Research Centre ( CSIR ), Ghaziabad  
The India Cements Ltd, Madras  
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Cement Corporation of India, New Delhi  
Research, Designs and Standards Organization ( Ministry of Railways ), Lucknow  
Indian Hume Pipes Co Ltd, Bombay  
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