



## PRODUCT MANUAL FOR ASBESTOS CEMENT FLAT SHEETS ACCORDING TO IS 2096: 1992

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

1.	<b>Product</b>	:	IS 2096: 1992
	<b>Title</b>	:	Asbestos Cement Flat Sheets
	<b>No. of Amendments</b>	:	1
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	a) Cement – Clause 3 of IS 2096: 1992 b) Asbestos Fibre/Pozzolanic material, fillers and pigment – Clause 3 of IS 2096: 1992 c) Colouring material: Clause 4 of IS 2096: 1992
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX - A
c)	<b>Sample Size</b>	:	5 Sheets
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX - B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX - C
5.	<b>Possible tests in a day:</b>		
	Since testing facility is not available in any BIS/BIS recognized lab, complete testing has to be carried out in factory.		
6.	<b>Scope of the Licence:</b>		
	“Licence is granted to use Standard Mark as per IS 2096: 1992 with the following scope:		
	Name of the product	Asbestos Cement Flat Sheets	
	Class of sheet	Class 1: Semi Compressed /Class 2: Fully Compressed	
	Nominal Thickness of Sheets (mm)	Upto and including ---- mm	

**ANNEX A****Grouping Guidelines**

1. Asbestos Cement Flat Sheets as per IS 2096: 1992 are classified as follows:

<b>Class of Sheet/ Description of Sheet</b>		<b>Class 1/ Semi-Compressed</b>	<b>Class 2/ Fully-Compressed</b>
<b>Minimum Bending Strength in N/mm<sup>2</sup></b>	<b>Loading parallel to the fibre of sheet</b>	13	20
	<b>Loading at right angles to the fibre of sheet</b>	16	28
<b>Minimum Density (g/cc)</b>		1.2	1.6

**Dimensions of sheets:**

<b>Thickness (mm)</b>	3, 4, 5, 6, 8, 10, 12, 15	
<b>Width (mm)</b>	1200	1220
<b>Length (mm)</b>	600, 1200, 1800, 2400, 3000	610, 1220, 1830, 2440, 3050

2. Sheets of other dimensions (Length, Width, Thickness) may be supplied as per mutual agreement between manufacturer and supplier.
3. Manufacturing of sheets of higher thickness are more critical than manufacturing of sheets of less thickness.
4. Considering the above, following grouping guidelines is developed for GoL/CSoL:
- a) One sample of Asbestos cement flat sheet with maximum thickness from each Class shall be tested for all requirements to cover sheets of all thickness upto and including the thickness tested for that particular Class.
5. The Firm shall declare the varieties they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
6. During the operation of the Licence, BO shall ensure that all varieties covered in the Licence are tested in rotation, to the extent possible.

**ANNEX B****List of Test Equipment***Major test equipment required to test as per the Indian Standard*

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1	Dimensions and tolerance (Clause 7, 8.3, 8.4, 8.5)	<ul style="list-style-type: none"> <li>- Measuring tape / Steel tape</li> <li>- Thickness gauge with flat anvil of minimum diameter 9 mm</li> <li>- Straight edge</li> <li>- Filler gauges</li> <li>- Engineer square/Right angle of adequate length</li> </ul>
2	Bending strength test (Clause 8.2)	<ul style="list-style-type: none"> <li>- Bending strength test apparatus with two supports and central uniform loading system with self-aligning rollers arrangement</li> <li>- Water bath to maintain temperature of 15 to 35 °C</li> <li>- Vernier caliper</li> <li>- Stop watch</li> </ul>
3	Density (Clause 8.6)	<ul style="list-style-type: none"> <li>- Vernier caliper</li> <li>- Hot air oven</li> <li>- Measuring jar with water</li> </ul>

*The above list is indicative only and may not be treated as exhaustive.*

## ANNEX C

### Scheme of Inspection and Testing

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per the requirement of IS 2096: 1992.

**4. CONTROL UNIT** – All Asbestos Cement Flat Sheets of same class and thickness manufactured under similar conditions of production in a day shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

**TABLE 1**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3	Composition	3	IS 2096	S	One	Each consignment	Further testing is not required if consignment received with manufacturers certificate or ISI marked. Cement shall be ISI marked and shall be received with manufacturers test certificate
4	Colouring matter	4	IS 2096 IS 5913	S	One		
6	General appearance and Finish	6	IS 2096	R	Each Sheet	-	-
7.1,7.2,	Dimensions and Tolerances	7.1,7.2, 7.3, Table 1	IS 2096	R	1% subject to a minimum 5 sheets	One control Unit	In case of failure all sheets in the control unit shall be tested and defective sheets rejected
8.3	Thickness	8.3, 7.3.1					
8.4	Straightness and squareness of edges	8.4, 7.3.3.1					
8.5	Squareness of edges	8.5, 7.3.3.2					
8.2	Bending strength test	8.2, Table 1 7.2,	IS 2096 IS 5913	R	Three	Each Control Unit	##
8.6	Density	8.6, Table 1 13	IS 2098 IS 5913	R	Three	Each Control Unit	

## In case factory works in 3 shifts, at least one sample shall be drawn from each shift. If one sample fails, twice the number of samples shall be drawn and tested from the same control unit and all the samples shall pass. If any sample fails, then the control unit shall be rejected.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.