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# उत्पाद मैन्युअल
# फाइबर सीमेंट शीट - लाइटवेट कंक्रीट सैंडविच पेनल्स के लिए
# आई एस 17908 : 2023 के अनुसार

# PRODUCT MANUAL
# FIBRE CEMENT SHEET – LIGHTWEIGHT CONCRETE SANDWICH PANELS
# ACCORDING TO IS 17908 : 2023

**विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।**

**This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.**

| | | | |
|---|---|---|---|
| 1. | **मानक संख्या**<br>**IS No.** | : | IS 17908 : 2023 |
| | **शीर्षक**<br>**Title** | : | Fibre Cement Sheet – Lightweight Concrete Sandwich Panels |
| | **संशोधनों की संख्या**<br>**No. of amendments** | : | Nil |
| 2. | **नमूना दिशानिर्देश**<br>**Sampling Guidelines** | | |
| a) | **कच्चा माल**<br>**Raw material** | : | Please refer to Annex-A<br>Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/ Factory Surveillance |
| b) | **समूहीकरण दिशानिर्देश**<br>**Grouping Guidelines** | : | Please refer to Annex-B |
| c) | **नमूने का परिमाण**<br>**Sample Quantity** | : | • 12 Panels for all tests (excluding optional tests as per Clause 6.6 of IS 17908:2023)<br>Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in |

| | | | |
|---|---|---|---|
| | | | Scope of Licence/ Factory Surveillance (incase of market surveillance, effort may be made to procure therequired quantity of product sample, as far as possible since raw material sample may not be available in market) |
| d) | **परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर**<br>**Parameters to be Declared in Test Request** | | - Same as the scope of licence<br>- Jointing System<br>- Optional test requirements |
| 3. | **परीक्षण उपकरणों की सूची**<br>**List of Test Equipment** | : | Please refer to Annex-C |
| 4. | **निरीक्षण और परीक्षण की स्कीम**<br>**Scheme of Inspection and Testing** | : | Please refer to Annex-D |
| 5. | **एक दिन में संभावित परीक्षण**<br>**Possible tests in a day** | | |
| | (i) Manufacture (Cl 5), (ii) General (Cl 6.1), (iii) Dimensions (Cl 6.2), (iv) Density (Cl 6.3), (v) Impact test (Cl 6.5)<br><br>Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor. | | |
| 6. | **लाइसेंस का दायरा /Scope of the Licence:** | | |
| | "Licence is granted to use Standard Mark as per IS 17908 : 2023 with the following scope: | | |
| | Name of the product | Fibre Cement Sheet – Lightweight Concrete Sandwich Panels | |
| | Thickness | 50 MM / 75 MM / 100 MM / NON-MODULAR (SPECIFY THICKNESS IN MM) | |
| | Size (length x width) | For Length x Width up to and including ….. mm | |

# ANNEX A
## Raw Material

| Raw Material | Indian Standard |
|---|---|
| Facing Sheet (Cl 4.1) | Facing Sheets shall be fibre cement flat sheet conforming to IS 14862. |
| Cement (Cl 4.2) | Cement shall conform to the relevant Indian Standard(s) as mentioned in Clause 4.2 of IS 17908. |
| Pulverised Fuel Ash (Cl 4.3) | Pulverized fuel ash shall conform to IS 3812 (Part 1) and Clause 4.3 of IS 17908. |
| Ground Granulated Blast Furnace Slag (Cl 4.4) | Ground granulated blast furnace slag, if used, shall conform to IS 16714. |
| Water (Cl 4.6) | Water shall conform to IS 456 and Clause 4.6 of IS 17908. |
| Aeration Agent (Cl 4.7) | Aeration Agent shall conform to Clause 4.7 of IS 17908. |
| Additives (Cl 4.8) | Additives shall conform to the relevant Indian Standard(s) as mentioned in Clause 4.8 of IS 17908. |

# ANNEX B
# Grouping Guidelines

1. IS 17908: 2023 covers Fibre Cement Sheet — Lightweight Concrete Sandwich Panels which are categorized as given below:

   **Dimension:**

   (i) Length – 2400mm / 2700 mm / 3000 mm
   (ii) Width – 600 mm
   (iii) Thickness – 50 mm / 75 mm / 100 mm

   Other shape and size may also be manufactured as per the agreement between manufacturer and purchaser

2. Considering the above, following grouping guidelines is developed for GoL/CSoL:

   - One sample of Panel of highest nominal Length and Width against each thickness shall be tested for all requirements to cover panels of all lengths and widths up to and including the length & width tested, for that particular thickness.

3. 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.

4. The Firm shall also declare the jointing system (Clause 3) and claim of optional test requirements (Clause 6.6) as per IS 17908:2023.

5. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

# ANNEX C

## List of Test Equipment

***(INDICATIVE LIST, FOR GUIDANCE ONLY)***

| Sl. No. | Tests used in with Clause Reference | Test Equipment |
|---|---|---|
| 1. | Dimensions and Geometrical Characteristics (Clause 6.2) | - Smooth flat and rigid inspection platform<br>- Measuring Steel tape / Vernier calliper<br>- Filler gauges<br>- Square Edge<br>- Straight Edge |
| 2. | Density (Clause 6.3) | - Measuring Steel tape<br>- Vernier calliper<br>- Weighing Balance (with least count of 10 g or better) |
| 3. | Bending Strength (Clause 6.4.1)<br><br>*Three Point Loading* | - Bending test machine as per Cl. C-1.2 of IS 17908<br>- Cutting machine / arrangement<br>- Dial gauge<br>- Conditioning chamber/room |
| 4. | Bending Strength (Clause 6.4.2)<br><br>*Uniformly Distributed Loading (UDL)* | - Bending test machine with an arrangement for applying load with a constant rate of deflection (50 mm/min).<br>- Conditioning chamber/room<br>- Supports as per Fig. 6 of IS 17908 |
| 5. | Impact Resistance (Clause 6.5) | - Apparatus as per Cl. E-1.3 (Fig. 7) having Impactor, supporting frame and measuring instrument.<br>- Apparatus as Cl. E-2.3 (Fig. 9) comprising Spheroconical bag, Two pulleys and a suspension line, Winding and release mechanisms and Measuring instrument. |

# ANNEX D
# SCHEME OF INSPECTION AND TESTING

## 1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing theStandard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 **RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT**:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : All panels of same length, width, thickness and jointing system manufactured under similar conditions and of same mix design in a day shall constitute a control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

**2. ENSURING COMPLIANCE THROUGH TESTING-** manufacturers shall ensure compliance of their products to all the requirementsof the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred :

i) Shared testing resources like common facility,

ii) Cluster based testing facility,

iii) Sub-contracting to outside laboratories which may either be:

a) BIS recognised/empanelled laboratories, or

b) Any accredited laboratory as per ISO/IEC 17025

2.1 **TEST RECORDS**- The manufacturers shall maintain test records for the tests carried out

(either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

**3. PACKING AND MARKING** - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each sandwich panel provided always that the material so marked conforms to each requirement of the specification.

3.1 Marking shall be done as per Clause No 10 of IS 17908:2023.

3.2 Manufacturer shall supply the test certificate as per Clause No 9 of IS 17908:2023, if requested.

3.3 **Additional Marking requirements**: Additionally, the following shall also be marked on product or package :

a) "For BIS certification details please visit www.bis.gov.in"

**4. REJECTION - T**he production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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

*(Recommended Levels of Control by BIS- for Guidance Only)*

| (1) | | | | (2) | | |
|---|---|---|---|---|---|---|
| **Test Details** | | | | **Recommended Levels of Control** | | |
| **Clause** | **Requirement** | **Test Methods** | | **No. of Sample** | **Frequency** | **Remarks** |
| | | **Clause** | **Reference** | | | |
| 4 | **Materials -** | | | | | |
| 4.1 | Facing Sheet | 4.1 | IS 17908 | One | Each consignment | No further testing is required, if material received with test certificate or ISI Marked. |
| 4.2 | Cement | 4.2 | IS 17908 | One | Each consignment | Cement received shall be ISI marked and accompanied with test certificate. |
| 4.3 | Pulverized Fuel Ash | 4.3 | IS 17908 | One | Each consignment | No further testing is required, if material received with test certificate or ISI Marked. |
| 4.4 | Ground Granulated Blast Furnace Slag | 4.4 | IS 17908 | | | |
| 4.6 | Water | 4.6 | IS 17908 | One | Once in a year or whenever there is a change in source of water, whichever is earlier | |
| 4.7 | Aeration agent | 4.7 | IS 17908 | One | Each consignment | No further testing is required, if material received with test certificate or ISI Marked. |
| 4.8 | Additives | 4.8 | | | | |
| 5 | Manufacture | 5 | IS 17908 | Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity. | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **6** | **Physical Requirements -** | | | | | |
| 6.1 | General | 6.1 | IS 17908 | Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity. | | |
| 6.2 | Dimensions | 6.2 | IS 17908 | | | |
| 6.3 | Density | 6.3 | IS 17908 | One | Each Control Unit | - |
| 6.4 | Bending Strength | 6.4 | IS 17908 | One | Each Control Unit | - |
| 6.5 | Impact test | 6.5 | IS 17908 | One | Each Control Unit | - |
| 6.6 | Optional Requirements - | | | | | |
| 6.6.1 | Axial Compression Load | 6.6.1 | IS 17908 | One | Once in a month | Varieties produced during the period shall be tested in rotation |
| 6.6.2 | Tensile Strength | 6.6.2 | IS 17908<br>IS 2380 (Pt 5) | One | Once in a month | |
| 6.6.3 | Screw Withdrawal Strength | 6.6.3 | IS 17908<br>IS 2380 (Pt 14) | One | Once in a month | |
| 6.6.4 | Sound Transmission | 6.6.4 | IS 17908<br>IS 9901 (Pt 3) | One | Once in a month | |
| 6.6.5 | Thermal Conductivity | 6.6.5 | IS 17908<br>IS 3346 | One | Once in a year | |
| 6.6.6 | Fire Rating | 6.6.6 | IS 17908<br>IS/ISO 834 (Pt 8) | One | Once in a year | |