



उत्पाद मैनुअल
एल्युमीनियम कम्पोजिट पैनल के लिए
आई एस 17682:2021 के अनुसार

PRODUCT MANUAL FOR
ALUMINIUM COMPOSITE PANEL
ACCORDING TO IS 17682:2021

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 IS No.	:	IS 17682:2021
	शीर्षक Title	:	Aluminium Composite Panel
	संशोधनों की संख्या No. of amendments	:	2
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Please refer Annex-A 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 Grouping Guidelines	:	Please refer to Annex-B
c)	नमूने का परिमाण Sample Quantity	:	5 Panels 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)

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d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request		- Same as the scope of licence - Type of Coating with number of coats
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to Annex-C
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex-D
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	Dimensions, straightness and Squareness test- Clause 6, Density of Core – Clause 7.1, Tensile strength – Clause 7.1, Yield Strength – Clause 7.1, Elongation – Clause 7.1, Peel strength – Clause 7.1, Coating thickness – Clause 7.1, Pencil hardness – Clause 7.1, Gloss – Clause 7.1, Limiting oxygen index – Clause 7.1, Smoke density rating – Clause 7.1, Ignitability – Clause 7.1, Flame spread – Clause 7.1, Sound transmission class – Clause 7.2, Sound absorption coefficient – Clause 7.2 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 17682:2021 with the following scope:		
	Name of the product	Aluminium Composite Panel	
	Grade	1/2/3/4/5	
	Size (length x width x thickness)		
	Optional Requirements	With/ without	

भारतीय मानक ब्यूरो
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ANNEX A
Details of Raw Materials

Raw Material	Indian Standard
Polymer Granules	The polymer granules shall confirm to Cl 5.1 of IS 17682.
Aluminium Alloy Sheets	The aluminium alloy sheets shall confirm to Cl 5.2 of IS 17682
Adhesive	The manufacturer shall obtain test certificate of adhesive as per Cl 5.3 of IS 17682.
Surface Coating	The manufacturer shall declare the type of coating for each grade as per Cl 5.4 of IS 17682.

ANNEX-B

Grouping Guidelines

1. Aluminium Composite Panel as per IS 17682 are classified as given below:
 - a) Grade – Grade 1/ Grade 2/ Grade 2S/ Grade 3/ Grade 4/ Grade 5
 - b) Nominal Dimensions (length x width): 1200 x 2400mm, 1200 x 3050mm & 1200 x 3660mm, Nominal Thickness: 2,3,4,5 & 6 mm

Any other dimensions (length, width and thickness) as agreed to between the manufacturer and the purchaser may also be used.
 - c) Optional requirements: with/ without
2. Considering the above following grouping guidelines for GoL/CSoL have been developed:
 - a) Each grade of panels shall be tested for all requirements to cover that particular grade tested in licence scope.
 - b) Highest nominal size and highest thickness of panel shall be tested for all requirements to cover all sizes and thicknesses upto and including the nominal sizes and thickness tested.
 - c) One sample from each grade of panel shall be tested for the optional requirements in order to cover the same in the scope of licence, if opted by manufacturer.
3. The Firm shall declare the varieties of Aluminium Composite Panel 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. Firm shall declare the type of protective coating used for each grade of Aluminium Composite Panel.
5. During the operation of the Licence, BO shall ensure that all the grades covered in the Licence are tested in rotation, to the extent possible.

ANNEX C

List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. N o.	Tests used in with Clause Reference	Test Equipment
1.	Dimensions, Squareness, straightness – Clause 6	- Measuring Tape - Vernier Calliper - Micrometre - Feeler Gauge - straight edge 1200 mm × 1 200 mm square
2.	Density of core (Clause 7.1)	Test facilities as per IS 13360 (Part 3/Sec 10) (weighing balance, immersion vessel, pycnometer, water bath)
3.	Tensile strength, YS and elongation (Clause 7.1)	Test facilities as per IS 1608 (Part 1) (Tensile testing machine, sample cutter, Vernier caliper, extensometer)
4.	Peel strength (Clause 7.1)	Test facilities as per Annex-D of IS 17682 (Tensile testing machine, sample cutter, Vernier caliper)
5.	Coating thickness (Clause 7.1)	Test facilities as per IS 6012 (eddy current instrument)
6.	Adhesion (cross hatch) (Clause 7.1)	Test facilities as per 6.2.2 of IS 101 (Part 5/Sec 2) (cutting tool, cutting guide, tape, eraser, light source, magnifying glass, soft brush)
7.	Pencil hardness (Clause 7.1)	Test facilities as per IS 101 (Part 5/Sec 1) (drawing pencil, pencil sharpener-H, 2H)
8.	Gloss (Clause 7.1)	Glossmeter
9.	Color retention (Clause 7.1)	spectrophotometer
10.	Chalk resistance (Clause 7.1)	Test facilities as per Annex-E of IS 17682 (fabric cloth, chalk)
11.	Weatherometer test (for 4 000 h) (Clause 7.1)	Test facilities as per IS 101 (Part 6/Sec 1) (metal panels, salt spray apparatus, heater)
12.	Accelerated Weathering Test (Clause 7.1)	Test facilities as per IS 101 (Part 6/Sec 5) (UV test chamber, lamps, specimen mounting arrangement, thermometer, Vernier caliper)
13.	Chemical resistance (Clause 7.1)	Test facilities as per Annex-F of IS 17682 (HCl acid, watch glass, AC, glasswares, sodium hydroxide pellets or flakes, nitric acid, ACS reagent)

		grade, tap water, building lime, dry sand, 10-mesh wire screen, weighing balance, Vernier caliper, detergent)
14.	Limiting oxygen index (Clause 7.1)	• Test facilities as per IS 13360 (Part 6/Sec 19) (oxygen index tester)
15.	Smoke density rating (Clause 7.1)	• Test facilities as per IS 13360 (Part 6/Sec 9) (smoke chamber, specimen holder, ignition system, photometric system, stop watch, conditioning chamber)
16.	Ignitability (Clause 7.1)	• Test facilities as per IS/ISO 11925-2:2020 (ignition test apparatus-combustion chamber, specimen holder, ignition source, anemometer, burner, flame height measuring device)
17.	Flame spread (Clause 7.1)	• Test facilities as per IS 12777 (conditioning chamber, test apparatus as per Cl 4 of IS 12777, ancillary equipment as per Cl 5 of IS 12777)
18.	Non-combustibility (Clause 7.1)	• Test facilities as per IS 3808 (non-combustibility test apparatus as per fig.1 of IS 3803)
19.	Oxygen bomb calorimeter (Clause 7.1)	• Test facilities as per IS/ISO 1716:2018 (oxygen bomb calorimeter)
20.	Sound transmission class (Clause 7.2)	• Test facilities as per IS 11050 (Part 1)
21.	Sound absorption coefficient (Clause 7.2)	• Test facilities as per IS 8225
22.	Coefficient of linear thermal (Clause 7.2) expansion	• Test facilities as per IS 3410 (vitreous silica dilatometers)
23.	Thermal Conductivity (Clause 7.2)	• Test facilities as per IS 3346 (Thermal conductivity test apparatus as per clause 3 or 4 of IS 3346)

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 the Standard 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 : Aluminium Composite Panel, having the same grade, type of protective coating, number of coats & size manufactured under similar conditions in a day, with the same consignment of raw materials 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 requirements of 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 indelibly and clearly marked on each aluminium composite panel, provided always that the material so marked conforms to each requirement of the specification.

3.1 Marking shall be done as per Clause 10 of IS 17682:2021.

3.2 **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 - The 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				Levels of Control		
Cl.	Requirement	Test Methods		No. of Sample	Frequency	Remarks
		Clause	Reference			
5	Material					
	Polymer Granules	5.1	IS 17682 IS 2530 IS 12235 (Pt 17)	One	Each Consignment	No further testing is required, if material received with test certificate or ISI Marked.
	Aluminium Alloy Sheets	5.2	IS 17682 IS 737	One	Each Consignment	
	Adhesive	5.3	IS 17682	One	Each Consignment	
	Surface Coating	5.4	IS 17682	One	Each Consignment	
6	Dimensions, straightness andsquareness	6	IS 17682	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 evidenceof conformity		
7.1	Table – 2 (Requirements for Physical and Mechanical Requirements of ACP)					
7.1	Density of core	7.1	IS 17682 IS 13360 (Pt 3/Sec 10)	One	Each Control unit	-
7.1	Tensile strength, yield strength and elongation	7.1	IS 17682 IS 1608 (Pt 1)	One	Each Control unit	-
7.1	Peel strength	7.1	Annex-D of IS 17682	One	Each Control unit	-
7.1	Table – 3 (Requirements for Coating of ACP)					
7.1	Coating thickness	7.1	IS 17682 IS 6012	One	Each Control unit	-

7.1	Adhesion	7.1	IS 17682 IS 101 (Pt 5/Sec 2)	One	Once in a week for each grade, type of protective coating and number of coats of panels produced during the period	
7.1	Pencil hardness	7.1	IS 17682 IS 101 (Pt 5/Sec 1)	One	Each Control unit	-
7.1	Gloss	7.1	IS 17682	One	Each Control unit	-
7.1	Weatherometer test:					
	(a) Resistance to humidity and Neutral salt spray test (Corrosion and Blister)		IS 17682 IS 101 (Pt 6/Sec 1)	One	Once in six months	Each grade and type of coating and number of coats shall be tested in rotation
	(b) Accelerated Weathering Test (Gloss retention, Color retention, ΔE & Chalk resistance)		IS 17682 IS 101 (Pt 6/Sec 5)	One	Once in a year	Each grade and type of coating and number of coats shall be tested in rotation
7.1	Chemical resistance - HCl, NaOH, Mortar pat, detergent, Nitric acid		IS 17682	One	Once in a month for each grade and type of protective coating of panels produced during the period	
7.1	Table – 4 (Fire Retardance Requirements of ACP) (applicable for Grade 3,4 & 5 only)					
7.1	Limiting oxygen index	7.1	IS 17682	One	Each Control unit	-
	Smoke density rating	7.1	IS 17682	One	Each Control unit	-
	Ignitability	7.1	IS 17682	One	Each Control unit	-
	Flame spread	7.1	IS 17682	One	Once in a year	Each grade and type of coating and number of coats shall be tested in rotation
	Non-combustibility	7.1	IS 17682	One	Once in a week	-
	Oxygen bomb calorimeter	7.1	IS 17682	One	Each Control unit	-
7.2	Table – 5 (Optional Tests Requirements)					
	Sound transmission class	7.2	IS 17682	One	Once in three months	-
	Sound absorption coefficient	7.2	IS 17682	One	Once in three months	-
	Coefficient of linear thermal expansion	7.2	IS 17682	One	Once in three months	-
	Thermal Conductivity	7.2	IS 17682	One	Once in three months	-