उत्पाद मैन्युअल

IS 2046: 1995 के अनुसार

PRODUCT MANUAL FOR
Decorative Thermosetting Synthetic Resin Bonded Laminated Sheets
According to IS 2046:1995

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 variousproducts. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	**मानक संख्या** **IS No.**	:	IS 2046:1995
	शीर्षक **Title**	:	Decorative Thermosetting Synthetic Resin Bonded Laminated Sheets
	संशोधनों की संख्या **No. of amendments**	:	1
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	No specific requirement
b)	**समूहीकरण दिशानिर्देश** **Grouping Guidelines**	:	Please refer Annex – A
c)	**नमूने का परिमाण**	:	Two sheets

	Sample Quantity		
3.	**परीक्षण उपकरणों की सूची** **List of Test Equipment**	:	Please refer Annex – B
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer Annex –C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**	:	i) Colour and Pattern, cl.5.1 ii)Surface Finish, cl.5.2 iii)Thickness, cl.5.3 iv) Appearance, cl.5.4 v) All other test(s) except moisture resistance subject to availability of pre-conditioned sample
6.	**लाइसेंस का दायरा** **Scope of the Licence :**		
	Licence is granted to use Standard Mark as per IS 2046:1995 with the following scope:		
	Name of the product	Decorative Thermosetting Synthetic Resin Bonded Laminated Sheets	
	Material Type	Type S or Type P or Type F or Type Compact S or Type Compact F	
	Varieties	Alphabetical classification or type and index number of all the varieties covered e.g. HGS(Horizontal general purpose standard) / S 333	
	Thickness	Thickness of sheets in mm	
	Size	{upto L(mm) x W(mm)}	

ANNEX-A

GROUPING GUIDELINES

i) The Standard specifies following classification system for the 17 varieties of the product manufactured based on the Performance category:

Sl. No	Type and Index Number(wear,impact,scratch)	Equivalent Alphabetical Classification
1	Compact S 323	CGS (Compact general purpose standard)
2	Compact F 323	CGF (Compact general purpose flame retardant)
3	S 434	HDS (Horizontal heavy duty standard)
4	F 434	HDF (Horizontal heavy duty flame retardant)
5	S 333	HGS (Horizontal general purpose standard)
6	P 333	HGP (Horizontal general purpose post forming)
7	F 333	HGF (Horizontal general purpose fire retardant)
8	S 323	---
9	F 323	---
10	P 323	---
11	S 232	VGS (Vertical general purpose standard)
12	F 232	VGF (Vertical general purpose flame retardant)
13	P 222	VGP (Vertical general purpose post forming)
14	S 122	---
15	F 122	---
16	P 122	---
17	S121	VLS (Vertical light duty standard)

The materials can be specified either by the type and index number system or by the Alphabetical classification system

ii) Based upon the classification and Performance Category as specified in IS 2046 the following Grouping guidelines may be considered for Grant of Licence (GOL)/ Change in Scope of Licence (CSOL):

Group	Group 1	Group 2	Group 3	Group 4	Group 5
Performance HIGH ⇩ LOW	HDS or S 434	HDF or F 434	HGP or P 333	CGS or S323	CGF or F 323
	HGS or S 333	HGF or F 333	P 323	---	---
	S 323	F 323	VGP or P 222	---	---
	VGS or S 232	VGF or F 232	P 122	---	---
	S 122	F 122	---	---	---
	VLS or S 121	---	---	---	---

iii) One sample of lowest and highest thickness for a type manufactured in a group, of any size, for the varieties intended to be covered in scope of the license shall be drawn for independent testing.

iv) If the sample of high performance is tested in a group, then low performance grade of the laminate may be included in the scope of license.

(For example, if the laminate from Group 1, Grade HDS is tested then HGS, S323, VGS, S122 and VLS may be covered in the scope of license, and the same condition apply for all the groups. Similarly, if the laminate from Group 1, Grade HGS is tested then, S323, VGS, S 122 and VLS only may be covered in the scope of license

v) Scope of licence shall be restricted based on the manufacturing and testing facilities available.

vi) During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible

ANNEX – B

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No	Test used in	Clause Reference	Test Equipment/Chemical
01	Colour and Pattern	5.1	Inspection Table with arrangement for daylight or D65 Standard illuminate
02	Surface Finish	5.2	Inspection Table
03	Thickness	5.3	Ratchet type Micrometer, or Dial Gauge Indicator with 2 flat parallel measuring surfaces of at least 6 mm diameter, read to 0.01 mm and capable of exerting a pressure of 10 to 100 kPa
04	Appearance	5.4	
	Surface Defects	5.4.1	Standardised Lighting Arrangement - Horizontal Inspection Table of Height 700 mm - Overhead Fluorescent Lighting Arrangement of colour temperature approx 5000 K and intensity of 800 – 1000 lx
	Edge Defects	5.4.2	Length Measuring Scale
	Broken Corner	5.4.3	Length Measuring Scale
	Sanding Defects	5.4.4	Inspection table with light arrangement
05	Warping	5.4.5	Straight Edge
			Dial Gauge with Stand
			Measuring scale
06	Length & Width	5.4.6	Measuring Tape
07	Straightness of Edge	5.4.7	Straight Edge as above
08	Squareness	5.4.8	Measuring Tape
09	Resistance to Surface Wear	Cl.5.5, Table 7, Sl.No. i)	Abrasion Resistance Testing Machine Specimen Holder in the form of Disk and rotates in horizontal plane at a frequency of 58 to 62 rpm Abrasive wheel – as per Cl – 3.1.2 Holding and Lifting Device : as per Cl 3.1.3,Revolution Counter
			Zinc Plate
			Abrasion Strip as per C 2.2, a, b
			Double Side adhesive Tape

			Weighing Balance
			Conditioning Chamber Fitted With Digital Temperature Controller
10	Resistance to Immersion in Boiling Water	Cl.5.5, Table 7, Sl.No. ii)	Boiling Water Bath
			Balance
			Electric Oven
			Water Vessel
			Dessicator
			Micrometer
			Specimen Holder
			Distilled water
11	Resistance to Dry heat at 180^0 C	Cl.5.5, Table 7, Sl.No. iii)	Materials: Glycerol tristearate or similar material, fine faced wood chipboard, urea formaldehyded adhesive
			Resistance to dry heat apparatus consisting of cylindrical vessel of cast aluminium or aluminium alloy, heat source, inorganic heat insulating board and thermometer
12	Dimensional stability at deviated temperature	Cl.5.5, Table 7, Sl.No. iv)	Oven
			Conditioning chambers
			Bedplate and mounted dial gauge
			Rigid Jig
			dessicator
			Vernier caliper
13	Dimensional Stability at 20°C	Cl.5.5, Table 7, Sl.No. v)	Conditioning Chamber
			Dessicator
			Distilled Water
			Water Bath
			Length measuring scale
			Ethanol
			Stop Watch
			Vernier Caliper
14	Resistance to impact by small diameter ball	Cl.5.5, Table 7, Sl.No.vi)	High quality fine faced wood chipboard
			Urea formaldehyde adhesive
			Solution of dye in alcohol, graphite or talcum
			Impact tester

			Arrangement capable of being suspended from the impact bolt to exert a compressive force on the spring (e.g. scale pan, weights), Steel plate, hand Lens
15	Resistance to impact by large diameter balls	Cl.5.5, Table 7, Sl. No. vii)	Free fall test apparatus
			Polished steel ball
			Specimen Clamping frame
16	Resistance to cracking (thin laminates)	Cl.5.5, Table 7, Sl.No.viii)	Clamping device
			Conditioning chamber
			Electrically heated over with air circulation
			Hand Lens 6 x
			Lighting 800– 1000lx
17	Resistance to scratching	Cl.5.5, Table 7, Sl.No. ix)	Scratch testing apparatus (as specified in L-2.1 of the ISS)
			Viewing enclosure
			Conditioning chamber
			Viewing mash
18	Resistance to staining	Cl.5.5, Table 7, Sl.No. x)	Staining material as per Annex M
			Glass covers
			Thermometer (up to 100 C)
			Flat bottomed aluminium vessel
			Hot plate
			Horizontal inspection surface
			Wetting agent
			Hard nylon bristle brush, soft cloth
			Ethanol 95%, acetone, MEK, trichloroethane etc.
19	Resistance to colour change		
	In Xenon Arc Light	Cl.5.5, Table 7, Sl.No. xi)	Xenon Arc lamp, test enclosure, black panel thermometer, specimen holders, blue dyed wool standards nos 1 to 7 and the grey slab for assessing change in colour, conditioning chamber (60 +-5 C)
	In enclosed carbon arc light	Cl.5.5, Table 7, Sl.No. xi)	Enclosed carbon arc lamp, test enclosure, black panel thermometer, specimen holders, blue dyed wool standards nos 1 to 7 and the grey slab for assessing change in colour, conditioning chamber (60 +-5 C)

20	Resistance to Cigarette Burns	Cl.5.5, Table 7, Sl.No. xii)	Fine faced wood chipboard, urea formaldehyde adhesive, pale tobacco cigarettes unfiltered (3), ethanol soft cloth Conditioning chamber (T 27+-C, RH 65+-5%)
	Resistance to Cigarette Burns	Cl.5.5, Table 7, Sl.No. xii)	Fine faced wood chipboard, urea formaldehyde adhesive, Heating element support, heating element or Fe-Al alloy in spiral shape, adjustable mounting, calibration block, glass windowed cover, stopwatch, power source, control circuit, potentiometer, cotton wick, Conditioning chamber (T 27+-C, RH 65+-5%)
21	Formability	Cl.5.5, Table 7, Sl.No. xiii)	Method A: Radiant heater, variable output transformer, temp indicators (thermal crayons or waxes), stopwatch, forming apparatus, conditioning chamber, strips of solid colour white laminate Method B: Radiant heater element, forming jig, clamping device, L-shaped forming bar, temp indicators (thermal crayons or waxes), stopwatch, thickness gauge, conditioning chamber
22	Resistance to blistering	Cl.5.5, Table 7, Sl.No. xiv)	Method A: Same as formability Method A plus an additional timer Method B: Same as formability Method B plus an additional timer
23	Resistance to steam	Cl.5.5, Table 7, Sl.No. xv)	Erlenmeyer flask , specimen holder and heat resistance screen, non-fibrous filter paper, hand lens (6x), electric hot plate
24	Resistance to crazing (thick laminates)	Cl.5.5, Table 7, Sl.No. xvi)	Specimen Holder, electrically heated oven, hand lens (6x), lighting (800-1000 lx), conditioning chamber
25	Resistance to moisture (Double faced compact laminates)	Cl.5.5, Table 7, Sl.No. xvii)	Water bath capable of being maintained at 65 +-2 C, specimen holder
26	Flexural Modulus	Cl.5.5, Table 7, Sl.No. xviii)	Standard Testing machine as per Annex F of IS 13411:1992
27	Flexural strength	Cl.5.5, Table 7, Sl.No. xix)	Standard Testing machine as per Annex F of IS 13411:1992
28	Tensile strength	Cl.5.5, Table 7, Sl.No. xx)	Tensile Testing Machine as per IS 13360 (Part 5/Sec 1):2018/ISO 527-1:2012

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan 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 defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

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

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is the entire quantity of the laminated sheets of the same variety (same type and index) produced under uniform conditions in a single batch 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**.

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. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different testsgiven in the specification shall be carried out in accordance with the method given in the specification**.** They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize theprovisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing commoncluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratoryor any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be 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 <insert the location/manner of marking> provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements**: The material shall also be marked with the following additionalrequirement on <insert the place where marking can be done>:

a) "For BIS certification details please visit www.bis.gov.in"
b) Size and thickness of the sheets

4. REJECTION - All 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
LEVELS OF CONTROL

(1)				(2)	(3)		
Clause	**Requirements**	**Test Method Clause Reference**		**Test equipment requirement** R: required (or)S: Sub-contracting permitted	**No. of samples**	**Frequency**	**Remarks**
5.1	Colour and Pattern	5.1	IS 2046:1995	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.2	Surface finish and Reserve side/ bonding	5.2.1 & 5.2.2	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.3	Thickness	5.3.1	-do-	R	One	Each control unit	--
5.4	Appearance						
5.4.1	Surface defects	5.4.1	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.1.1	Spot, dirt, and similar surface defects	5.4.1.1	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.1.2	Fibers, hairs scratches	5.4.1.2	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.1.3	Accumulated (combinations) of surface defects	5.4.1.3	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		

5.4.2	Edge defect	5.4.2	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.3.3	Broken corners	5.4.3	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.4	Sanding Defects	5.4.4	IS 2046:1995	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.5	Warping	5.4.5	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.6	Length and width	5.4.6	IS 2046:1995	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.7	Straightness of Edges	5.4.7	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.4.8	Squareness of the laminates	5.4.8	-do-	R	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer		
5.5 & Table 7	Other properties						
i)	Resistance to surface wear	Annex C	-do-	R	one	Each control unit	

ii)	Resistance to immersion in bonding water	Annex D	-do-	R	one	Each control unit	
iii)	Resistance to Dry heat	Annex E	-do-	R	one	Each control unit	
iv)	Dimensional stability at elevated temp	Annex F	-do-	R	one	Each control unit	
v)	Dimensional stability at 20℃	Annex G	-do-	R	one	–Each control unit	
vi)	Resistance to impact by small dia ball	Annex H	-do-	R	one	Each control unit	
vii)	Resistance to impact by large dia ball	Annex J	-do-	R	one	Each control unit	
viii)	Resistance to cracking	Annex K	IS 2046: 1995-	R	one	Each control unit	
ix)	Resistance to scratching	Annex L	-do-	R	one	-Each control unit	
x)	Resistance to Staining	Annex M	-do-	R	one	-Each control unit	
xi)	Resistance to colour change	Annex N Alternate Annex-O	-do-	S	one	Once in six months	
xii)	Resistance to cigarette burns.	Annex P Alternate Annex G	-do-	R	one	Each control unit	
xiii)	Formability. Method A Method B	 Annex R -do-	-do-	R	one	Each control unit	
xiv)	Resistance to blistering Method A Method B	 Annex S -do	-do-	R	one	Each control unit	
xv)	Resistance to steam	Annex T	-do-	R	one	Each control unit	
xvi)	Resistance to crazing	Annex W	-do-	R	one	Each control unit	
xvii)	Resistance to moisture	Annex Y	-do-	R	One	Each control unit	
xviii)	Flexural Modulus	Annex-F of IS 13411	-do-	R	One	Each control unit	
xix)	Flexural Strength	-do-	-do-	R	One	Each control unit	
xx)	Tensile Strength	IS 13660 Part 5/Sec. 2 & 3	-do-	R	One	Each control unit	