



**PRODUCT MANUAL FOR  
PLASTIC TRANSLUCENT SHEETS MADE FROM  
THERMO-SETTING POLYESTER RESIN  
(GLASSFIBRE REINFORCED)  
ACCORDING TO IS 12866: 1989**

*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 12866 : 1989
	<b>Title</b>	:	Plastic Translucent Sheets Made from Thermo-Setting Polyester Resin (Glassfibre Reinforced)
	<b>No. of Amendments</b>	:	1
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	As per clause 3 of IS 12866: 1989
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX – A
c)	<b>Sample Size</b>	:	a) Full size sheets – 4 nos b) Unsaturated polyester resin- 500gm and c) Glassfibre – 500 mm x 500 mm
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>	:	Please refer ANNEX – D
6.	<b>Scope of the Licence:</b>		
	“Licence is granted to use Standard Mark as per IS 12866: 1989with the following scope:		
	Name of the product	Plastic Translucent Sheets made from Thermo-Setting Polyester Resin (Glassfibre Reinforced)	
	Type of sheet	IS No and Profile No.	
	Sizes of sheet	Length, Width and Thickness	
	Light diffusion classification		
	Light transmission classification		

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

1. IS 12866: 1989 covers 'Plastic Translucent Sheets made from Thermo-Setting Polyester Resin (Glassfibre Reinforced)' which are categorized as under:

a) Profile of sheet:

<b>Type of Sheet</b>	<b>Corrugated asbestos cement profile in accordance with IS 459</b>		<b>Corrugated steel profile in accordance with IS 277</b>		<b>Corrugated aluminium sheets profile in accordance with IS 1254</b>		
<b>Profile No.</b>	1	2	3	4	5	6	7

(Sheet thickness is specified in Table 1 of IS 12866 : 1989. Sheets with higher thickness are also permitted as per agreement between the purchaser and the manufacturer)

- b) Light Diffusion Classification: I/ II/ III/ IV  
(Class IV has better light diffusion properties than class I)
- c) Light Transmission Classification: I/ II/ III/ IV  
(Class I has better light transmission properties than class IV)

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

- a) Sample of sheet of maximum length and thickness for each profile number shall be tested for all requirements to cover all sheets upto and including the length and thickness tested for that particular profile number.
- b) If sheet of better Light Diffusion Class is tested, then sheets of lower Light Diffusion Class may be covered (For eg., if Class IV is tested, then Class III/ II/ I may also be covered).
- c) If sheet of better Light Transmission Class tested, then sheets of lower Light Transmission Class may be covered (For eg., if Class I is tested, then Class II/ III/ IV may also be covered).

3. The Firm shall declare the varieties intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

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

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	<b>Raw Material</b>	
	Glassfibre (Clause 3.2)	- Measuring tape - Electronic weighing balance
	Unsaturated Polyester Resin (Clause 3.2)	- Brooke field viscometer - Specific gravity testing tubes - Acid value testing apparatus - Abby refractometer
2.	Profiles (Clause 4)	- Master sample of corrugated sheets as per IS 459 , IS 277, IS 1254 and IS 15965 - Thickness gauge/Flat envy micrometer - Depth gauge - Steel tape - Steel scale - Vernier calliper
3.	Workmanship and finish (Clause 5)	- Vernier calliper
4.	Density (Clause 6.1)	- Weighing balance - Vernier calliper - Micrometer - Steel tape/scale
5.	Glass content (Clause 6.2)	- Analytical balance - Crucible - Muffle furnace - Desiccator
6.	Water absorption (Clause 6.3)	- Vernier calliper - Hot air oven - Desiccator - Analytical weighing balance - Thermostatically controlled water bath - Distilled water - Thermometer
7.	Hardness (Barcol) (Clause 6.4)	- Barcol Hardness Testing Machine - Stop watch
8.	Bolt shear test (Clause 6.5)	- Vernier calliper - Air conditioner - Tensile testing machine to apply load at constant rate.

9.	Load deflection (Clause 6.6)	- Load deflection testing machine as per clause E-1.2 and Fig 1 of IS 12866: 1989
10.	Light diffusion (Clause 6.7)	- Light Diffusion test apparatus as per clause F-1.2 and Fig 2 of IS 12866: 1989
11.	Transmission (Clause 6.8)	- Light transmission test apparatus as per clause G-1.2 and Fig 3 of IS 12866: 1989

*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 12866: 1989
4. **CONTROL UNIT** - All the Plastic Translucent Sheets of same profile no. and thickness made from similar composition in one day under similar conditions 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	Material	3.2	IS 12866 IS 11551	S	One	Each Consignment	Further testing is not required if consignment received with manufacturers test certificate.
		3.3	IS 12866 IS 6746	S	One	Each Consignment	
4.1	Profiles	4.1, Table 1	IS 12866	R	One	Each Sheet	The profile of the sheet shall match the profiles specified in the appropriate Indian Standard
4.2	Dimensions	4.2 to 4.6, Table 1	IS 12866	R	One Percent subject to Minimum of 5 Sheets	Each Control Unit	-
5	Workmanship and Finish	5.1, 5.2, 5.3	IS 12866	R	Each sheet	-	-
<b>6</b>	<b>PERFORMANCE REQUIRMENTS</b>						
6.1	Density	6.1	IS 12866	R	Three	Each Control Unit	Sample shall be composite sample for production in a day i.e. for each shift.
6.2	Glass content	6.2, Annex-A	IS 12866	R	Three	Each Control Unit	

6.3	Water absorption	6.3, Annex-B	IS 12866	R	Three	Once in Week	In case of failure of sample in any requirement, twice the samples shall be tested from the same control unit and control unit shall be accepted on passing of retested samples.
6.4	Hardness (Barcol)	6.4, Annex-C	IS 12866	R	Three	Each Control Unit	
6.5	Bolt shear test	6.5, Annex-D	IS 12866	R	Three	Each Control Unit	
6.6	Load deflection test	6.6, Table 2, Annex-E	IS 12866	R	Three	Each Control Unit	
6.7	Light Diffusion	6.7, Table 3, Annex-F	IS 12866	R	Three	Each Control Unit	
6.8	Transmission	6.8, Table 4, Annex-G	IS 12866	R	Three	Each Control Unit	

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.

**ANNEX D**

**Possible tests in a day**

1. Dimension (Clause 4)
2. Workmanship and Finish (Clause 5)
3. Density (Clause 6.1)
4. Hardness (Barcol) (Clause 6.4)
5. Bolt Shear Test (Clause 6.5)
6. Load Deflection Test (Clause 6.6)
7. Light Diffusion Test (Clause 6.7)
8. Total Light Transmission (Clause 6.8)