PRODUCT MANUAL FOR SAFETY GLASS FOR ROAD TRANSPORT ACCORDING TO IS 2553 (Part 2): 2019

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.	**Product**	:	IS 2553 (Part 2): 2019
	Title	:	Safety Glass for Road Transport
	No. of Amendments	:	One
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	---
b)	**Grouping guidelines**	:	Please refer **ANNEX –A**
c)	**Sample Size**	:	i) 20 pieces (full size) ii) Cut pieces and Flat pieces - Sufficient nos. as applicable
3.	**List of Test Equipment**	:	Please refer **ANNEX –B**
4.	**Scheme of Inspection and Testing**	:	Please refer **ANNEX –C**
5.	**Possible tests in a day**	:	i) Marking Cl. 4.1 ii) Light transmittance test (Cl. 5.1.1) iii) Thickness (Cl. 3.7) iv) Resistance to temperature change (Cl. 5.2.1)
6.	**Scope of the Licence:**		Please refer **ANNEX –D**

ANNEX A

Grouping Guidelines

1. Safety glazing intended for installation in motor vehicles as per IS 2553 (Part 2) are classified as given below:

   (a) **Windscreens**
   - Laminated Glass (II, II/P)
   - Glass Plastics (IV)

   (b) **Panes**
   - Uniformly Toughened Glass (with and without marking P)
   - Laminated Glass (XI, XI/P)
   - Double Glazed Unit (VI)
     - Symmetrical, Asymmetrical
   - Glass Plastics (XII)
   - Rigid Plastics (VIII/A, VIII/B, VIII/C)
     - /L, /M
   - Flexible Plastics (IX)

   (For Panes, glazing with a light transmission of less than 70 % shall be marked with "/V").

2. For considering GoL/CSoL, the guidelines given below shall be followed:
   (a) Separate samples shall be tested for safety glass with each classification and subclassification to cover that particular variety.
   (b) For Double Glazed Unit, separate samples of each color combination as well as type (Symmetrical/ Asymmetrical) shall be tested.
   (c) For covering all nominal thicknesses in a range, samples of highest and lowest nominal thicknesses shall be tested.

3. However, the following relaxation may be given:
   a. If windscreens with identification mark II/P is tested, then windscreens with identification mark II may also be covered.
   b. If panes with identification mark XI/P is tested, then panes with identification mark XI may also be covered.
   c. If Uniformly Toughened Glass with identification marking P is tested, then Uniformly Toughened Glass without identification mark P may also be covered.

4. Wherever applicable, the transitional provisions given at Cl. 13 of IS 2553 (Part 2): 2019 may be applied.

5. The Firm shall declare the varieties of Safety Glass 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 license, it shall be ensured that all varieties covered in the license 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

S.no.	Tests used in with Clause Reference		Test Equipment
	Cl. No.	**Test**	
1)	5.1.1	Light Transmittance Test	Light source consisting of an incandescent lamp with its filament contained within a parallel piped measuring 1.5 mm × 1.5 mm × 3 mm as per Cl. 6.11
2)	5.1.2	Test of Resistance to abrasion	Abrading Instrument as mentioned in Fig 4 of IS 2553 (Part 2):2019, Abrasive wheels, Haze meter, Light Source consisting of Incandescent lamp, Linen Cloth, Distilled water as per Cl. 6.6
3)	5.2.1	Resistance to Temperature Changes	Temperature controller bath as per Cl. 6.10
4)	5.2.2	Resistance to fire	Combustion Chamber, Sample holder and fume Cupboard as per Cl. 6.14
5)	5.2.3	Resistance to chemicals	Chemicals and solutions as mentioned in Cl. 6.15
6)	5.3.1	Resistance to Radiation	Test apparatus for radiation resistance, Radiation source consisting of a medium pressure mercury vapour arc lamp or any similar source as per Cl. 6.8
7)	5.3.2	Resistance to High Temperature	Chamber for maintaining high temperature as per Cl. 6.7
8)	5.3.3	Resistance to humidity	Humidity Chamber as per Cl. 6.9
9)	5.4.1	Optical Distortion Test	Optical Distortion Tester Consisting projector, rasters and supporting stand as per Cl. 6.12
10)	5.4.2	Secondary image separation test	Apparatus for image separation test as mentioned in Cl. 6.13
11)	5.4.3 5.5.3.2 5.6.1	Head-form test	Head form Supporting Fixture

12)	5.4.4	2.260 g Ball test	Solid Hardened Steel ball, set up as per Cl. 6.4
13)	5.4.5, 5.5.1.2, 5.5.2.1, 5.6.2, 5.7.1	227 g Ball test	Hardened Steel ball fixture, set up as per Cl. 6.3
14)	5.5.1.1	Fragmentation test	Spring Loaded Centre punch or hammer, Adhesive tape, set up as per Cl. 6.3
15)	5.6.3 5.7.2	Flexibility and Fold	Thermometer, Hygrometer
16)	5.6.4	Weathering	Long-arc xenon lamp as per Cl. 6.18
17)	5.6.5	Cross-cut	Cutting tool with 6 blades set, Magnifying glass

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 requirements of IS 2553 (Part 2):2019.

4. CONTROL UNIT- All the safety glass of the same nominal thickness and type (as per Table 1 of IS 2553 (Part 2):2019) manufactured by the same method and under similar conditions 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.

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**				
4.1	Marking	4.1	IS 2553 (Part 2)	--	Each glass		
5.1	**Requirements applicable to all glazing**						
5.1.1	Light transmittance test	6.11, Table 1	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.1.2	Resistance to abrasion	6.6, Table 1	IS 2553 (Part 2)	R	Three	Once in six months for each type	--
5.2	**Additional Requirements applicable to All Glazing faced with plastic**						
5.2.1	Resistance to Temperature Changes	6.10, Table 1	IS 2553 (Part 2)	R	Two	Once in six months for each type	--
5.2.2	Resistance to fire	6.14, Table 1	IS 2553 (Part 2)	R	Five	Once in six months for each type	--
5.2.3	Resistance to chemicals	6.15, Table 1	IS 2553 (Part 2)	R	Four	Once in six months for each type	--
5.3	**Additional Requirements applicable to All Laminated-Glass and All Glazing faced with Plastics, Glass Plastics**						
5.3.1	Resistance to Radiation	6.8, 6.11, Table 1	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.3.2	Resistance to High Temperature	6.7, Table 1	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.3.3	Resistance to humidity	6.9, Table 1	IS 2553 (Part 2)	R	Three	Once in six months for each type	--

5.4	**Additional Requirements applicable to Windscreens**						
5.4.1	Optical Distortion Test	6.12, Table 1	IS 2553 (Part 2)	S	Four	Once in two years for each type	--
5.4.2	Secondary image separation test	6.13, Table 1	IS 2553 (Part 2)	S	Four	Once in two years for each type	--
5.4.3	Head-form test	6.5, Table 1	IS 2553 (Part 2)	S	Eight	Once in two years for each type	--
5.4.4	2260 g Ball test	6.4, Table 1	IS 2553 (Part 2)	S	Twelve	Once in two years for each type and nominal thickness	--
5.4.5	227 g Ball test	6.3, Table 1	IS 2553 (Part 2)	R	Ten	Once in a month for each type and nominal thickness	--
5.5	**Additional Requirements applicable to Panes**						
5.5.1	**Requirements applicable only to uniformly Toughened Glass Panes**						
5.5.1.1	Fragmentation test	6.2, Table 1	IS 2553 (Part 2)	R	Four	Once in six months for each type	--
5.5.1.2	227 g Ball test	6.3, Table 1	IS 2553 (Part 2)	R	Six	Once in a month for each type and nominal thickness	--
5.5.2	**Requirements applicable only to Laminated-Glass and Glass-Plastic Panes**						
5.5.2.1	227 g Ball test	6.3, Table 1	IS 2553 (Part 2)	R	Eight	Once in a month for each type and nominal thickness	--
5.5.3	**Requirements applicable only to Double-Glazed Units**						
5.5.3.1	Individual components	5.5.3.1, Table 1	IS 2553 (Part 2)	As outlined in the SIT for that type of glazing			
5.5.3.2	Head-form test	6.5, Table 1	IS 2553 (Part 2)	S	Twelve	Once in two years for each type	--

5.6	**Additional requirements specific to Rigid Plastic Glazing**						
5.6.1	Head-form test	6.16, Table 1	IS 2553 (Part 2)	S	Six	Once in two years for each type	--
5.6.2	Mechanical Strength test- 227g Ball test	6.3, Table 1	IS 2553 (Part 2)	R	Ten	Once in a month for each type and nominal thickness	--
5.6.2.5	227g Ball Test at –18° ± 2°C	6.3, Table 1	IS 2553 (Part 2)	R	Ten	Once in six months for each type and nominal thickness	--
5.6.3	Flexibility and Fold test	6.17, Table 1	IS 2553 (Part 2)	R	One	Once in a month for each type	--
5.6.4	Weathering	6.18, Table 1	IS 2553 (Part 2)	R	Three	Once in two years for each type	--
5.6.5	Cross-cut	6.19, Table 1	IS 2553 (Part 2)	R	One	Once in a month for each type	--
5.7	**Additional requirements specific to Flexible Plastic Glazing**						
5.7.1	227g Ball Test at 20° ± 5°C	6.3, Table 1	IS 2553 (Part 2)	R	Ten	Once in a month for each type and nominal thickness	--
5.7.2	227g Ball Test at -18° ± 2°C	6.3, Table 1	IS 2553 (Part 2)	R	Ten	Once in six months for each type and nominal thickness	--
5.7.3	Flexibility and Fold test	6.17, Table 1	IS 2553 (Part 2)	R	One	Once in a month for each type	--

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

Note-2: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.

ANNEX D

Scope of Licence

Licence is granted to use Standard Mark as per IS 2553 (Part 2):2019 with the following scope:	
Name of the Product	Safety Glass for Road Transport
Type of glazing	
Nominal Thickness	From … mm up to and including … mm
Intended type of installation	Windscreen/ Pane
Color combination, if applicable	Clear + Clear, Clear + Green etc.