उत्पाद मैन्युअल

भा. मा. 2553 (भाग 2): 2019 के अनुसार

सड़क परिवहन के लिए सुरक्षा काँच के लिए

दस्तावेज़ संख्या-पी एम/आई एस 2553 (Part 2)/4/फरवरी 2023

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैन्युअल प्रमाणीकरण के प्रचालन में रीति औरपारिर्शिता की सुसंगतता सुनिश्चित करनेके लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसी द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/ प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

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

Document No.-PM/IS 2553 (Part 2)/4/ February 2023

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.

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

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1.	**Product**	:	IS 2553 (Part 2): 2019
	Title	:	Safety Glass for Road Transport
	No. of Amendments	:	Three
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	---
b)	**Grouping guidelines**	:	Please refer **ANNEX –A**
c)	**Sample Size**	:	Please refer **ANNEX –B**
d)	**Sampling Guidelines during operation of licence**		One sample for independent testing (either Factory sample or Market sample) shall be drawn during an operative year.
3.	**List of Test Equipment**	:	Please refer **ANNEX –C**
4.	**Scheme of Inspection and Testing**	:	Please refer **ANNEX –D**
5.	**Possible tests in a day**	:	Please refer **ANNEX –E**
6.	**Scope of the Licence:**		Please refer **ANNEX –F**

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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)
   - Laminated Glass (II/P)
   - Glass Plastics (IV)
   - Toughened Glass (I)
   - Toughened Glass (I/P)
   - Uniformly Toughened Glass (VII)

   (For agricultural tractors only)

   (b) **Panes and Roof Glazing**

   - Uniformly Toughened Glass (without marking P)
   - Uniformly Toughened Glass (with marking P)
   - Laminated Glass (XI)
   - Laminated Glass (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) Every variety of Safety Glass is required to be tested. Appropriate reduction in testing as per Table given under Cl. 12, page 45 of IS 2553-2: 2019) shall be applicable.

   (b) The manufacturer shall declare all the varieties which are intended to be covered in the scope of licence and submit the technical specification in accordance with Annex A of IS 2553 (Part 2) for each variety of Safety glass intended to be manufactured by him..

   (c) For inclusion of additional variety, every functional modification in technical specification in accordance with Annex A shall be declared by manufacturer to BIS.

   (d) In case any reduction in testing as per Table given under Cl. 12, page 45 of IS 2553-2: 2019 is sought at the time of grant of licence or inclusion, the same shall be declared by the manufacturer to BIS and the testing lab carrying out the testing.

3. 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
Sample size

Sl. No.	Grade	Sampling Details
1	Laminated Glass (II)	Actual Size: 04 Nos. Cut Size 300 mm x 300 mm: 44 Nos. Cut Size 76 mm x 300 mm: 03 Nos. Cut Size 100 X 100 with6.4 mm hole (in centre): 03 Nos.Cut Size 1100 mm x 500 mm: 08 Nos. OR Actual Size: 08 Nos. Cut Size 300 mm x 300 mm: 44 Nos. Cut Size 76 mm x 300 mm: 03 Nos. Cut Size 100 X 100 with6.4 mm hole (in centre): 03 Nos.Head-form Test support fixture for windscreen
2	Uniformly Toughened Panes (Without P)	Actual Size = 08 Nos. Cut Size 300 x 300 = 06 Nos.
3	Laminated Glass (XI)	Actual Size = 01 No. 300 X 300 mm samples = 20 Nos. Cut Size 100 X 100 with 6.4 mm hole (in centre): 03 Nos. 76 X 300 mm samples = 03 Nos
4	Toughened Windscreen (I)	Actual Size: 06 Nos. Cut Size 300 mm x 300 mm: 03 Nos. Cut Size 1100 mm x 500 mm: 06 Nos.OR Actual Size: 10 Nos. Cut Size 300 mm x 300 mm: 03 Nos. Head-form Test support fixture for windscreen
5	Uniformly Toughened Windscreen (VII)	Actual Size = 08 Nos. Cut Size 300 x 300 = 06 Nos.
6	Double Glazed Unit (VI)	Actual Size = 12 Nos. Cut Size 300 x 300 = 03 Nos.

ANNEX C

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, 5.8.3	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, 5.8.2	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, 5.7.4	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 D

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 – The packing and marking shall be done as per the provisions of the Indian Standard i.e IS 2553 (Part 2):2019. The Standard Mark, as given in the Schedule of the licence, shall be marked on each piece of safety glass provided always that the safety glass thus marked conforms to all the requirement of the specification.. In addition, the licence no. CM/L-_____ and details of BIS website shall be marked at an appropriate place as follows: "For details of BIS certification please visit www.bis.gov.in"

4. CONTROL UNIT- Quantity of the safety glass of the same variety [variety as defined in Scope of licence] 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**				
3.7	Thickness measurement	3.7	IS 2553 (Part 2)	R	One	Each Control Unit	
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, Table 1A	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.2	**Additional Requirements applicable to All Glazing faced with plastic**						
5.1.2	Resistance to abrasion	6.6, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in six months for each type	--
5.2.1	Resistance to Temperature Changes	6.10, Table 1, Table 1A	IS 2553 (Part 2)	S	Two	Once in six months for each type	--
5.2.2	Resistance to fire	6.14, Table 1, Table 1A	IS 2553 (Part 2)	S	Five	Once in six months for each type	--
5.2.3	Resistance to chemicals	6.15, Table 1, Table 1A	IS 2553 (Part 2)	S	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**						
5.1.2	Resistance to abrasion	6.6, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in six months for each type	--
5.3.1	Resistance to Radiation	6.8, 6.11, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in two years for each type	--

5.3.2	Resistance to High Temperature	6.7, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.3.3	Resistance to humidity	6.9, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in six months for each type	--
5.4	**Additional Requirements applicable to Windscreens**						
5.1.2	Resistance to abrasion	6.6, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in six months for each type	--
5.4.1	Optical Distortion Test	6.12, Table 1, Table 1A	IS 2553 (Part 2)	S	Four	Once in two years for each type	--
5.4.2	Secondary image separation test	6.13, Table 1, Table 1A	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, Table 1A	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, Table 1A	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, Table 1A	IS 2553 (Part 2)	S	Four	Once in six months for each type	--
5.5.1.2	227 g Ball test	6.3, Table 1, Table 1A	IS 2553 (Part 2)	S	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, Table 1A	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, Table 1A	IS 2553 (Part 2)	S	Twelve	Once in two years for each type	--
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	--
5.6	**Additional requirements specific to Rigid Plastic Glazing**						
5.1.2	Resistance to abrasion	6.6, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in six months for each type	--
5.6.1	Head-form test	6.16, Table 1, Table 1A	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, Table 1A	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, Table 1A	IS 2553 (Part 2)	S	Ten	Once in six months for each type and nominal thickness	--
5.6.3	Flexibility and Fold test	6.17, Table 1, Table 1A	IS 2553 (Part 2)	R	One	Once in a month for each type	--
5.6.4	Weathering	6.18, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.6.5	Cross-cut	6.19, Table 1, Table 1A	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)	S	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	--
5.7.4	Weathering test	6.18, Table 1, Table 1A	IS 2553 (Part 2)	S	Three	Once in two years for each type	--
5.8	**Additional requirements specific to Toughened glass windscreens for Agricultural Tractor**						
5.8.2	Fragmentation test	6.2.1, 6.2.2.1, 6.2.2.2, 6.2.2.4, Table 1A	IS 2553 (Part 2)	S	Six	Once in six months for each type	
5.8.3	Head-form test	6.5.3, Table 1A	IS 2553 (Part 2)	S	Four	Once in two years 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.

Note-3: Type of safety glass is defined at para 1 of Grouping Guidelines

Annex-E

Possible tests in a day

i) Thickness measurement (Cl. 3.7)
ii) Marking Cl. 4.1
iii) Light transmittance test (Cl. 5.1.1)
iv) Thickness (Cl. 3.7)
v) Resistance to temperature change (Cl. 5.2.1)
vi) Resistance to High Temperature (Cl.5.3.2)
vii) Optical Distortion (Cl. 5.4.1)
viii) Secondary Image Separation (Cl.5.4.2)
ix) Fragmentation Test (Cl. 5.5.1.1)
x) 227g Ball (Cl. 5.5.1.2)

Note: Fragmentation test shall be done on all varieties available during surveillance inspection.

ANNEX F

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		
Technical parameter / **Variety**	**Variety 1**	**Variety 2**	**Variety 3**
Part number or unique identification Mark			
Drawing number			
Type of glazing along with identification marks as per Cl. 4.2 of IS 2553 (Part 2) and Classification given in Grouping Guidelines in this Manual			
Nominal Thickness			
Intended type of installation (Windscreen/Rear windscreen/ Pane/Roof glazing)			
Rake angle, in case of windscreen			
Color combination			