

**Proposal for Supplement 8 to the 01 series of amendments to  
UN Regulation No. 43 (Safety glazing)**

**ECE/TRANS/WP.29/GRSG/2018/7 as revised by GRSG at its 114<sup>th</sup> session**

**I. Proposal**

*Paragraph 5.5.8.*, amend to read:

"5.5.8. XI In the case of a laminated-glass panes. **In addition, the appropriate application will be signified by:**

**/D For laminated-glass panes with enhanced mechanical properties."**

*Paragraph 8.2.1.1.*, amend to read:

8.2.1.1. Safety glazing shall be subjected to the tests listed in the following table:

Tests	Windscreens						Glasspanes Glass panes			
	Toughened glass		Ordinary laminated glass		Treated laminated glass		Glass-plastics	Toughened glass	Laminated-glass	Glass-plastics
	I	I-P	II	II-P	III	III-P	IV			
Fragmentation:	A4/2	A4/2	-	-	A8/4	A8/4	-	A5/2	-	-
Mechanical strength										
- 227 g ball	-	-	A6/4.3	A6/4.3	A6/4.3	A6/4.3	A6/4.3	A5/3.1	A7/4.3	A11/3
- 2,260 g ball	-	-	A6/4.2	A6/4.2	A6/4.2	A6/4.2	A6/4.2	-	-A7/4.2 <sup>4</sup>	-
Headform test <sup>1</sup>	A4/3	A4/3	A6/3	A6/3	A6/3	A6/3	A10/3	-	-A7/3 <sup>4</sup>	-
Abrasion										
Outer face	-	-	A6/5.1	A6/5.1	A6/5.1	A6/5.1	A6/5.1	-	A6/5.1	A6/5.1
Inner face	-	A9/2	-	A9/2	-	A9/2	A9/2	A9/2 <sup>2</sup>	A9/2 <sup>2</sup>	A9/2
High temperature	-	-	A3/5	A3/5	A3/5	A3/5	A3/5	-	A3/5	A3/5
Radiation	-	A3/6	A3/6	A3/6	A3/6	A3/6	A3/6	-	A3/6	A3/6
Humidity	-	A3/7	A3/7	A3/7	A3/7	A3/7	A3/7	A3/7 <sup>2</sup>	A3/7	A3/7
Light transmission	A3/9.1	A3/9.1	A3/9.1	A3/9.1	A3/9.1	A3/9.1	A3/9.1	A3/9.1	A3/9.1	A3/9.1
Optional distortion	A3/9.2	A3/9.2	A3/9.2	A3/9.2	A3/9.2	A3/9.2	A3/9.2	A3/9.2 <sup>3</sup>	-	-
Secondary image	A3/9.3	A3/9.3	A3/9.3	A3/9.3	A3/9.3	A3/9.3	A3/9.3	A3/9.3 <sup>3</sup>	-	-
Resistance to temperature changes	-	A3/8	-	A3/8	-	A3/8	A3/8	A3/8 <sup>2</sup>	A3/8 <sup>2</sup>	A3/8
Fire resistance	-	A3/10	-	A3/10	-	A3/10	A3/10	A3/10 <sup>2</sup>	A3/10 <sup>2</sup>	A3/10
Resistance to chemicals	-	A3/11.2.1	-	A3/11.2.1	-	A3/11.2.1	A3/11.2.1	A3/11.2.1 <sup>2</sup>	A3/11.2.1 <sup>2</sup>	A3/11.2.1

<sup>1</sup> Furthermore this test shall be carried out on multiple-glazed units pursuant to Annex 12, paragraph 3 (A12/3).

<sup>2</sup> If coated on the inner side with plastics material.

<sup>3</sup> This test shall only be carried out on uniformly-toughened glass-panes to be used as windscreens of slow-moving vehicles which, by construction, cannot exceed 40 km/h.

<sup>4</sup> **This test shall only be carried out on laminated-glass panes bearing the additional symbol /D.**

*Note:* A reference such as A4/3 in the table indicates the annex (4) and paragraph (3) of that annex, where the relevant test is described and the acceptance requirements are specified

Annex 1 - Appendix 4, amend to read:

## **"Laminated-glass panes**

(Principal and secondary characteristics as defined in Annex 7 or Annex 9 to Regulation No. 43)

Approval No. .... Extension No. ....

Principal characteristics:

Number of layers of glass: .....

Number of layers of interlayer: .....

Thickness category: .....

Nominal thickness of interlayer(s): .....

Special treatment of glass: .....

Nature and type of interlayer(s): .....

Nature and type of plastics coating(s): .....

Nominal thickness of plastics coating(s): .....

Secondary characteristics:

Nature of the material (plate, float, sheet glass): .....

Colouring of interlayer (total/partial): .....

Colouring of glass: .....

Colouring of plastics coating(s): .....

Conductors incorporated (yes/no): .....

Opaque obscuration incorporated (yes/no): .....

Remarks:

**For laminated glass panes with enhanced mechanical properties with additional symbol /D (yes/no)**

..... "

*Annex 7*

Insert new paragraph 3., to read:

- "3. **Headform Test**  
**The provisions concerning headform test shall apply to laminated-glass panes bearing the additional symbol /D**
- 3.1. **Indices of difficulty of the secondary characteristics**  
**No secondary characteristic is involved.**
- 3.2. **Number of test pieces**  
**Six flat test pieces measuring (1,100 mm x 500 mm) +5mm/-2mm shall be subjected to testing.**

- 3.3. **Test method**
- 3.3.1. The method used shall be that described in annex 3, paragraph 3.1.
- 3.3.2. The height of drop shall be  $1.50\text{ m} \begin{smallmatrix} + 0 \\ - 5 \end{smallmatrix}$  mm.
- 3.4. **Interpretation of results**
- 3.4.1. This test shall be deemed to have given a satisfactory result if the following conditions are met:
  - 3.4.1.1. The test piece yields and breaks, displaying numerous circular cracks centred approximately on the point of impact,
  - 3.4.1.2. Tears in the interlayer are allowed, but the manikin's head shall not pass through,
  - 3.4.1.3. No large fragments of glass shall become detached from the interlayer.
- 3.4.2. A set of test pieces submitted for approval shall be considered satisfactory from the point of view of the headform test if all the tests give a satisfactory result."

Renumber paragraphs 3 to 5 (former) as paragraphs 4 to 6.

**Paragraph 4, amend to read** (the 2260g ball test is inserted into mechanical strength tests):

- "4. **Mechanical strength test**
- 4.1. Indices of difficulty of the secondary characteristics  
No secondary characteristic is involved.
- 4.2. **2,260 g ball test**  
The provisions concerning 2,260g ball test shall apply to laminated-glass panes bearing the additional symbol /D
  - 4.2.1. Twelve square test pieces of 300 mm +10/-0 mm side shall be subjected to testing.
  - 4.2.2. Test method
    - 4.2.2.1. The method used shall be that described in Annex 3, paragraph 2.2.
    - 4.2.2.2. The height of drop (from the underface of the ball to the upper face of the test piece) shall be 4 m +25/-0 mm.
  - 4.2.3. Interpretation of results
    - 4.2.3.1. The test shall be deemed to have given a satisfactory result if the ball does not pass through the glazing within five seconds after the moment of impact.
    - 4.2.3.2. A set of test pieces submitted for approval shall be considered satisfactory from the point of view of the 2,260 g ball test if at least eleven of the twelve tests have given a satisfactory result.
- 4.3. **227 g ball test**
  - 4.3.1. Number of test pieces  
Eight flat samples measuring 300 mm x 300 mm, specially made or cut from the flattest part of a pane shall be tested
    - 4.3.1.1. Test pieces can alternatively be finished products that may be supported over the apparatus described in paragraphs 2.1.1. to 2.1.1.3. of Annex 3.
    - 4.3.1.2. If the test pieces are curved, care should be taken to ensure adequate contact with the support.
  - 4.3.2. Test method
    - 4.3.2.1. The method used shall be that described in Annex 3, paragraph 2.1.

- 4.3.2.2. The height of drop from the underface of the ball to the upper face of the test piece or sample shall be 9 m +25/-0 mm.
- 4.3.4. Interpretation of results
- 4.3.4.1. The test shall be considered to have given a satisfactory result if the following conditions are met:
- (a) The ball does not pass through the test piece;
  - (b) The laminate shall not break into separate pieces;
  - (c) At the point immediately opposite the point of impact, small fragments of glass may leave the specimen, but the small area thus affected shall expose less than 645 mm<sup>2</sup> of reinforcing or strengthening material, the surface of which shall always be well covered with tiny particles of tightly adhering glass. Total separation of glass from the reinforcing or strengthening material shall not exceed 1,935 mm<sup>2</sup> on either side. Spalling of the outer glass surface opposite the point of impact and adjacent to the area of impact is not to be considered a failure.
- 4.3.4.2. A set of test pieces submitted for approval shall be considered satisfactory from the point of view of the mechanical strength test if at least six of the eight tests have given a satisfactory result."

*Annex 23*

Paragraph 2.4.1, amend to read:

- "2.4.1. 227 g ball test in accordance with the requirements of annex 7, **paragraph 4.3.**"

Paragraph 3.2.1., amend to read:

- "3.2.1. Tests
- The check shall be carried out on test pieces corresponding to at least 0.5 per cent of the daily production of windscreens **respectively panes** of one production line. A maximum of 15 **samples** per day shall be tested.
- The choice of test pieces shall be representative of the production of the various types of windscreen **respectively panes**.
- As an alternative and with the agreement of the administrative service, these tests may be replaced by the 2,260 g ball test (see paragraph 3.3. below). Behaviour under head impact shall in any event be checked on at least two samples for each thickness class per year."

*Insert new paragraphs 2.4.5. to 2.4.5.2., to read:*

- "2.4.5. **In the case of laminated-glass panes with enhanced mechanical properties bearing the additional symbol /D**
- 2.4.5.1. **2,260 g ball test in accordance with the requirements of Annex 7, paragraph 4.2.**
- 2.4.5.2. **Headform test in accordance with the requirements ~~for laminated-glass panes~~ of Annex 7, paragraph 3."**

**Paragraph 2.4.5. (former), renumber as paragraph 2.4.6.**

