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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations**

Working Party on General Safety Provisions

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Item 6(a) of the provisional agenda

**Amendments to safety glazing regulations:****UN Global Technical Regulation No. 6 (Safety glazing)****Proposal for Amendment 2 to UN Global Technical Regulation No. 6 (Safety glazing)****Submitted by the expert from India\***

The text reproduced below was prepared by the expert from India to align UN Global Technical Regulation No. 6 (UN GTR No. 6) on the optional use of laminated-glass panes with improved mechanical properties especially for the front, exterior, forward-facing glazing of the upper deck of a double-deck vehicle. It is based on informal document GRSG-115-38, presented at the 115th session of the Working Party on General Safety Provisions (GRSG) (see report ECE/TRANS/WP.29/GRSG/94, para. 18). The modifications to the current text of UN GTR No. 6 are marked in bold characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2018–2019 (ECE/TRANS/274, para. 123 and ECE/TRANS/2018/21/Add.1, Cluster 3.1), the World Forum will develop, harmonize and update UN regulations to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.19-00151(E)



\* 1 9 0 0 1 5 1 \*

Please recycle The recycling symbol, consisting of three chasing arrows forming a triangle.



## I. Proposal

Paragraph 4.1.2.2.2., amend to read:

"4.1.2.2.2. "XI" for laminated glass. **In addition, the appropriate application will be signified by:**

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

Paragraph 5., Table 1 (Summary of performance requirements), amend to read:

	Windscreens			Panels					
	Laminated glass		Glass plastics	Uniformly toughened glass		Laminated glass		Double glazed uni 1/	Glass plastics
Marking	II	II/P	IV		/P	XI	XI /P	V	XII
Light transmittance	5.1.1.	5.1.1.	5.1.1.	5.1.1.	5.1.1.	5.1.1.	5.1.1.	5.1.1.	5.1.1.
Resistance to abrasion	5.1.2.	5.1.2.	5.1.2.		5.1.2.	5.1.2.	5.1.2.		5.1.2.
Resistance to temperature changes		5.2.1.	5.2.1.		5.2.1.		5.2.1.		5.2.1.
Resistance to fire		5.2.2.	5.2.2.		5.2.2.		5.2.2.		5.2.2.
Resistance to chemicals		5.2.3	5.2.3.		5.2.3.		5.2.3		5.2.3
Resistance to radiation	5.3.1.	5.3.1.	5.3.1.		5.3.1.	5.3.1.	5.3.1.		5.3.1.
Resistance to high temperature	5.3.2.	5.3.2.	5.3.2.		5.3.2.	5.3.2.	5.3.2.		5.3.2.
Resistance to humidity	5.3.3.	5.3.3.	5.3.3.		5.3.3.	5.3.3	5.3.3.		5.3.3.
Optical distortion	5.4.1.	5.4.1.	5.4.1.						
Image separation	5.4.2.	5.4.2.	5.4.2.						
Fragmentation				5.5.1.1.	5.5.1.1.				
Head-form	5.4.3. 2/	5.4.3. 2/	5.4.3. 2/			5.4.3.5. 3/		5.5.3.2. 2/	
2,260 g Ball	5.4.4.	5.4.4.	5.4.4.			5.4.4.2. 3/			
227 g Ball	5.4.5.	5.4.5.	5.4.5.	5.5.1.2.	5.5.1.2.	5.5.2.1.	5.5.2.1.		5.5.2.1

1/ Each component pane shall satisfy the appropriate tests for the type of glazing.

2/ See paragraph 4.2.2.

3/ **These tests shall only be carried out on laminated-glass panes bearing the additional symbol /D.**

Table 1 - Summary of performance requirements"

Insert new paragraphs 5.4.3.5. to 5.4.3.5.4.2., to read:

### "5.4.3.5. Headform Test

The provisions concerning the headform test shall apply to laminated-glass panes bearing the additional symbol /D

#### 5.4.3.5.1. Indices of difficulty of the secondary characteristics

No secondary characteristic is involved.

#### 5.4.3.5.2. Number of test pieces

Eight flat test pieces measuring (1,100 mm x 500 mm) +10mm/-2mm shall be subjected to testing.

**5.4.3.5.3. Test method**

5.4.3.5.3.1. The method used shall be that described in paragraph 6.5.

5.4.3.5.3.2. The height of drop shall be 1.50 m  $\begin{matrix} + 0 \\ - 5 \end{matrix}$  mm.

**5.4.3.5.4. Interpretation of results**

5.4.3.5.4.1. This test shall be deemed to have given a satisfactory result if the following conditions are met:

5.4.3.5.4.1.1. The test piece yields and breaks, displaying numerous circular cracks centred approximately on the point of impact,

5.4.3.5.4.1.2. Tears in the interlayer are allowed, but the manikin's head shall not pass through,

5.4.3.5.4.1.3. No large fragments of glass shall become detached from the interlayer.

5.4.3.5.4.2. 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."

*Insert new paragraphs 5.4.4.2. to 5.4.4.2.3.2., to read:*

**"5.4.4.2. 2,260 g Ball Test**

The provisions concerning the 2,260g ball test shall apply to laminated-glass panes bearing the additional symbol /D.

5.4.4.2.1. Twelve square test pieces of 300 mm +10/-0 mm side shall be subjected to testing.

**5.4.4.2.2. Test method**

5.4.4.2.2.1. The method used shall be that described in paragraph 6.4.

5.4.4.2.2.2. The height of drop (from the underface of the ball to the upper face of the test piece) shall be 4 m +25/-0mm.

**5.4.4.2.3. Interpretation of results**

5.4.4.2.3.1. 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.

5.4.4.2.3.2. 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."

## II. Justification

This proposal aims to develop, in the framework of the 1998 Agreement, an amendment to UN GTR No. 6 on Safety Glazing to adapt the provisions to technical progress by providing optional use of laminated-glass panes that meet the mechanical strength requirements in the front, exterior, forward-facing glazing of the upper deck of double-deck buses instead of laminated windscreen. This is in line with similar proposal discussed at the 114th session of GRSG for UN Regulation No. 43.