

## Proposal for the 02 series of amendments to UN Regulation No. 43 (Safety glazing)

### I. Proposal

*Insert new Sub-paragraphs to 2.13., to read:*

- “2.13. "Windscreen" means the glazing in front of the driver through which the driver views the road ahead. **Two types of windscreens shall be considered:**
- 2.13.1. Windscreens where, in case of an accident, there is a possibility of impact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**
- 2.13.2. Windscreens where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat. Contact is prevented by restraint systems (seat belts, airbags etc.) and potentially supported by the geometrical construction of the passenger cabin itself.”**

*Paragraph 5.5 and subsequent paragraphs, amend to read:*

- “5.5. The following additional symbols shall be affixed near the above approval mark:
- 5.5.1. In the case of a windscreen:
- I For toughened glass,
  - II For ordinary laminated glass,
  - III For treated laminated glass,
  - IV For glass-plastics glazing,
- In addition, the following marking shall also be applied as appropriate:**
- /E For windscreens where contact between the head and the windscreen is prevented by restraint systems or other means and the headform test was therefore not carried out, see paragraph 8.1.2.2.**
- 5.5.2. V In the case of safety glazing having a regular light transmittance less than 70 per cent,
- 5.5.3. VI In the case of multiple-glazed unit,
- 5.5.4. VII In the case of uniformly-toughened glass glazing which can be used as windscreens for slow-moving vehicles which, by construction, cannot exceed 40 km/h.

**In addition, the following marking shall also be applied as appropriate:**

- /E For windscreens where contact between the head and the windscreen is prevented by restraint systems or other means and the headform test was therefore not carried out, see paragraph 8.1.2.2.**
- 5.5.5. VIII In the case of rigid plastic glazing. In addition the appropriate application will be signified by:
- /A For exterior or interior forward facing panes,

- /B For other panes where there is a risk of head impact,
- /C For other panes where there is no risk of head impact.

In addition, for plastic glazing which has been submitted to the abrasion resistance tests described in Annex 3, paragraph 4., the following markings shall also be applied as appropriate:

- /L For panes with a light scatter not exceeding 2 per cent after 1,000 cycles on the outer surface and 4 per cent after 100 cycles on the inner surface (see Annexes 14, 16 and 18, paragraph 6.1.3.1.).
- /M For panes with a light scatter not exceeding 10 per cent after 500 cycles on the outer surface and 4 per cent after 100 cycles on the inner surface (see Annexes 14, 16 and 18, paragraph 6.1.3.2.).

- 5.5.6. IX In the case of flexible-plastic glazing,
- 5.5.7. X In the case of a rigid plastic multiple glazed unit. In addition, the appropriate application will be signified by:
  - /A For exterior or interior forward facing panes,
  - /B For other panes where there is a risk of head impact,
  - /C For other panes where there is no risk of head impact.

For plastic glazing which has been submitted to the abrasion resistance test described in Annex 3, paragraph 4., the following markings shall also be applied as appropriate:

- /L For glazing according to Annex 16, paragraph 6.1.3.1.,
- /M For glazing according to Annex 16, paragraph 6.1.3.2.,

- 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."
- 5.5.9. XII In the case of glass-plastic panes,
- 5.5.10. /P In the case of a safety glazing made of glass, with a layer of plastics material on its inner face.
- 5.5.11. XIII In the case of rigid plastic windscreens.

**In addition, the following marking shall also be applied as appropriate:**

- /E For windscreens where contact between the head and the windscreen is prevented by restraint systems or other means and the headform test was therefore not carried out, see paragraph 8.1.2.2.**

- 5.5.12. XIV In the case of laminated-rigid plastic panes with the signification as described in paragraph 5.5.5.
- 5.5.13. XV In the case of laminated-rigid plastic windscreen.

**In addition, the following marking shall also be applied as appropriate:**

- /E For windscreens where contact between the head and the windscreen is prevented by restraint systems or other means and the headform test was therefore not carried out, see paragraph 8.1.2.2."**

*Paragraph 8.1.2.2.*, amend to read:

“8.1.2.2. Headform test

The purpose of this test is to verify the compliance of glazing with the requirements relating to the limitation of injury in the event of impact of the head against the windscreen, laminated glass and glazing of glass-plastic and rigid plastic other than windscreens, together with the multiple-glazed units used in the side windows. **The test is not to be carried out, when the vehicle manufacturer can demonstrate to the technical service [for the whole vehicle] that the windscreen is installed in a position where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**

**In case of M1 vehicles this shall be demonstrated according to the procedure described in Annex 8 of UN Regulation No. 21, 01 series of amendments. In that case the windscreen shall bear the additional symbol /E.**

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			
	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	A7/3	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 <sup>5</sup>	A4/3 <sup>5</sup>	A6/3 <sup>5</sup>	A6/3 <sup>5</sup>	A6/3 <sup>5</sup>	A6/3 <sup>5</sup>	A10/3 <sup>5</sup>	-	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.

<sup>5</sup> **In the case of a windscreen, for which contact between the head and the windscreen is prevented by restraint systems or other means the headform test shall not be carried out, see paragraph 8.1.2.2. In that case the windscreen shall bear the additional symbol /E.**

*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."

8.2.1.2. Plastic glazing materials shall be subjected to the tests listed in the following table. In the case of the abrasion test, the applicant shall have the alternative between the Taber test and the set of three tests composed of the carwash, sand drop and the wiper test.

Test	Windscreens		Plastics other than windscreens						
	Rigid plastics	Laminated -rigid plastics	Rigid plastics		Laminated rigid plastics		Multiple glazing		
	Motorised vehicles		Motorised vehicles	Trailers and unoccupied vehicles	Motorised vehicles	Trailers and unoccupied vehicles	Motorised vehicles	Trailers and unoccupied vehicles	Flexible plastics
Flexibility	A3/12	A3/12	A3/12	A3/12	A3/12	A3/12	A3/12	A3/12	A3/12
227 g ball	A17/5	A19/5.2	A14/5	A14/5	A18/5	A18/5	A16/5	A16/5	A15/4
2,260 g ball	-	A19/5.1							
Headform <sup>1</sup>	A17/4 <sup>4</sup>	A19/4 <sup>4</sup>	A14/4	-	A18/4	-	A16/4	-	-
Light transmission <sup>2</sup>	A3/9.1	A3/9.1	A3/9.1	-	A3/9.1	-	A3/9.1	-	A3/9.1
Optical distortion	A3/9.2	A3/9.2	-	-	-	-	-	-	-
Secondary image	A3/9.3	A3/9.3	-	-	-	-	-	-	-
Fire resistance	A3/10	A3/10	A3/10	A3/10	A3/10	A3/10	A3/10	A3/10	A3/10
Chemical resistance	A3/11	A3/11	A3/11.	A3/11	A3/11	A3/11	A3/11	A3/11	A3/11.2.1
Abrasion <sup>3</sup>	A17/6.1	A19/6.1	A14/6.1	-	A18/6.1	-	A16/6.1	-	A16/6.1
Weathering	A3/6.4	A3/6.4	A3/6.4	A3/6.4	A3/6.4	A3/6.4	A3/6.4	A3/6.4	A3/6.4
Humidity	A17/6.4	A19/6.4	A14/6.4	A14/6.4	A18/6.4	A18/6.4	A16/6.4	A16/6.4	-
Cross-cut <sup>2</sup>	A3/13	A3/13	A3/13	-	A3/13	-	A3/13	-	-
High temperature	-	A3/5	-	-	A3/5	-	-	-	-
Radiation resistance	-	A3/6	-	-	A3/6	-	-	-	-
Resistance to temperature changes	-	A3/8	-	-	-	-	-	-	-

<sup>1</sup> Test requirements are dependent on the location of the glazing within the vehicle.

<sup>2</sup> Applies only if the glazing is to be used in a location requisite for driving visibility.

<sup>3</sup> Either Taber test or the set of sand drop, carwash and wiper test.

<sup>4</sup> **In the case of a windscreen, for which the contact between the head and the windscreen is prevented by restraint systems or other means the headform test shall not be carried out, see paragraph 8.1.2.2. In that case the windscreen shall bear the additional symbol /E.**

*Paragraph 12*, insert new paragraphs 12.8 to 12.12, to read:

- 12.1. As from the official date of entry into force of Supplement 12 to this Regulation, no Contracting Party applying this Regulation shall refuse to grant approval under this Regulation as amended by Supplement 12 to the Regulation in its original form.
- 12.2. As from 24 months after the date of entry into force, Contracting Parties applying this Regulation shall grant approvals only if the type of component or separate unit to be approved meets the requirements of Supplement 12 to the Regulation.
- 12.3. As from 24 months after the date of entry into force of Supplement 12, the Contracting Parties applying this Regulation may refuse to recognize the approval of safety glazing not bearing the symbols prescribed in paragraph 5.5. of this Regulation.
- 12.4. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant approval under this Regulation as amended by the 01 series of amendments.
- 12.5. As from 24 months after the date of entry into force, Contracting Parties applying this Regulation shall grant approvals only if the type of safety glazing material to be approved meets the requirements of this Regulation as amended by the 01 series of amendments.
- 12.6. Even after the entry into force of the 01 series of amendments to this Regulation, approvals of safety glazing materials to the 00 series of amendments to this Regulation shall remain valid and Contracting Parties applying this Regulation shall continue to accept them, and Contracting Parties shall not refuse to grant extensions of approvals to the 00 series of amendments to this Regulation.
- 12.7. Even after the date of entry into force of the 01 series of amendments, approvals of a vehicle type to the 00 series of amendments to this Regulation shall remain valid and Contracting Parties applying the Regulation shall continue to accept them, and Contracting Parties shall not refuse to grant extensions of approvals to the 00 series of amendments to this Regulation.
- “12.8. As from the official date of entry into force of the 02 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 02 series of amendments.**
- 12.9. As from 1 September [2026], Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued after 1 September [2026].**
- 12.10. Until 1 September [2027], Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before 1 September [2026].**
- 12.11. As from 1 September [2027], Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation.**
- 12.12. Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation”**

Annex 1 – Appendix 1, amend to read:

## Annex 1 - Appendix 1

### Toughened-glass windscreens

(Principal and secondary characteristics as defined in Annex 4 or Annex 9 to Regulation No. 43)

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

Principal characteristics:

Shape category: .....

Thickness category: .....

Nominal thickness of the windscreen: .....

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 glass: .....

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

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

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

**Toughened-glass windscreens for which no headform test has been conducted marked with additional symbol /E (yes/no):**  
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Remarks: .....

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Documents attached: list of windscreens (see Appendix 13)

Annex 1 – Appendix 3, amend to read:

## Annex 1 - Appendix 3

### Laminated-glass windscreens

(Principal and secondary characteristics as defined in Annexes 6, 8 or 9 to Regulation No. 43)

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

Principal characteristics:

Number of layers of glass: .....

Number of layers of interlayer: .....

Nominal thickness of the windscreen: .....

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 plastic coating(s): .....

Secondary characteristics:

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

Colouring of glass (colourless/tinted): .....

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

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

Conductors incorporated (Yes/No): .....

Opaque obscuration incorporated (Yes/No): .....

**Laminated-glass windscreens for which no headform test has been conducted marked with additional symbol /E (yes/no):**  
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Remarks: .....

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Documents attached: list of windscreens (see Appendix 13).



Annex 1 – Appendix 5, amend to read:

## Annex 1 - Appendix 5

### Glass-plastics windscreens

(Principal and secondary characteristics as defined in Annex 10 to Regulation No. 43)

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

Principal characteristics:

Shape category: .....

Number of layers of plastics: .....

Normal thickness of glass: .....

Treatment of the glass (yes/no): .....

Nominal thickness of the windscreen: .....

Nominal thickness of the layer(s) of plastics acting as interlayer: .....

Nature and type of layer(s) of plastics acting as interlayer: .....

Nature and type of the outer layer of plastics: .....

Secondary characteristics:

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

Colouring of glass: .....

Colouring of the layer(s) of plastics (total/partial): .....

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

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

**Glass-plastics windscreens for which no headform test has been conducted marked with additional symbol /E (yes/no): .....**

Remarks: .....

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Documents attached: list of windscreens (see Appendix 13)

Annex 1 – Appendix 10, amend to read:

## Annex 1 – Appendix 10

### Rigid plastic windscreens

(Principal and secondary characteristics as defined in Annex 17 to Regulation No. 43)

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

Principal characteristics:

The chemical designation of the material .....

Classification of the material by the manufacturer .....

Nominal thickness .....

Process of manufacture .....

Shape and dimensions .....

Colouring of the plastic product .....

Nature of the surface coating .....

Secondary characteristics:

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

Obscuration incorporated (yes/no) .....

**Rigid plastic windscreens for which no headform test has been conducted  
marked with additional symbol /E (yes/no):  
.....**

Remarks: .....  
.....  
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Documents attached: list of windscreens (see Appendix 13)

Annex 1 – Appendix 12, amend to read:

## Annex 1 – Appendix 12

### Laminated-rigid plastic windscreens

(Principal and secondary characteristics as defined in Annex 19 to Regulation No. 43)

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

Principal characteristics:

Number of layers of plastic .....  
Number of layers of interlayer .....  
Nominal thickness .....  
Nominal thickness of interlayer (s) .....  
Nature and type of interlayer (s) .....  
Special treatment of plastic .....  
Colouring of plastic product .....  
Chemical designation of single sheet material .....  
Classification of the material .....  
Process of manufacture .....  
Shape and dimensions .....  
Nature of the surface coating .....

Secondary characteristics:

Colouring of interlayer (total/partial) .....  
Conductors incorporated (yes/no) .....  
Opaque obscuration incorporated (yes/no) .....

**Laminated-rigid plastic windscreens for which no headform test has been conducted marked with additional symbol /E (yes/no):**

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Remarks: .....  
.....

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Documents attached: list of windscreens (see Appendix 13)

*Annex 4, Paragraph 3., amend to read:*

"3. Headform test

**The test is not to be carried out when the vehicle manufacturer can demonstrate to the technical service that the windscreen is installed in a position where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**

**In case of M1 vehicles this shall be demonstrated according to the procedure described in Annex 8 of UN Regulation No. 21, 01 series of amendments.**

**If this cannot be demonstrated, the headform test shall be conducted as described in the subsequent paragraphs."**

*Annex 6, Paragraph 3., amend to read:*

"3. Headform test

**The test is not to be carried out when the vehicle manufacturer can demonstrate to the technical service that the windscreen is installed in a position where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**

**In case of M1 vehicles this shall be demonstrated according to the procedure described in Annex 8 of UN Regulation No. 21, 01 series of amendments.**

**If this cannot be demonstrated, the headform test shall be conducted as described in the subsequent paragraphs."**

*Annex 10, Paragraph 3., amend to read:*

"3. Headform test

**The test is not to be carried out when the vehicle manufacturer can demonstrate to the technical service that the windscreen is installed in a position—where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**

**In case of M1 vehicles this shall be demonstrated according to the procedure described in Annex 8 of UN Regulation No. 21, 01 series of amendments.**

**If this cannot be demonstrated, the headform test shall be conducted as described in the subsequent paragraphs."**

*Annex 17, Paragraph 4., amend to read:*

"4. Headform test on a complete windscreen

**The test is not to be carried out when the vehicle manufacturer can demonstrate to the technical service that the windscreen is installed in a position where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**

**In case of M1 vehicles this shall be demonstrated according to the procedure described in Annex 8 of UN Regulation No. 21, 01 series of amendments.**

**If this cannot be demonstrated, the headform test shall be conducted as described in the subsequent paragraphs."**

*Annex 19, Paragraph 4., amend to read:*

"4. Headform test on a complete windscreen

**The test is not to be carried out when the vehicle manufacturer can demonstrate to the technical service that the windscreen is installed in a position where, in case of an accident, there is no probability of contact with the inside of the windscreen and the head of the driver or a passenger sitting in a front seat.**

**In case of M1 vehicles this shall be demonstrated according to the procedure described in Annex 8 of UN Regulation No. 21, 01 series of amendments.**

**If this cannot be demonstrated, the headform test shall be conducted as described in the subsequent paragraphs."**

*Annex 24, Paragraph 4.1.5., to be deleted:*

4. Specific provisions applicable to vehicles of categories M and N <sup>1)</sup>

4.1. Windscreens

4.1.1. The regular light transmittance shall not be less than 70 per cent.

4.1.2. The windscreen shall be type approved for the vehicle type for which it is intended to be fitted.

4.1.3. The windscreen shall be correctly fitted with reference to the vehicle driver's 'R' point.

4.1.4. Vehicles having a maximum design speed greater than 40 km/h may not be fitted with a toughened windscreen.

~~4.1.5. Plastic safety windscreens shall bear an additional symbol /A/L as defined in paragraphs 5.5.5. and 5.5.7. of this Regulation.~~

## II. Justifications

1. UN Regulation No. 43 on “safety glazing” is mandating a headform test. The aim is to limit head injuries in specific situations, e.g. during a crash, when the head possibly could hit the glazing.
2. Consequently, the glazing needs to absorb the energy; this is achieved by breaking of the glass. Plastic safety glazings are not able to show this behaviour and there are also cases where such behaviour of the glazing is not wanted. For example, as UN Regulation No. 43 is also applying to T category vehicles, there is in some cases the need to protect the driver against intruding parts.
3. In most vehicles there are also restraint systems to protect the occupants. The combination of e.g., a seatbelt and an airbag is limiting the head’s movement to avoid impacts with any hard structures, including the windscreen.
4. For vehicles where the aim of the headform test to protect the occupants’ heads is achieved by other means like a restraint system, the test shall not be conducted.
5. This will allow more flexibility in the use of different glazing materials.
6. For windscreens where no head impact test was conducted a new marking /E shall be mandatory. This shall avoid situations where a windscreen without having been tested could be assembled in a vehicle where there is a contact probability during an accident.
7. Finally, paragraph 4.1.5. in Annex 24 was found contradictory. It mandates additional symbols /A (headform test at 3m) and /L for plastic safety windscreens as defined in paragraphs 5.5.5. and 5.5.7. These paragraphs are introducing provisions for any glazed unit, not necessarily the windscreen. Windscreens made of plastic safety glazing are described in paragraphs 5.5.11. and 5.5.13. and no additional marking is needed as the content of markings /A and /L are already included.