

汽车安全玻璃测试介绍

CCM

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WHEN YOU NEED TO BE SURE



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相关法规、标准

- 中国国家标准 ——GB 9656 《汽车安全玻璃》 — 3c认证
- 美国国家标准——ANSI Z26.1 《陆地公路上行驶的机动车辆用安全窗用玻璃材料规范》 — DOT 认证
- 欧共体标准——ECE R43 《安全玻璃材料的统一规定》 —E-MARK认证
- 日本工业标准——JIS R3211 《汽车用安全玻璃》 —JIS 认证
- 澳大利亚标准——AS/NZS 2080
- 德国大众标准——TL 957

汽车安全玻璃分类

根据用途

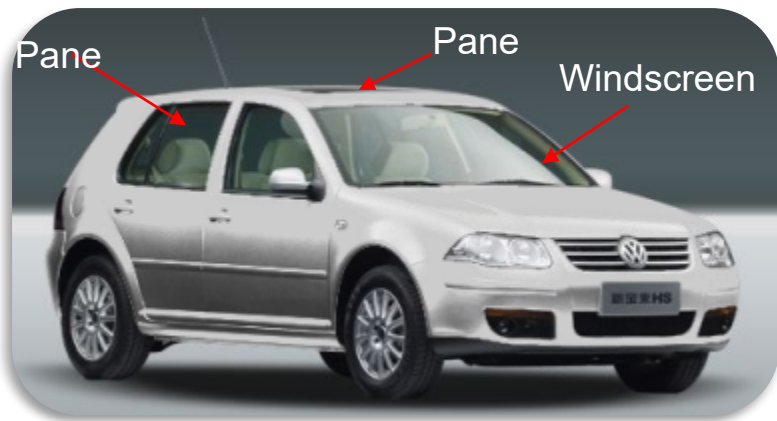
- 载人车辆
- 非载人车辆

根据安装部位

- 风窗玻璃
- 风窗以外玻璃

根据材质

- 钢化玻璃
- 普通夹层玻璃
- 钢化夹层玻璃
- 塑玻
- 硬质塑料
- 夹层硬质塑料
- 多种复合材料



汽车安全玻璃分类

Tests	Windscreen							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										
- 227g ball	-	-	A6/4.3	A6/4.3	A6/4.3	A6/4.3	A6/4.3	A5/3.1	A7/3	A11/3
- 2 260g ball	-	-	A6/4.2	A6/4.2	A6/4.2	A6/4.2	A6/4.2	-	-	-
Headform test ⁽¹⁾	A4/3	A4/3	A6/3	A6/3	A6/3	A6/3	A10/3	-	-	-
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 ⁽²⁾	A9/2 ⁽²⁾	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 ⁽²⁾	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 ⁽³⁾	-	-
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 ⁽³⁾	-	-
Resistance to temperature changes	-	A3/8	-	A3/8	-	A3/8	A3/8	A3/8 ⁽²⁾	A3/8 ⁽²⁾	A3/8
Fire resistance	-	A3/10	-	A3/10	-	A3/10	A3/10	A3/10 ⁽²⁾	A3/10 ⁽²⁾	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 ⁽²⁾	A3/11.2.1 ⁽²⁾	A3/11.2.1

⁽¹⁾ Furthermore this test shall be carried out on multiple-glazed units pursuant to Annex 12 Paragraph 3 (A12/3).

⁽²⁾ If coated on the inner side with plastics material.

⁽³⁾ 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 40km/h.

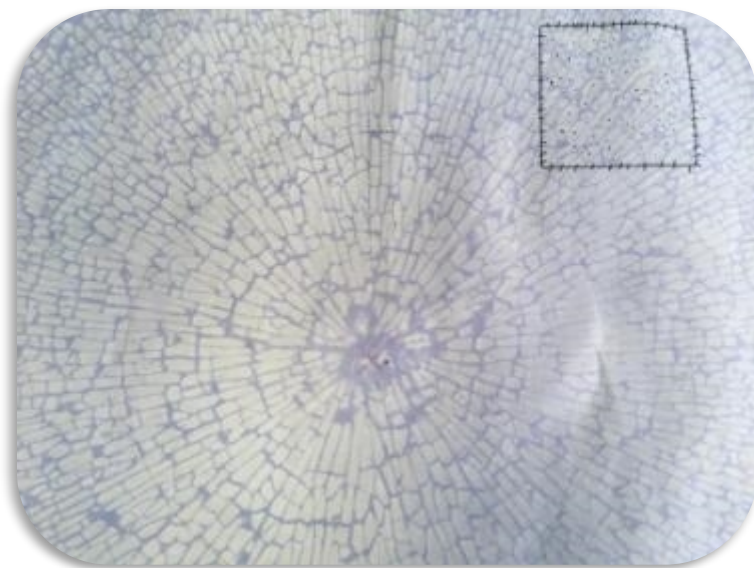
Note: A reference such as A4/3 in the table indicates the Annex (4) and Paragraph (3) of that Annex, where the relevant test is described and the acceptance requirements are specified.

汽车安全玻璃分类

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
227g ball	A17/5	A19/5.2	A14/5	A14/5	A18/4	A18/5	A16/5	A16/5	A15/4
2,260g ball	–	A19/5.1							
Headform ⁽¹⁾	A17/4	A19/4	A14/4	–	A18/4	–	A16/4	–	–
Light transmission ⁽²⁾	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 ⁽³⁾	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 ⁽²⁾	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	–	–	–	–	–	–	–

测试及实验室能力简介

- 碎片测试：测定玻璃破损后产生的碎片可能造成的人员受伤等风险



测试及实验室能力简介

- 机械性能：两种冲击测试，针对不同类型玻璃，测定安全玻璃抗冲击及穿透性能



测试及实验室能力简介

- 人头模型测试：模拟人头冲击玻璃后可能造成的风险



测试及实验室能力简介

- 环境影响：包括耐磨，耐高温，耐辐照（紫外），耐湿，耐温变，耐模拟环境（氙灯），十字划格（贴膜），用于测定安全玻璃耐受环境变化的能力



测试及实验室能力简介

- 光学性能：包括可见光透射比，光畸变，副相偏离，用于测定安全玻璃的各方面光学性能



测试及实验室能力简介

- 燃烧性能：使用水平燃烧法，测定安全玻璃材料耐火性能。主要针对贴膜玻璃，塑玻材料及塑料
- 耐化学性能：测定化学试剂对安全玻璃材料的影响
- 弯曲性能：主要针对塑料，用于区分样品属于硬质塑料还是弹性塑料



SGS

谢谢！

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