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CNAS L0690

TEST REPORT

Report No.: WT2020E09A00936

Entrusted by: Shenzhen China Gaoren Electrical New Materical Co., Ltd.

Sample Name: Laminated glass

Test Type: Entrustment Test

China National Safety Glass & Quartz Glass Test Center

China Building Materials Test and Certification Group Co., Ltd.

国检集团

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China National Safety Glass & Quartz Glass Test Center

Test Report

Sample name	Laminated glass	**Test type**	Entrustment test
Entrusted by	Shenzhen China Gaoren Electrical New Materical Co., Ltd.	**Trademark**	——
Manufactured by	Shenzhen China Gaoren Electrical New Materical Co., Ltd.	**Sample status**	Samples meet the test requirements
Reception date	November 11, 2020	**Sample quantity**	19 Pieces
Manufacture date/Batch number	——	**Model or size**	Shown on each data sheet
Test method	Shown on each data sheet	**Test date**	November 13, 2020-November 30, 2020
Criterion	GB 15763.3-2009 *Safety glazing materials in building—Part3: Laminated glass*		
Test item	High temperature resistance, humidity resistance, radiation resistance, ball impact peeling test and shot-bag impact test		
Test conclusion	* The test results of high temperature resistance, humidity resistance, radiation resistance and ball impact peeling test conform to the requirements in GB 15763.3-2009. The test results are shown on Page 2 to Page 6.* Date of issue: December 18, 2020 (Seal)		
Remark: Submitted by entrusting party: 1. Interlayer: 0.8mm EVA film; 2. Class of shot bag impact test: II-1.			

Approved by: **Checked by:** **Reported by:**

Laboratory address: No.1 Guanzhuang Dongli, Chaoyang District, Beijing, 100024, P.R. China
Tel: +86-10-51167681

Test item	High temperature resistance
Test method	GB 15763.3-2009 *Safety glazing materials in building---Part 3: Laminated glass*, clause 7.8
Criterion	Requirement of GB 15763.3-2009: 1. It is permitted for the specimens to bring forth cracks, but neither bubbles nor other defects shall be found beyond 13mm from the edges or any cracks developed during the test. 2. Three specimens shall be tested. If all the specimens meet the requirements, the test result is deemed to be satisfied. If one specimen meets the requirements, the result of the test is deemed to be failure. When two specimens meet the requirements, three new specimens shall be re-tested, and all the new specimens meet the requirements, the result of the test is deemed to be satisfied.
Test Results	
Sample No.	Status after high temperature resistance test
1	No bubbles nor other defects.
2	No bubbles nor other defects.
3	No bubbles nor other defects.
Item conclusion	**Pass**
Remark	1、Test address: Guanzhuang; 2、Main test equipment: Q-09 ZF-68 Boiling test chamber; 3、Sample size: Sample No.1: 300mm×300mm×9.57mm, Sample No.2: 300mm×300mm×9.49mm, Sample No.3: 300mm×300mm×9.51mm.

Checked by: 王瑾

Test item	Humidity resistance
Test method	GB/T 5137.3-2002 *Test methods of safety glazing materials used on road vehicles Part 3: for resistance to radiation, high temperature, humidity, fire and simulated weathering test*, clause 7
Criterion	Requirement of GB 15763.3-2009: 1. Neither bubbles nor other defects shall be found beyond 15mm from the uncut edges of the specimen, beyond 25mm from the cut edges or beyond 10mm from any cracks developed during the test. 2. Three specimens shall be tested, after the test, if all the specimens meet the requirements, the test result is deemed to be satisfied. If one specimen meets the requirements, the result of the test is deemed to be failure. When two specimens meet the requirements, three new specimens shall be re-tested, and all the new specimens meet the requirements, the result of the test is deemed to be satisfied.
Test Results	
Sample No.	Status after humidity resistance test
4	No bubbles nor other defects.
5	No bubbles nor other defects.
6	No bubbles nor other defects.
Item conclusion	**Pass**
Remark	1、Test address: Guanzhuang; 2、Main test equipment: J-42 HS-010B Constant temperature and humidity chamber; 3、Sample size: Sample No.4: 300mm×300mm×9.48mm, Sample No.5: 300mm×300mm×9.43mm, Sample No.6: 300mm×300mm×9.44mm.

Checked by: 王肯

Test item	Radiation resistance
Test method	*GB 15763.3-2009 Safety glazing materials in building---Part 3: Laminated glass, clause 7.10*
Criterion	Requirement of GB 15763.3-2009: (1) $\frac{\lvert T_1 - T_2 \rvert}{T_1} \times 100\% \leq 3\%$ where T_1: regular luminous transmittance before UV-irradiation T_2: regular luminous transmittance after UV-irradiation (2) After test, there shall not be any remarkable changes, like discoloration, bubble and turbidity, found in the specimen. (3) Three specimens shall be tested, after the test, if all the specimens meet the requirements, the test result is deemed to be satisfied. If one specimen meets the requirements, the result of the test is deemed to be failure. When two specimens meet the requirements, three new specimens shall be re-tested, and if all the new specimens meet the requirements, the result of the test is deemed to be satisfied.
Test Results	
Sample No.	Status after radiation resistance test
7	(1) $\frac{\lvert 82.3\% - 82.0\% \rvert}{82.3\%} \times 100\% = 0.4\%$ (2) After test, no remarkable changes, like discoloration, bubble and turbidity, is found in the specimen.
8	(1) $\frac{\lvert 82.2\% - 82.0\% \rvert}{82.2\%} \times 100\% = 0.2\%$ (2) After test, no remarkable changes, like discoloration, bubble and turbidity, is found in the specimen.
9	(1) $\frac{\lvert 82.5\% - 82.3\% \rvert}{82.5\%} \times 100\% = 0.2\%$ (2) After test, no remarkable changes, like discoloration, bubble and turbidity, is found in the specimen.
Item conclusion	**Pass**
Remark	1、Test address: Guanzhuang; 2、Main test equipment: Q-01 SGT-A Visible light transmittance meter, Q-32-5 SGR-III Radiation chamber; 3、Sample size: Sample No.7: 300mm×300mm×9.21mm, Sample No.8: 300mm×300mm×9.42mm, Sample No.9: 300mm×300mm×9.42mm.

Checked by: 王涛

Test item	Ball impact peeling test
Test method	GB 15763.3-2009 *Safety glazing materials in building---Part 3: Laminated glass*, clause 7.11
Criterion	Requirement of GB 15763.3-2009: 1. The interlayer shall not be torn or exposed portions due to the splinters detached from the test piece. 2. Six specimens shall be tested, after the test, if five or more samples meet the requirements, the result of the test is deemed to be satisfied. If three or less specimens meet the requirements, the result of the test is deemed to be failure. If four specimens meet the requirements, six specimens shall be re-tested. If all the new specimens meet the requirements, the result of the test is deemed to be satisfied.

Test Results

Sample No.	Thickness mm	Weight of the ball/g	Impact height/mm	Status after impact
10	9.32	1042	3000	The interlayer is not torn or exposed portions while one side broke.
11	9.30	1042	2400	The interlayer is not torn or exposed portions while one side broke.
12	9.31	1042	3000	The interlayer is not torn or exposed portions while one side broke.
13	9.32	1042	3800	The interlayer is not torn or exposed portions while one side broke.
14	9.36	1042	3000	The interlayer is not torn or exposed portions while one side broke.
15	9.28	1042	3800	The interlayer is not torn or exposed portions while one side broke.

Item conclusion	Pass
Remark	1、Test address: Guanzhuang; 2、Main test equipment: J-54-4 Micrometer (Digital display), Q-37 MCJ-6 Impact machine; 3、Sample size: 610mm×610mm.

Checked by: 王资

Test Report

Report Number: WT2020E09A00936

Test item	**Shot-bag impact test**
Test method	GB 15763.3-2009 *Safety glazing materials in building---Part 3: Laminated glass*, clause 7.12
Criteria	Requirement of GB 15763.3-2009: II-1: 3 group test pieces shall be tested at a height of 300mm, 750mm and 1200mm.After impact all the specimens shall not break and/or shall break safely. II-2: 2 group test pieces shall be tested at a height of 300mm and 750mm. After impact all the specimens shall not break or shall break safely. But another group test pieces shall be tested at height of 1200mm, any sample shall break unsafely. III: 1 group test pieces shall be tested at a height of 300mm. After impact all the specimens shall not break and/or break safely. But another group test pieces shall be tested at height of 1200mm, any sample shall be break unsafely. The requirements of the specimens which break safely: a) When breakage occurs with appearance of numerous cracks and fissures, but remains substantially in one piece and no tear or shear or opening develops within the vertical specimens through which a 76 mm diameter sphere can pass using a force of 25 N. b) When breakage occurs, the crack-free particles shall be selected within 3 minutes subsequent to the impact and shall weigh no more than the equivalent weight of 100cm^2 of the original specimen. The largest single particle shall weigh less than the mass equivalent to 44cm^2 of the original specimen.

Test Result

Sample No.	Thickness mm	Impact height /mm: 300 — Status after impact / weight of detached particles(g)/ weight of the largest particle(g)	300 — 76mm ball can pass through or not	750 — Status after impact / weight of detached particles(g)/ weight of the largest particle(g)	750 — 76mm ball can pass through or not	1200 — Status after impact / weight of detached particles(g)/ weight of the largest particle(g)	1200 — 76mm ball can pass through or not
16	10.45	——	——	——	——	Broke safely/0/0	No
17	10.23	——	——	——	——	Broke safely/0/0	No
18	10.30	——	——	——	——	Broke safely/0/0	No
19	10.43	——	——	——	——	Broke safely/0/0	No
——							

Classification	——
Item conclusion	——
Remarks	1. Test address: Guanzhuang; 2. Main test equipment: J-02 SBI-II Shot-bag impact machine, J-54-1 Micrometer (digital display), J-76 HP-100 Digital display force gauge; 3. Sample size: 1930mm×864mm; 4. Requirement submitted by entrusting party: The height of shot bag impact test is 1200mm.

Checked by: 王源

The end of the report