

TEST REPORT

No. : SHIN190501476CCM

Date : Jun. 06, 2019

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CUSTOMER NAME: DONGGUAN SAIDE GLASS CO., LTD
ADDRESS: 1 BAOYUAN 1ST ROAD, TANGXIA, DONGGUAN

Sample Name : 8MM ULTRA-CLEAR GLASS
Manufacturer : DONGGUAN SAIDE GLASS CO., LTD
supplier : DONGGUAN SAIDE GLASS CO., LTD

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

Test Required : Please see the next page(s)
Test Method : EN 12150-1:2015
SGS Ref. No. : NBHL1905008084PL
Date of Receipt : May. 23, 2019
Testing Start Date : May. 23, 2019
Testing End Date : Jun. 06, 2019
Test result(s) : For further details, please refer to the following page(s)
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for
SGS-CSTC Standards Technical
Services (Shanghai) Co., Ltd.



Tiffany Liu
Authorized signatory



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Summary of Result(s):

| No. | Test Item | Test Method | Test Result | Conclusion |
|-----|---|---|-------------|------------|
| 1 | Dimension and tolerance | EN 12150-1:2015 section 6 | See result | Pass |
| 2 | Fragmentation test | EN 12150-1:2015 section 8 | See result | Pass |
| 3 | Thermal durability | EN 12150-1:2015 section 9.3 | See result | Pass |
| 4 | Mechanical strength | EN 12150-1:2015 section 9.4 & EN 1288-3:2000 | See result | Pass |
| 5 | Classification of performance under accidental human impact | EN 12150-1:2015 section 9.5 & EN 12600:2002 | See result | / |

Note: Pass: Meet the requirements;
 Fail: Does not meet the requirements;
 /: Not Apply to the judgment.



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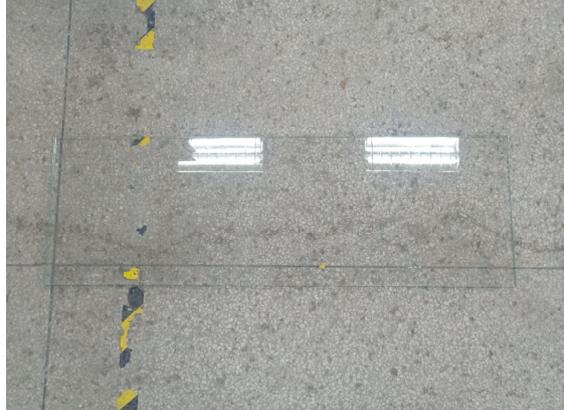
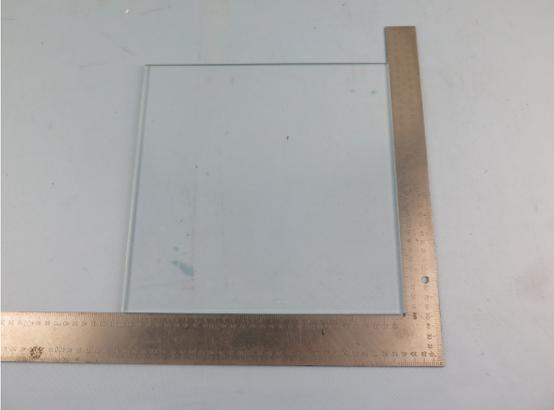
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Original sample photo(s):

| | |
|---|--|
|  |  |
| <p>Dimension and tolerance/ Classification of performance under accidental human impact</p> | <p>Fragmentation test/ Mechanical strength</p> |
|  | |
| <p>Thermal durability</p> | |



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1. Test item: Dimension and tolerance

Test method: EN 12150-1:2015 section 6

Test condition:

Specimen: 1939mm×876m×8mm, 1pc

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

| Test Item | | Test Result | | Requirement | Conclusion |
|--|-------------|-------------|---------|--|------------|
| Nominal thickness and thickness tolerances | | 7.78mm | -0.22mm | ±0.3mm (Nominal Thickness 8mm) | Pass |
| | | 7.84mm | -0.16mm | | |
| | | 7.79mm | -0.21mm | | |
| | | 7.84mm | -0.16mm | | |
| Length | | 1939mm | | — (Client does not declare the nominal length and width.) | — |
| Width | | 876mm | | | |
| Squareness | | 0mm | | ≤4mm | Pass |
| Flatness | Overall bow | 0.18 mm/m | | ≤3.0mm/m | Pass |
| | Roller Wave | 0.02 mm | | ≤0.3mm | |
| | Edge lift | 0.07 mm | | ≤0.3mm | |



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2. Test item: Fragmentation test

Test method: EN 12150-1:2015 section 8

Test condition:

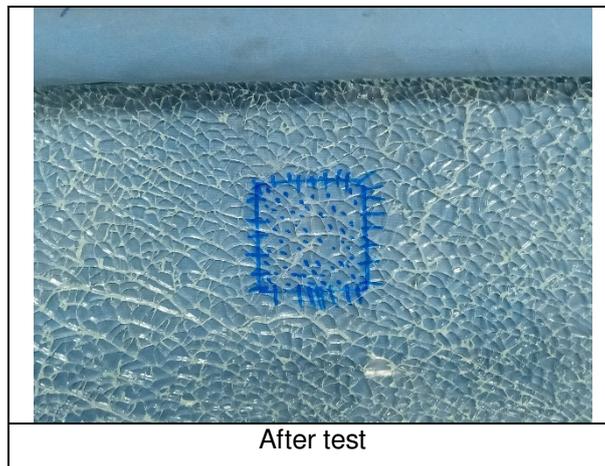
Specimen: 1100mm×360mm×8mm, 5pcs

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

| Test Item | Test Result | Requirement | Conclusion |
|--------------------|---|--|------------|
| Fragmentation test | Particle count of 5 specimens were 65,75,73,82 and 71, particle with longest length were 16.09mm, 12.73mm, 18.14mm, 14.35mm and 16.78mm | 5 specimens must be tested and meet the requirements: ①In any area of 50mm×50mm, the minimum particle count shall not be less than 40 pieces; ②A few long fragment will be allowed, but the length of the longest particles shall not exceed 100mm | Pass |

Test photo:



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3. Test item: Thermal durability

Test method: EN 12150-1:2015 section 9.3

Test condition:

Specimen: 300mm×300mm×8mm, 3pcs

Temperature difference: 200K

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

| Test Item | Test Result | Requirement | Conclusion |
|--------------------|---|--|------------|
| Thermal durability | Specimens remained unbroken when sudden temperature change and temperature differential were 200K | Specimen must resist against sudden temperature changes and temperature differentials up to 200K | Pass |



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4. Test item: Mechanical strength

Test method: EN 12150-1:2015 section 9.4 & EN 1288-3:2000

Test condition:

Specimen:1100mm×360mm×8mm, 10pcs

Test rate: 38.4N/s

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

| Test Item | Test Result | | Requirement | Conclusion |
|--|---------------|--|------------------------|------------|
| | Average value | bending strength σ_{bB} (5% Fractile for a confidence level of 95%) | | |
| Mechanical strength (N/mm ²) | 162.5 | 133.4 | $\sigma_{bB} \geq 120$ | Pass |

Original data:

| Test Item | Test Result | | | | | | Ave. | σ_{bB} |
|--|-------------|-------|-------|-------|-------|-------|-------|---------------|
| | Ind. | | | | | | | |
| Mechanical strength (N/mm ²) | 146.5 | 167.8 | 154.4 | 180.0 | 141.2 | 162.5 | 133.4 | |
| | 168.7 | 181.8 | 140.4 | 166.1 | 178.5 | | | |



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5. Test item: Classification of performance under accidental human impact

Test method: EN 12150-1:2015 section 9.5 & EN 12600:2002

Test condition:

Specimen:1939mm×876mm×8mm, 12pcs

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

| Test Item | Test result |
|---|---|
| Classification of performance under accidental human impact | Performance Classification: 1(C)1 (See note) |

Note: The safety glass should be classified by testing in accordance with EN 12600. The performance classification should be given as:

$\alpha(\beta)\Phi$

where,

α is the highest drop height class at which the product either did not break or broke in accordance with

a) or b) of clause 4 of EN 12600:

- Numerous cracks appear, but no shear or opening is allowed within the test piece through which a 76 mm diameter sphere can pass when a maximum force of 25N is applied. Additionally, if particles are detached from the test piece up to 3min after impact, they shall, in total, weigh no less than the mass equivalent to 10 000mm² of the original test piece. The largest single particle shall weigh less than the mass equivalent to 400mm² of the original test piece.
- Disintegration occurs and the 10 largest crack-free particles collected within 3 min after impact and weighed, all together, within 5 min of impact shall weigh no more than the mass equivalent to 6500mm² of the original test piece. The particles shall be selected only from the portion of the original test piece exposed in the test frame. Only the exposed area of any particle retained in the test frame shall be taken into account in determining the mass equivalent.



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| Classification | Drop height(mm) |
|----------------|-----------------|
| 3 | 190 |
| 2 | 450 |
| 1 | 1200 |

β is the mode of breakage;

Type A – mode of breakage typical of annealed glass;

Type B – mode of breakage typical of laminated glass;

Type C – mode of breakage typical of toughened glass;

Φ is the highest drop height class at which the product either did not break or when broke, broke in accordance with a) of clause 4 of EN 12600.

The detail of accidental human impact:

At 190mm: all 4 specimens did not break;

At 450mm: all 4 specimens did not break;

At 1200mm: all 4 specimens did not break;

So, the performance classification is given as 1(C)1

***** End of report*****

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