intertek
Total Quality. Assured.

TEST REPORT
EN 12150-1
GLASS IN BUILDING-THERMALLY TOUGHENED SODA LIME SILICATE SAFETY GLASS PART 1: DEFINITION AND DESCRIPTION

Report Reference No. ..... :	220413024GZU-001
Tested by (name and signature) ..... :	Ziqing Chen Project Engineer
Approved by (name and signature) .. :	Jeff Deng Manager
Date of original issue ..... :	April 25, 2022
Date of revised issue ..... :	------
Contents ..... :	Total test report 8 pages including: Report text: 5 pages Appendix A for test data: 1 page Appendix B for product photos: 1 page Appendix C for revision page: 1 page
Testing Laboratory name ..... :	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address ..... :	Room 4103 & 4203, No. 63, Punan Road, Huangpu District, Guangzhou, Guangdong Province, China
Testing location ..... :	Same as above
Applicant's name ..... :	Luoyang LandGlass Technology Co., Ltd.
Address ..... :	North side of the crossroad of keji Avenue and Zhuge Avenue, Yibin District, Luoyang City, Henan Province, P.R.China
Test specification:	
Standard ..... :	EN12150-1:2015 +A1:2019 (E)
Non-standard test method ..... :	N/A
Test Report Form No ..... :	TTRF_EN12150-1_c
TTRF Originator ..... :	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Master TTRF ..... :	Dated 2020-6-4
Test item description ..... :	Tempered Vacuum Insulated Glass
Trade Mark ..... :	LandVac
Model and/or type reference ..... :	4T+0.3V+4TL
Manufacturer ..... :	Luoyang LandGlass Technology Co., Ltd.
Rating(s) ..... :	—

CONCLUSION:

The submitted samples were tested and found to **COMPLY WITH** clause 6, 8, 9.3, 9.4 and 9.5 of EN12150-1:2015 +A1:2019 (E).

Test item particulars:	
Classification of installation and use ..... :	—
Supply Connection..... :	—
Possible test case verdicts:	
- Test case does not apply to the test object ..... :	N/A
- Test object does meet the requirement ..... :	P (Pass)
- Test object does not meet the requirement ..... :	F (Fail)
Testing:	
Date of receipt of test item..... :	April 12, 2022
Date (s) of performance of tests..... :	April 12, 2022 – April 24, 2022

General remarks:

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
"(See remark #)" refers to a remark appended to the report.
"(See Appendix #)" refers to an appendix appended to the report.
When determining the test result, measurement uncertainty has been considered.
The clause which indicated with * is the subcontract test item.
All the tests results give the statement of conformity refer to the decision rule of "Procedure 2 "Accuracy Method" as stated in the IEC Guide 115:2007.
The revised report replaces the report of the previous version.

General product information:

Tempered vacuum insulated glass assembled by two tempered glass, flat, transparent.

Nominal thickness: 8.3mm (4T+0.3V+4TL)

Sample used for testing: 1938×876mm, 1100×360mm, 300×300mm

EN 12150-1			
Clause	Requirement - Test	Result - Remark	Verdict
6.1	Nominal thickness and thickness tolerances The nominal thickness and thickness tolerance are those given in the relevant product standard, some of which are reproduced in table 1 in this standard.	See test result on page 6.	P[1]
6.2.1	Width and length (sizes) General When thermally toughened soda lime silicate safety glass dimensions are quoted for rectangular panes. It shall be made clear which dimension is the width, B, and which is the length, H, when related to its installed position.	The shape of sample is rectangular. H: 1937mm B: 876mm	P[1]
6.2.2	Maximum and minimum sizes For maximum and minimum sizes, the manufacturer should be consulted.	N/A	N/A
6.2.3	Tolerances and squareness The nominal dimensions for width and length being given, the tolerances of finished pane sizes shall comply the tolerances given in Table 2 of this standard.	Maximum length deviation: -1mm Maximum width deviation: -1mm	P[1]
6.2.4	Edge deformation produced by the vertical process For vertical toughening glass, the centres of the tong marks are situated up to a maximum of 20 mm in from the edge. A deformation of the edge less than 2 mm can be produced in the region of the tong mark and there may also be an area of optical distortion. These deformations are included in the tolerances in Table 2 of this standard.	No tong marks were found on the surface of sample.	P[1]

EN 12150-1			
Clause	Requirement - Test	Result - Remark	Verdict
6.3	Flatness The maximum allowable values for the overall bow when measured according to 6.3.2, and local bow, when measured according to 6.3.3, for glass without holes and/or notches and/or cut-out are given in table 4 of this standard.	See test result on page 6.	P[1]
	Glass Type: Max allowable value for distortion — Overall bow (mm/m); Local distortion (mm/300mm) All [a]: 5.0; 1.0		
	[a] For enamelled glass which is not covered over the whole surface the manufacturer should be consulted.		
8	Fragmentation test The fragmentation test determines whether the glass breaks in the manner prescribed for a thermally toughened soda lime silicate safety glass. The minimum particle count values: Nominal thickness 2mm: minimum 15 Nominal thickness 3mm: minimum 15; Nominal thickness 4-12mm: minimum 40. Nominal thickness 15-25mm: minimum 30 In order to classify the glass as thermally toughened soda lime silicate safety glass, the length of the longest particle shall not exceed 100 mm.	5 specimens with nominal size 1100mmX360mm were tested. See test result on page 4 for the value of the particle count and longest particle.	P[1]
9	Other physical characteristic		
9.3	Thermal durability The mechanical properties of thermally toughened soda lime silicate safety glass are unchanged for continuous service up to 250℃ and are unaffected by sub-zero temperatures. Thermally toughened soda lime silicate safety glass is capable of resisting both sudden temperature changes and temperature differentials up to 200k.	Specimen size: 300mmX300mm Test method: ISO 718: 1990 The model could withstand service of a temperature change of 200k.	P[1]

EN 12150-1			
Clause	Requirement - Test	Result - Remark	Verdict
9.4	Mechanical strength The mechanical strength of the tempered glass was determined according to EN 1288-3 For the float type of glass, the values for mechanical strength shall more than 120 N/mm².	See test result on page 6.	P[1]
9.5	Classification of performance under accidental human impact. Pendulum body impact resistance shall be determined and classified in accordance with EN12600.	See test result on page 6.	P[1]

Note 1: The product is vacuum glass assembled by two tempered glass and the result was judged according to tempered glass.

**********End of Page**********

Appendix A
Test data

Test result of Clause 6.1 of EN12150-1

4T+0.3V+4TL Tempered Vacuum Insulated Glass

Sample No.	4 sides thickness (mm)			
1	8.13	8.18	8.20	8.24
2	8.15	8.16	8.16	8.17
3	8.14	8.15	8.16	8.17

Test result of Clause 8 of EN12150-1

4T+0.3V+4TL Tempered Vacuum Insulated Glass

Sample No.	Overall bow (mm/m)	Local distortion (mm/300mm)
1	1.11	0.10
2	1.06	0.10
3	1.06	0.10

Test result of Clause 8 of EN12150-1

4T+0.3V+4TL Tempered Vacuum Insulated Glass

Sample No.	Total particles	Longest length (mm)
1	82	14.51
2	99	9.98
3	55	36.27
4	62	19.97
5	78	19.78

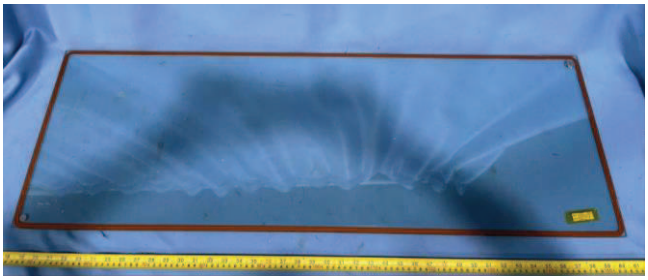
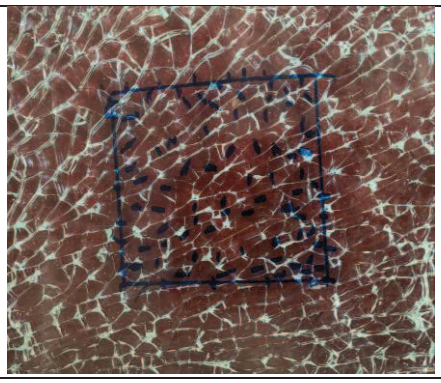
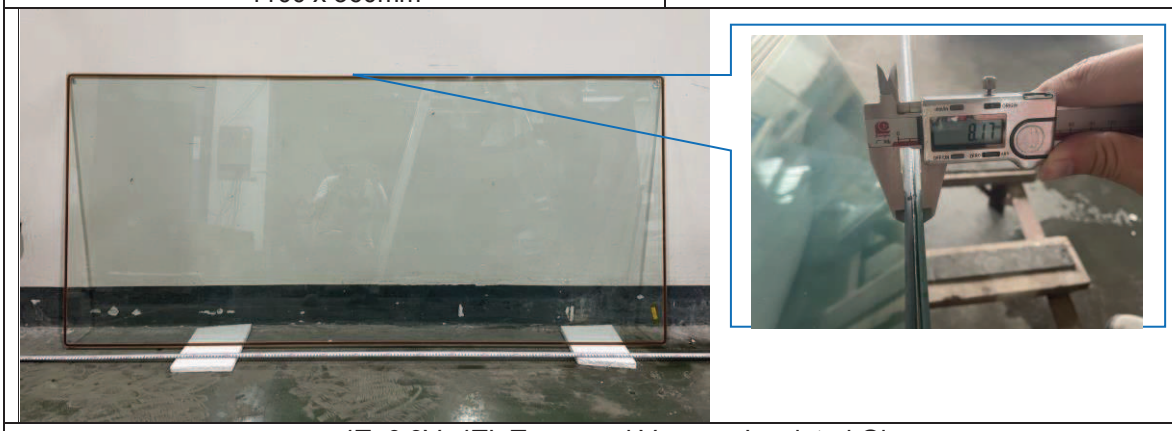
Test result of Clause 9.4 of EN12150-1

Bending strength (Unit: N/mm²)	Minimum	Average
4T+0.3V+4TL Tempered Vacuum Insulated Glass	125	147

Test result of Clause 9.5 of EN12150-1

Item	Drop height class	Mode of breakage
4T+0.3V+4TL Tempered Vacuum Insulated Glass	Class 1	1(C)3

Appendix B
Product photos

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>4T+0.3V+4TL Tempered Vacuum Insulated Glass
1100 x 360mm</td><td>Fragment</td></tr>
<tr><td colspan="2">  </td></tr>
<tr><td colspan="2">4T+0.3V+4TL Tempered Vacuum Insulated Glass
1938 x 876mm</td></tr>
</table>

Appendix C
Revision page

Revision No.	Date	Changes	Author	Reviewer
0	April 25, 2022	First issue	Ziqing Chen	Jeff Deng

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