



**TEST REPORT**

**Report No.:** F7090.01-109-44

**Rendered to:**

LUOYANG LANDGLASS TECHNOLOGY CO., LTD.  
Luoyang  
CHINA

**PRODUCT TYPE:** Tempered Vacuum Insulated Glass  
**SERIES/MODEL:** LandVac 5L4

Title	Summary of Results
Design Pressure	±7200 Pa (±150.38 psf)

Reference must be made to Report No. F7090.01-109-44, dated 09/08/16 for complete test specimen description and detailed test results.

**1.0 Report Issued To:** Luoyang LandGlass Technology Co., Ltd.  
Guangjian Building, No. 12  
Wangcheng Road, Luoyang 471000  
CHINA

**2.0 Test Laboratory:** Architectural Testing, Inc., an Intertek company ("Intertek-ATI")  
130 Derry Court  
York, Pennsylvania 17406-8405  
717-764-7700

**3.0 Project Summary:**

**3.1 Product Type:** Tempered Vacuum Insulated Glass

**3.2 Series/Model:** LandVac 5L4

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test method(s). Test specimen description and results are reported herein.

**3.4 Test Date(s):** 08/22/16 – 08/29/16

**3.5 Test Record Retention End Date:** All test records for this report will be retained until August 29, 2020.

**3.6 Test Location:** Intertek-ATI test facility in York, Pennsylvania

**3.7 Test Specimen Source:** The test specimen(s) was provided by the client. Representative samples of the test specimen(s) were returned per the client's request.

**3.8 Drawing Reference:** The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix B Any deviations are documented herein or on the drawings.

**3.9 List of Official Observers:**

<u>Name</u>	<u>Company</u>
Timothy J. McGill	Intertek-ATI
Richard E. Hartman III	Intertek-ATI

**4.0 Test Method(s):**

ASTM E1233 (Procedure B – Extreme Wind Test), *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Cyclic Air Pressure Differential*

**5.0 Test Specimen Description:**

**5.1 Product Sizes:**

Overall Area: 1.7 m <sup>2</sup> (18.7 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	889	35	1949	76-3/4
Fixed daylight opening	864	34	1930	76

**5.2 Frame Construction:**

Frame Member	Material	Description
All members	Aluminum	1" by 1" angle used to glaze the specimen

	Joinery Type	Detail
All corners	Mitered	Miter cut

**5.3 Glazing:** *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Interior Lite	Spacer Type	Exterior Lite	Glazing Method
3/8" VIG	3/16" Tempered	0.01" Steel micro pillars	5/32" Tempered	The glass was set from the exterior onto foam glazing tape against a 1" by 1" aluminum angle. The glass was secured by using a 1" by 1" aluminum angle with foam glazing tape set onto the glazing. A silicone heel bead was applied to the interior glazing.

**5.4 Weatherstripping:** No weatherstripping was utilized.

**5.0 Test Specimen Description:** (Continued)

**5.5 Drainage:** No drainage was utilized.

**5.6 Hardware:** No hardware was utilized.

**6.0 Installation:**

The specimen was installed into a Spruce-Pine-Fir wood buck. The exterior perimeter of the window was sealed with silicone.

Location	Anchor Description	Anchor Location
Aluminum frame	#10 x 1-1/2" pan head screws	Located 6" from the corners and spaced 12" on center

**7.0 Test Results:** The temperature during testing was 31°C (87°F). The results are tabulated as follows:

Title of Test	Deflection	Permanent Deformation	Allowed	Note
<b>Uniform Load,</b> per ASTM E1233 Deflections taken at center of glazing +7200 Pa (+150.38 psf) -7200 Pa (-150.38 psf)	13.7 mm (0.54") 14.2 mm (0.56")	1 mm ( 0.04") 1 mm (0.04")	Report only	1, 2
<b>Cyclic Wind Load,</b> Per ASTM E1233 Permanent sets taken at center of glazing +4309 Pa (+90.00 psf) -4309 Pa (-90.00 psf)	10.9mm (0.43") 9.4 mm (0.37")	2 mm ( 0.08") 0.3 mm (0.01")	Report only	1
<b>Cyclic Wind Load,</b> Per ASTM E1233 Permanent sets taken at center of glazing +5746 Pa (+120.00 psf) -5746 Pa (-120.00 psf)	13.2 mm 0.52") 11.9 mm (0.47")	2.3 mm ( 0.09") 0.8 mm (0.03")	Report only	1
<b>Cyclic Wind Load,</b> Per ASTM E1233 Permanent sets taken at center of glazing +7182 Pa (+150.00 psf) -7182 Pa (-150.00 psf)	15.0 mm (0.59") 14.2 mm (0.56")	2.8 mm ( 0.11") 1 mm (0.04")	Report only	1
<b>Uniform Load,</b> per ASTM E1233 Deflections taken at center of glazing +10,800 Pa (+225.56 psf) -10,800 Pa (-225.56 psf)	17.5 mm (0.69") 18.8 mm (0.74")	0.8 mm ( 0.03") 0.8 mm (0.03")	Report only	1, 2

## 7.0 Test Results: (Continued)

**General Note:** *All testing was performed in accordance with the referenced standard(s).*

*Note 1: No observable damage during or after test.*

*Note 2: Loads were held for 10 seconds.*

*Note 3: Tape and film were not used to seal against air leakage during structural testing.*

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For ARCHITECTURAL TESTING, INC.:

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Richard E. Hartman III  
Technician

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Timothy J. McGill  
Manager – Product Testing

REH:asm/cmd

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Photograph(s) (1)

Appendix B: Drawing(s) (1)

This report produced from controlled document template ATI 00479, revised 06/19/15.

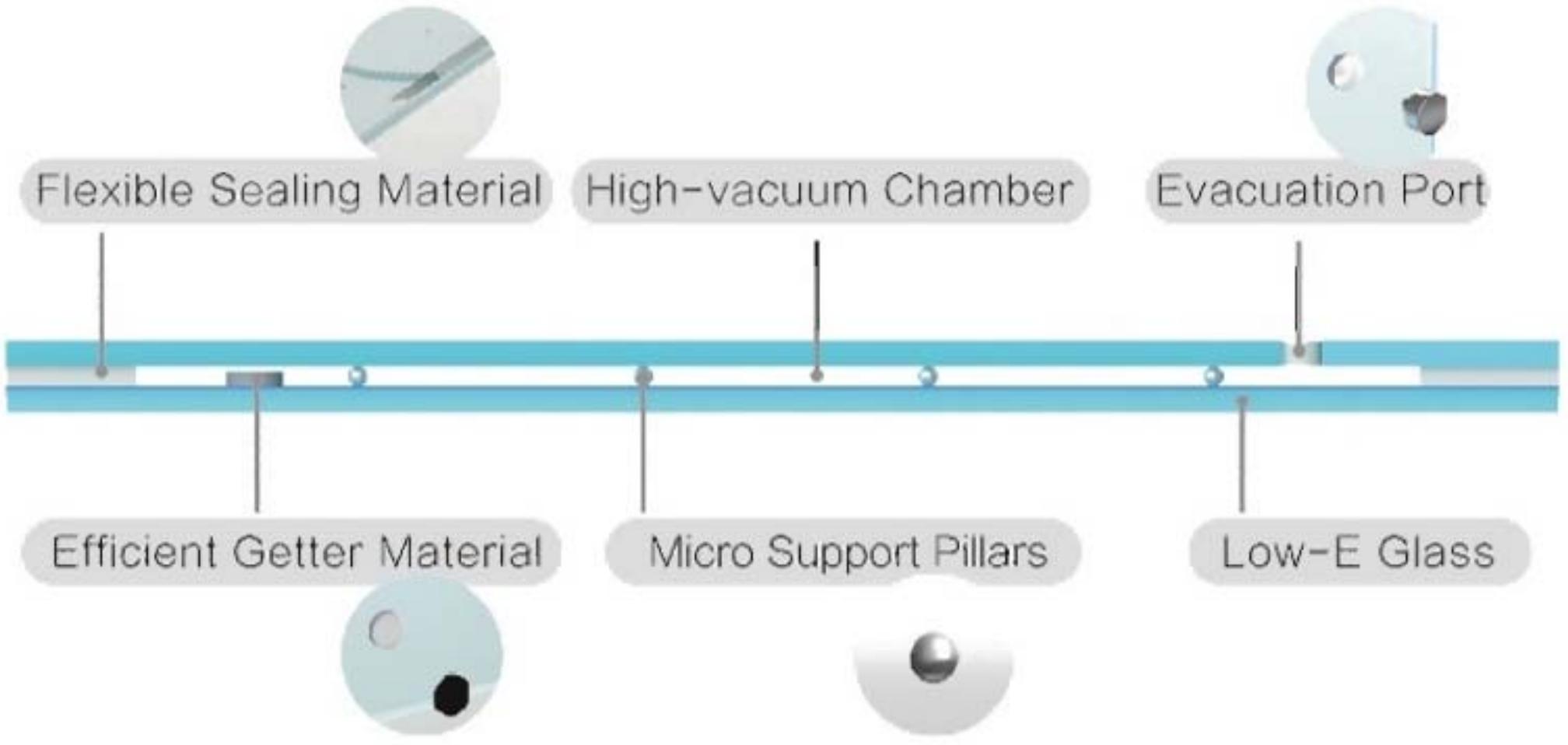
**Appendix A**  
**Photograph(s)**



**Photo No. 1**  
**View of Tested Specimen**

**Appendix B**

**Drawing(s)**



Flexible Sealing Material

High-vacuum Chamber

Evacuation Port

Efficient Getter Material

Micro Support Pillars

Low-E Glass