# TEST REPORT

**AAMA/WDMA/CSA 101/I.S.2/A440-11**

**REPORT NO.:** 1391.02-106-11

**RENDERED TO:** GAMCO CORPORATION  
Flushing, New York

**PRODUCT TYPE:** Aluminum fixed window

**SERIES / MODEL:** W250C

<table>
<thead>
<tr>
<th>Test</th>
<th>Summary of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Product Designator</td>
<td>Class CW – PG30 1524 x 1524 (60 x 60)-FW</td>
</tr>
<tr>
<td>Design Pressure</td>
<td>±1440 Pa (±30.08 psf)</td>
</tr>
<tr>
<td>Air Infiltration</td>
<td>&lt;0.1 L/s/m² (&lt;0.01 cfm/ft²)</td>
</tr>
<tr>
<td>Water Penetration Resistance Test Pressure</td>
<td>220 Pa (4.60 psf)</td>
</tr>
</tbody>
</table>

**Test Completion Date:** 11/20/2017

PROJECT SUMMARY:

PRODUCT TYPE: Aluminum fixed window

SERIES/MODEL: W250C

PROJECT SUMMARY: Molimo, LLC was contracted to perform testing on the above referenced product. The results are tested values and were secured by using the designated test methods. A summary of the rating achieved for the specimen tested are shown in the table below.

<table>
<thead>
<tr>
<th>SPECIMEN</th>
<th>SPECIFICATION</th>
<th>PRODUCT RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>101/I.S.2/A440-11</td>
<td>Class CW – PG30 1524 x 1524 (60 x 60)-FW</td>
</tr>
</tbody>
</table>

PROJECT DETAILS:

Test Dates: 11/20/2017 – 11/21/2017

Test Record Retention End Date: 11/21/2021

Test Location: Crystal Window and Door Systems, Ltd. test facility in Flushing, New York. In accordance with AAMA 205.01, calibration of manufacturers' test equipment is documented under Report No. 1391.01-106-11.

Test Specimen Source: The test specimen was provided by the client. Representative samples of the test specimen will be retained by Molimo for a minimum of four years from the test completion date.

Drawing Reference: The test specimen drawings were supplied by the client. The test specimen construction was verified by Molimo and was found to be representative of the product tested. Test specimen drawings are located in Appendix D of this report.
WITNESSES:
The following representatives witnessed all or part of the testing.

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qi Zhang</td>
<td>Gamco Corporation</td>
</tr>
<tr>
<td>Charles Ng</td>
<td>Crystal Window &amp; Doors</td>
</tr>
<tr>
<td>Matt Hollinger</td>
<td>Molimo, LLC</td>
</tr>
</tbody>
</table>

TEST METHOD:

TEST SPECIMEN DESCRIPTION:

PRODUCT SIZES:
Test Specimen #1:
Overall Size: 1524 mm x 1524 mm (60" x 60")
Overall Area: 2.32 m² (25 ft²)

FRAME CONSTRUCTION:
Material: Thermally improved, poured and debridged, extruded aluminum
Corner Details: Miter-cut, sealed with sealant and secured with two interior aluminum corner keys with one lanced stake per key per member end

REINFORCEMENT: No reinforcement was utilized.

GLAZING DETAILS: No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen can be made.

Glass Type: 1" IG
Glazing Construction: (exterior to interior)
  1/4" thick annealed glass
  1/2" spacer
  1/4" thick annealed glass
Glazing Method: Set from the interior against a glazing compound and secured with snap-in aluminum glazing beads with a gasket against the glass.
Glazing Bite: 1/2"
Daylight Opening:
  Exterior Sash: 1407 mm x 1407 mm (55-3/8" x 55-3/8")
TEST SPECIMEN DESCRIPTION: (Continued)

WEATHERSTRIPPING: No weatherstripping was utilized.

DRAINAGE: Exterior weeps

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/4&quot; wide by 5/16&quot; high weepslot with cover</td>
<td>2</td>
<td>Sill face, 5&quot; from each end</td>
</tr>
</tbody>
</table>

INSTALLATION: The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/2" shim space. The exterior perimeter of the specimen was sealed with sealant.

<table>
<thead>
<tr>
<th>Location</th>
<th>Anchor Description</th>
<th>Anchor Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, sill, and jambs</td>
<td>#8 x 2-1/2&quot; pan head screws</td>
<td>5&quot; from corners and spaced 16&quot; on center, through the frame into the wood buck</td>
</tr>
</tbody>
</table>

TEST RESULTS: The temperature during testing was 9 °C (48 °F).

AIR LEAKAGE TESTING: (per ASTM E 283)

<table>
<thead>
<tr>
<th>Test</th>
<th>Results</th>
<th>Allowable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infiltration @ 75 Pa (1.57 psf)</td>
<td>&lt;0.1 L/s/m² (&lt;0.01 cfm/ft²)</td>
<td>1.5 L/s/m² (0.30 cfm/ft²)</td>
</tr>
</tbody>
</table>

Note 2: The specimen tested meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

WATER PENETRATION TESTING: (per ASTM E 547)

<table>
<thead>
<tr>
<th>Test</th>
<th>Results</th>
<th>Allowable</th>
</tr>
</thead>
<tbody>
<tr>
<td>220 Pa (4.60 psf)</td>
<td>Pass</td>
<td>No Leakage</td>
</tr>
</tbody>
</table>

Note 3: Water Penetration testing was performed without an insect screen.
TEST RESULTS: (Continued)

UNIFORM LOAD TESTING: (per ASTM E 330)

<table>
<thead>
<tr>
<th>Design Pressure Test</th>
<th>Results</th>
<th>Allowable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deflection measured at the left jamb between anchors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+1440 Pa (+30.08 psf)</td>
<td>&lt;0.3 mm (&lt;0.01&quot;)</td>
<td>2.5 mm (0.10&quot;)</td>
</tr>
<tr>
<td>-1440 Pa (-30.08 psf)</td>
<td>&lt;0.3 mm (&lt;0.01&quot;)</td>
<td>2.5 mm (0.10&quot;)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structural Test</th>
<th>Results</th>
<th>Allowable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Set measured at the left jamb between anchors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+2160 Pa (+45.11 psf)</td>
<td>&lt;0.3 mm (&lt;0.01&quot;)</td>
<td>1.3 mm (0.05&quot;)</td>
</tr>
<tr>
<td>-2160 Pa (-45.11 psf)</td>
<td>&lt;0.3 mm (&lt;0.01&quot;)</td>
<td>1.3 mm (0.05&quot;)</td>
</tr>
</tbody>
</table>

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation and is recorded for information purposes only.

Note 5: All loads were held for 10 seconds.

Note 6: Tape and film were not used to seal against air leakage.

SECONDARY TESTING:

<table>
<thead>
<tr>
<th>Test</th>
<th>Results</th>
<th>Allowable</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORCED ENTRY RESISTANCE per ASTM F 588</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type: D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade: 10</td>
<td>Pass</td>
<td>No Entry</td>
</tr>
</tbody>
</table>

General Note: All testing was performed in accordance with reference test methods.
A copy of this report, detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Molimo, LLC for the entire test record retention period. At the end of this retention period, the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. This test 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 permission of Molimo, LLC.

For MOLIMO, LLC:

Matthew Hollinger  
Senior Project Engineer

Michael D. Stremmel, P.E.  
Senior Project Engineer

Attachments (pages): This report is complete only when all attachments listed are included.
  Appendix-A: Alteration Addendum (1)
  Appendix-B: Air Seal Location (1)
  Appendix-C: Photograph (1)
  Appendix-D: Drawings (4)

This report was produced from controlled document template MMO 00012, Rev 1, 11/28/2016.
Appendix A

Alteration Addendum

No alterations were performed.
Appendix B

Air Seal Location

- Seal Between Test Buck and Test Wall
- Seal Between Fenestration Product and Test Buck
- Fenestration Product
- Test Buck
- Test Wall
Appendix C

Photograph

Photo 1
Series W250C Fixed Window
Appendix D

Drawings
W250C FIXED LITE

Molimo
Architectural Product Testing

Report #: 1391.02-106-11
Date: 1/8/2018
By: M. Stremmel

JAMB
HEAD
SILL

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