

# VEKA INC. TEST REPORT

**SCOPE OF WORK**

AAMA/WDMA/CSA 101/I.S.2/A440-08 AND -11 TESTING ON SH46/57WW

**REPORT NUMBER**

H5098.01-501-47 R0

**TEST DATE(S)**

10/10/17

**ISSUE DATE**

10/26/17

**RECORD RETENTION END DATE**

10/10/21

**PAGES**

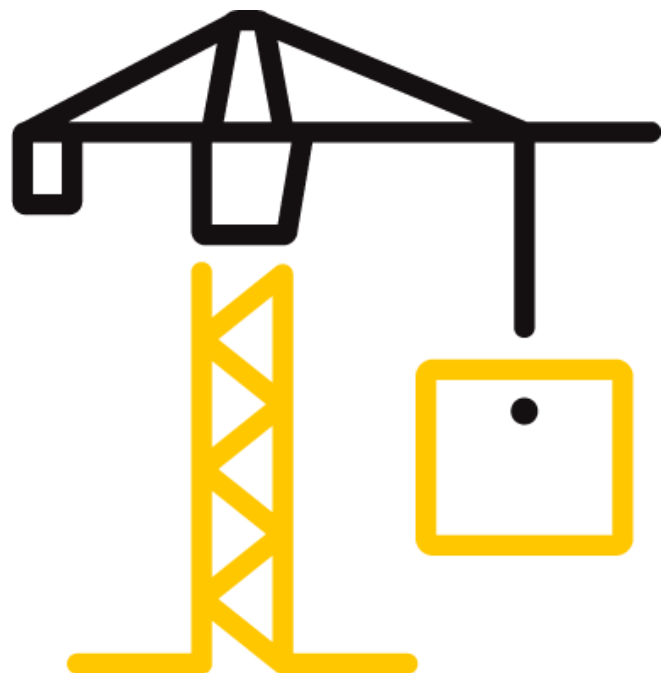
19

**DOCUMENT CONTROL NUMBER**

ATI 00438 (07/24/17)

RT-R-AMER-Test-2804

© 2017 INTERTEK



**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**REPORT ISSUED TO**Veka Inc.  
100 Veka Drive  
Fombell, PA 16123-0250**SECTION 1****SCOPE**

Intertek Building & Construction (B&C) was contracted by Veka Inc. in Fombell, PA to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights* And AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*, on their SH46/57WW – SINGLE HUNG. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Veka Inc. test facility in Fombell, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

**SECTION 2**

For INTERTEK B&amp;C:

**COMPLETED****BY:**James P. Grippo  
Technician- Building &  
Construction**TITLE:****SIGNATURE:****DATE:**

11/01/17

ZVM:sld

**REVIEWED BY:**

Joseph Allison

**TITLE:**

Laboratory Supervisor

**SIGNATURE:****DATE:**

11/01/17

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(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**SECTION 3**
**SUMMARY OF TEST RESULTS**

| TITLE  | TEST SPECIMEN #1                                   | TEST SPECIMEN #2                          |
|--|--|---|
| AAMA/WDMA/CSA 101/I.S.2/A440-08 and -11      | Class LC-PG30 1118 x 1905 (44 x 75) - H            | Class LC-PG45 1016 x 1829* (40 x 72*) - H |
| Design Pressure                              | +1440 Pa (+30.08 psf)                              | +2160 Pa (+45.11 psf)                     |
| Negative Design Pressure                     | -1440 Pa (-30.08 psf)                              | -2400 Pa (-50.13 psf)                     |
| Air Infiltration                             | 0.7 L/s/m <sup>2</sup> (0.14 cfm/ft <sup>2</sup> ) | See specimen #1                           |
| Canadian Air Infiltration/Exfiltration Level | A2   | See specimen #1                           |
| Water Penetration Resistance Test Pressure   | 290 Pa (6.06 psf)                                  | 360 Pa (7.52 psf)                         |

| TITLE  | TEST SPECIMEN #3                         |
|--|--|
| AAMA/WDMA/CSA 101/I.S.2/A440-08 and -11      | Class LC-PG50 965 x 1880* (38 x 74*) - H |
| Design Pressure                              | ±2400 Pa (±50.13 psf)                    |
| Air Infiltration                             | See specimen #1                          |
| Canadian Air Infiltration/Exfiltration Level | See specimen #1                          |
| Water Penetration Resistance Test Pressure   | 360 Pa (7.52 psf)                        |

**SECTION 4**
**TEST METHOD(S)**

The specimens were evaluated in accordance (general accordance if deviated from method; all deviations must be described within test report) with the following:

**AAMA/WDMA/CSA 101/I.S.2/A440-11**, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

**AAMA/WDMA/CSA 101/I.S.2/A440-08**, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

## TEST REPORT FOR VEKA INC.

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

### SECTION 5

#### MATERIAL SOURCE/INSTALLATION

Test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the window was sealed with silicone sealant. Installation of the tested product was performed by the client.

| LOCATION                          | ANCHOR DESCRIPTION         | ANCHOR LOCATION   |
|-----------------------------------|----------------------------|---|
| Integral nail fin                 | #8 x 2" dry wall screw     | Nominally spaced at 11" on center, and beginning at each corner |
| Jamb<br>(specimen #2 and #3 only) | #8 x 2-1/2" pan head screw | Near midspan through metal tilt latch clip                      |

### SECTION 6

#### EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories"

### SECTION 7

#### LIST OF OFFICIAL OBSERVERS

| NAME            | COMPANY      |
|-----------------|--------------|
| Doug Merry      | Veka Inc.    |
| Cornell Charles | Veka Inc.    |
| Joseph Allison  | Intertek B&C |

### SECTION 8

#### GATEWAY

Reference Intertek B&C Report No. H5098.03-501-47, dated 11/01/17 for complete *Gateway* test specimen description and test results. Reference Intertek B&C Report No. H5098.01-501-47, dated 11/01/17 for complete *Gateway* test specimen description and test results.

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**SECTION 9**
**TEST SPECIMEN DESCRIPTION**
**Product Type:** PVC Single Hung Window

**Series/Model:** SH46/57WW

**Product Size(s):**
**Test Specimen #1**

| OVERALL AREA:                              | WIDTH       |        | HEIGHT      |        |
|--|-------------|--------|-------------|--------|
|  | millimeters | inches | millimeters | inches |
| 2.1 m <sup>2</sup> (22.9 ft <sup>2</sup> ) |             |        |             |        |
| Overall size                               | 1118        | 44     | 1905        | 75     |
| Sash size                                  | 1060        | 41-3/4 | 927         | 36-1/2 |
| Screen size                                | 1022        | 40-1/4 | 914         | 36     |

**Test Specimen #2**

| OVERALL AREA:                              | WIDTH       |        | HEIGHT      |        |
|--|-------------|--------|-------------|--------|
|  | millimeters | inches | millimeters | Inches |
| 1.9 m <sup>2</sup> (20.0 ft <sup>2</sup> ) |             |        |             |        |
| Overall size                               | 1016        | 40     | 1829        | 72     |
| Sash size                                  | 959         | 37-3/4 | 889         | 35     |
| Screen size                                | 921         | 36-1/4 | 876         | 34-1/2 |

**Test Specimen #3**

| OVERALL AREA:                              | WIDTH       |        | HEIGHT      |        |
|--|-------------|--------|-------------|--------|
|  | millimeters | inches | millimeters | Inches |
| 1.8 m <sup>2</sup> (19.5 ft <sup>2</sup> ) |             |        |             |        |
| Overall size                               | 965         | 38     | 1880        | 74     |
| Sash size                                  | 908         | 35-3/4 | 914         | 36     |
| Screen size                                | 870         | 34-1/4 | 902         | 35-1/2 |

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

*The following descriptions apply to all specimens.*
**Frame Construction:**

| FRAME MEMBER                              | MATERIAL        | DESCRIPTION   |
|---|-----------------|---|
| Head, sill, jambs, and fixed meeting rail | PVC             | Extruded  |
|   | JOINERY TYPE    | DETAIL  |
| All corners                               | Mitered         | Thermally welded  |
| Fixed rail                                | Coped butt type | The fixed rail was fastened to the jambs with four #8 x 3" pan head screws, two at each end. Each intersection was sealed with silicone sealant |

**Sash Construction:**

| SASH MEMBER          | MATERIAL     | DESCRIPTION      |
|----------------------|--------------|------------------|
| All rails and stiles | PVC          | Extruded         |
|                      | JOINERY TYPE | DETAIL           |
| All corners          | Mitered      | Thermally welded |

**Reinforcement:**

| DRAWING NUMBER | LOCATION                       | MATERIALS         |
|----------------|--------------------------------|-------------------|
| S-046          | Fixed meeting rail             | Extruded aluminum |
| S-047          | Lock rail, bottom rail, stiles | Extruded aluminum |

**Weatherstripping:**

| DESCRIPTION   | QUANTITY | LOCATION    |
|---|----------|-------------|
| 0.187" x 0.230" center fin pile                         | 1 Row    | lock rail,  |
| 0.187" x 0.270" center fin pile                         | 2 Rows   | Sash stiles |
| 0.187" x 0.270" center fin pile                         | 1 Row    | Sill        |
| 0.450" diameter foam-filled vinyl bulb with offset base | 1 Row    | Bottom rail |

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**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 | SPACER TYPE                    | INTERIOR LITE  | EXTERIOR LITE  | GLAZING METHOD   |
|------------|--------------------------------|----------------|----------------|--|
| 3/4" IG    | "U" shaped steel single sealed | 3/32" annealed | 3/32" annealed | The fixed lite was interior glazed and the sash was exterior glazed. The glass was set against a double-sided adhesive glazing tape and secured with rigid vinyl glazing beads |

| LOCATION                 | QUANTITY | DAYLIGHT OPENING |                 | GLASS BITE |
|--------------------------|----------|------------------|-----------------|------------|
|                          |          | millimeters      | inches          |            |
| Specimen #1 sash / frame | 2        | 1003 x 870       | 39-1/2 x 34-1/4 | 1/2"       |
| Specimen #2 sash / frame | 2        | 902 x 832        | 35-1/2 x 32-3/4 | 1/2"       |
| Specimen #3 sash / frame | 2        | 851 x 857        | 33-1/2 x 33-3/4 | 1/2"       |

**Drainage:**

| DRAINAGE METHOD | SIZE                      | QUANTITY | LOCATION  |
|-----------------|---------------------------|----------|---|
| Weepslot        | 1-1/8" wide by 3/16" high | 2        | Exterior sill face, one 3-1/2" in from each end |
| Weepslot        | 1" wide by 3/16" high     | 2        | Intermediate sill wall, one at each end.        |
| Weephole        | 1-1/4" deep by 1/2" wide  | 2        | Sill/jamb intersection, one at each end         |
| Weephole        | 3/8" wide by 1/8" deep    | 2        | Bottom rail, one at each end                    |

# TEST REPORT FOR VEKA INC.

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

## Hardware:

| DESCRIPTION   | QUANTITY | LOCATION  |
|---|----------|---|
| Metal cam lock  | 2        | Lock rail, one 10" in from each end with mating keepers on the exterior meeting stile |
| Recessed plastic tilt latch (specimens #1 only)         | 2        | Top corners of sash   |
| Submarine type plastic tilt latch (specimen #2 and #3)  | 2        | Top corners of sash   |
| Metal tilt latch clip (specimen #2 and #3)              | 2        | Each jamb pivot shoe track  |
| Metal pivot bars  | 2        | Bottom rail, one at each end  |
| Block and tackle balance system with locking tilt shoes | 2        | One per jamb  |

## Screen Construction:

| FRAME MATERIAL  | CORNER CONSTRUCTION                                    | MESH TYPE | MESH ATTACHMENT METHOD |
|-----------------|--|-----------|------------------------|
| Formed aluminum | Miter-cut and secured with snap-in plastic corner keys | Fiber     | Flexible vinyl spline  |



**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**SECTION 10**
**TEST RESULTS**

The temperature during testing was 22°C (72°F). The results are tabulated as follows:

**Test Specimen #1:**

| TITLE OF TEST  | RESULTS   | ALLOWED   | NOTE                  |
|--|---|---|-----------------------|
| <b>Operating Force,</b><br>per ASTM E2068  | Initiate Motion:<br>133 N (30 lbf)<br>Maintain Motion:<br>133 N (30 lbf)<br>Latches:<br>22 N (5 lbf)<br>Locks:<br>44 N (10 lbf) | Report only<br><br>155 N (35 lbf) max<br><br>100 N (22.5 lbf) max<br><br>100 N (22.5 lbf) max | <br><br><br><br><br>8 |
| <b>Air Leakage,</b><br>Infiltration per ASTM E283<br>at 75 Pa (1.57 psf)   | 0.7 L/s/m <sup>2</sup><br>(0.14 cfm/ft <sup>2</sup> )   | 1.5 L/s/m <sup>2</sup><br>(0.3 cfm/ft <sup>2</sup> ) max.                                     | 1, 8                  |
| <b>Air Leakage,</b><br>Exfiltration per ASTM E283<br>at 75 Pa (1.57 psf)   | 0.7 L/s/m <sup>2</sup><br>(0.14 cfm/ft <sup>2</sup> )   | 1.5 L/s/m <sup>2</sup><br>(0.3 cfm/ft <sup>2</sup> ) max.                                     | 1, 8                  |
| <b>Canadian Air</b><br><b>Infiltration/Exfiltration Level</b>  | A2  | N/A   | 8                     |
| <b>Water Penetration,</b><br>per ASTM E547   | N/A   | N/A   | 4                     |
| <b>Uniform Load Deflection,</b><br>per ASTM E330   | N/A   | N/A   | 4                     |
| <b>Uniform Load Structural,</b><br>per ASTM E330   | N/A   | N/A   | 4                     |
| <b>Forced Entry Resistance,</b><br>per ASTM F588,<br>Type: A - Grade: 10   | Pass  | No entry  | 8                     |
| <b>Thermoplastic Corner Weld</b>   | Pass  | Meets as stated   | 8                     |
| <b>Deglazing,</b><br>per ASTM E987<br>Operating direction,<br>320 N (72 lbf)<br>Remaining direction,<br>231 N (52 lbf) | Pass<br><br>Pass  | Meets as stated<br><br>Meets as stated  | <br><br>8             |

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**Test Specimen #1:**

| TITLE OF TEST  | RESULTS                            | ALLOWED                                    | NOTE          |
|--|------------------------------------|--|---------------|
| <b>OPTIONAL PERFORMANCE</b>  |                                    |  |               |
| <b>Water Penetration,</b><br>per ASTM E547<br>at 290 Pa (6.06 psf)   | Pass                               | No leakage                                 | 3, 8          |
| <b>Uniform Load Deflection,</b><br>per ASTM E330<br>Deflections taken at<br>the meeting rail<br>+1440 Pa (+30.08 psf)<br>-1440 Pa (-30.08 psf)   | 16.8 mm (0.66")<br>14.5 mm (0.57") | Report only                                | 5, 6, 7,<br>8 |
| <b>Uniform Load Structural,</b><br>per ASTM E330<br>Permanent set taken at<br>the meeting rail<br>+2160 Pa (+45.11 psf)<br>-2160 Pa (-45.11 psf) | 2.5 mm (0.10")<br>1.0 mm (0.04")   | 4.1 mm (0.16") max.<br>4.1 mm (0.16") max. | 6, 7, 8       |

**Test Specimen #2:**

| TITLE OF TEST  | RESULTS                            | ALLOWED                                    | NOTE    |
|--|------------------------------------|--|---------|
| <b>OPTIONAL PERFORMANCE</b>  |                                    |  |         |
| <b>Water Penetration,</b><br>per ASTM E547<br>at 360 Pa (7.52 psf)   | Pass                               | No leakage                                 | 3       |
| <b>Uniform Load Deflection,</b><br>per ASTM E330<br>Deflections taken at<br>the meeting rail<br>+2160 Pa (+45.11 psf)<br>-2400 Pa (-50.13 psf)   | 14.0 mm (0.60")<br>13.8 mm (0.71") | Report only                                | 5, 6, 7 |
| <b>Uniform Load Structural,</b><br>per ASTM E330<br>Permanent set taken at<br>the meeting rail<br>+3240 Pa (+67.67 psf)<br>-3600 Pa (-75.19 psf) | 0.3 mm (0.01")<br>2.3 mm (0.09")   | 3.6 mm (0.14") max.<br>3.6 mm (0.14") max. | 6, 7    |

# TEST REPORT FOR VEKA INC.

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

## Test Specimen #3:

| TITLE OF TEST  | RESULTS                            | ALLOWED                                    | NOTE          |
|--|------------------------------------|--|---------------|
| <b>OPTIONAL PERFORMANCE</b>  |                                    |  |               |
| <b>Water Penetration,</b><br>per ASTM E547<br>at 360 Pa (7.52 psf)   | Pass                               | No leakage                                 | 3, 8          |
| <b>Uniform Load Deflection,</b><br>per ASTM E330<br>Deflections taken at<br>the meeting rail<br>+2400 Pa (+50.13 psf)<br>-2400 Pa (-50.13 psf)   | 14.5 mm (0.57")<br>14.0 mm (0.55") | Report only                                | 5, 6, 7,<br>8 |
| <b>Uniform Load Structural,</b><br>per ASTM E330<br>Permanent set taken at<br>the meeting rail<br>+3600 Pa (+75.19 psf)<br>-3600 Pa (-75.19 psf) | 1.8 mm (0.07")<br>2.3 mm (0.09")   | 3.3 mm (0.13") max.<br>3.3 mm (0.13") max. | 6, 7, 8       |

*Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

*Note 2: Test Date 08/21/17 (Air Note Only)*

*Note 3: With and without insect screen.*

*Note 4: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.*

*Note 5: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

*Note 6: Loads were held for 10 seconds.*

*Note 7: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.*

*Note 8: Reference Intertek B&C Report No. H5098.01-501-47, dated 09/06/17 for these test results.*



Total Quality. Assured.

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

1140 Lincoln Avenue  
Springdale, PA 15144

Telephone: 724-275-7100  
[www.intertek.com/building](http://www.intertek.com/building)

**SECTION 11**

**ALTERATIONS**

*No alterations were required.*

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

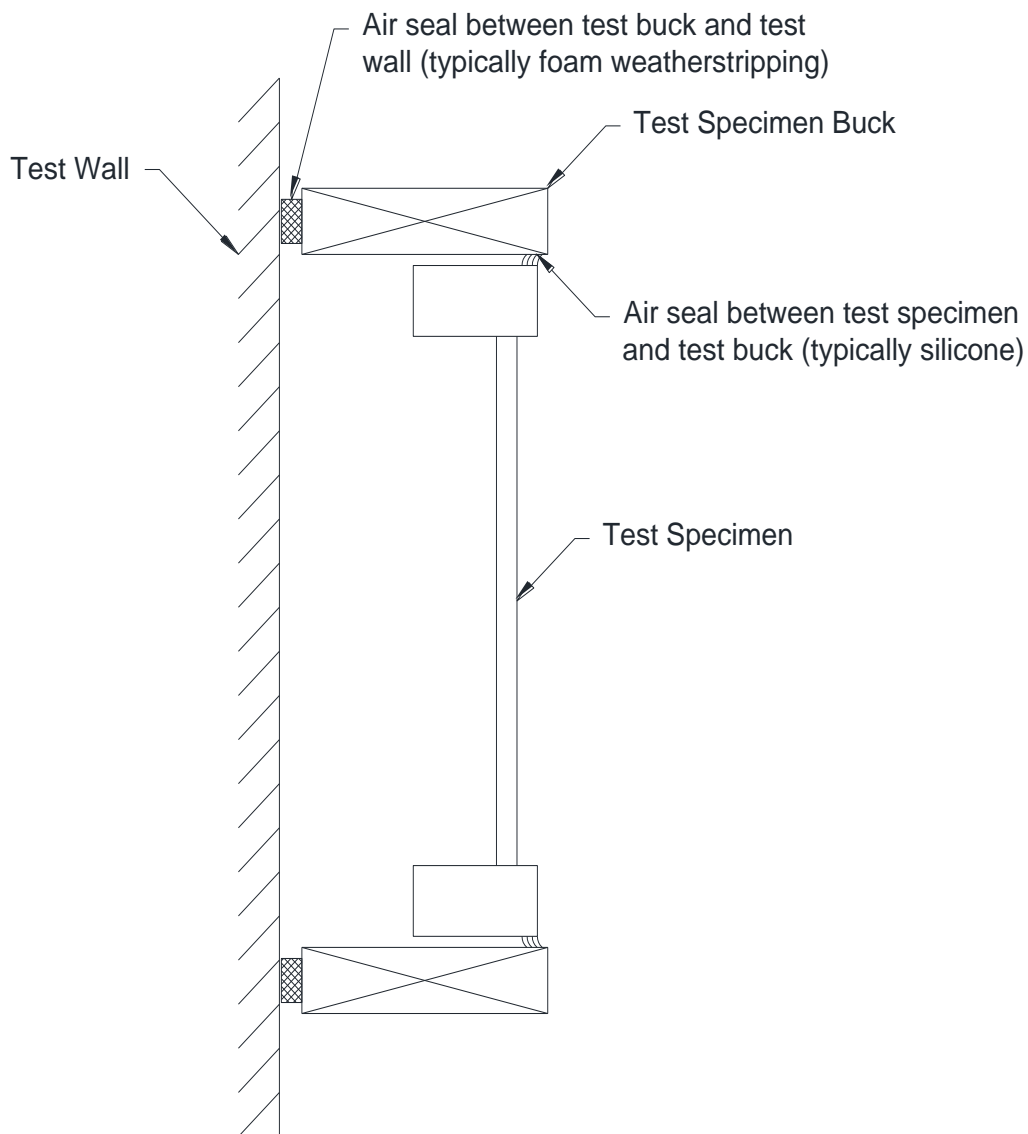
Date: 10/26/17

Revision 1: 11/01/17

**SECTION 12**

**LOCATION OF AIR SEAL**

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.



## TEST REPORT FOR VEKA INC.

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

### SECTION 13

#### CONCLUSION

The specimens tested successfully met the performance requirements for the following ratings:

| TEST SPECIMEN(S) | TITLE                     | SUMMARY OF RESULTS                        |
|------------------|---------------------------|---|
| 1                | 101/I.S.2/A440-08 and -11 | Class LC-PG30 1118 x 1905 (44 x 75) - H   |
| 2                | 101/I.S.2/A440-08 and -11 | Class LC-PG45 1016 x 1829* (40 x 72*) - H |
| 3                | 101/I.S.2/A440-08 and -11 | Class LC-PG50 965 x 1880* (38 x 74*) - H  |

Reference Intertek B&C Report No. H5098.03-501-47, dated 11/01/17 for complete *Gateway* test specimen description and test results. Reference Intertek B&C Report No. H5098.01-501-47, dated 11/01/17 for complete *Gateway* test specimen description and test results.

**General Note:** An asterisk (\*) next to the size designation indicates that the size tested for optional performance was smaller than the *Gateway* test size for the product type and class.



Total Quality. Assured.

1140 Lincoln Avenue  
Springdale, PA 15144

Telephone: 724-275-7100  
[www.intertek.com/building](http://www.intertek.com/building)

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

**SECTION 14**

**DRAWINGS**

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings on file with Intertek B&C. Any deviations are documented herein or on the drawings.

**Note:** Complete drawings packet on file with Intertek B&C.



Total Quality. Assured.

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

1140 Lincoln Avenue  
Springdale, PA 15144

Telephone: 724-275-7100  
[www.intertek.com/building](http://www.intertek.com/building)





Total Quality. Assured.

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

1140 Lincoln Avenue  
Springdale, PA 15144

Telephone: 724-275-7100  
[www.intertek.com/building](http://www.intertek.com/building)



Total Quality. Assured.

**TEST REPORT FOR VEKA INC.**

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

1140 Lincoln Avenue  
Springdale, PA 15144

Telephone: 724-275-7100  
[www.intertek.com/building](http://www.intertek.com/building)



Total Quality. Assured.

1140 Lincoln Avenue  
Springdale, PA 15144

Telephone: 724-275-7100  
[www.intertek.com/building](http://www.intertek.com/building)

# TEST REPORT FOR VEKA INC.

Report No.: H5098.01-501-47 R0

Date: 10/26/17

Revision 1: 11/01/17

## SECTION 15

### REVISION LOG

| REVISION # | DATE     | PAGES | REVISION  |
|------------|----------|-------|---|
| 0          | 10/26/17 | N/A   | Original Report Issue                             |
| 1          | 11/01/17 | 14    | Corrected rating on specimen #2 from PG40 to PG45 |