

**STRUCTURAL TEST REPORT**

Rendered to:

DANVID  
1813 Kelly Boulevard  
Carrollton, Texas 75006

Report No: 01-33332.01  
Test Dates: 10/26/98  
and: 10/27/98  
Report Date: 11/13/98  
Expiration Date: 10/27/02

**Project Summary:** Architectural Testing, Inc. (ATI) was contracted to witness tests on Danvid's Series/Model 300 HP, aluminum single hung window. All testing was performed at Forte, Inc. located in Youngstown, Ohio. The sample tested met all performance requirements for an H-R40 48 x 72 rating. Test specimen description and test data are reported below.

**Test Procedure:** The test specimen was evaluated in accordance with the following:

AAMA/NWWDA 101/I.S.2-97, *Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.*

ASTM F588-85, *Standard Test Methods for Resistance of Window Assemblies to Forced Entry Excluding Glazing.*

**Test Specimen Description:**

**Series/Model:** 300 HP

**Type:** Aluminum Single Hung Window

**Overall Size:** 4' 1/16" wide by 5' 11-3/4" high

**Interior Sash Size:** 3' 11-3/16" wide by 2' 6-3/8" high

**Fixed Daylight Opening Size:** 3' 9-3/8" wide by 3' 3-7/16" high

**Finish:** All aluminum was painted white.

**Glazing Details:** Both the sash and fixed light utilized 1/2" thick sealed insulating glass fabricated from two sheets of 1/8" thick clear annealed glass and a metal desiccant filled spacer system. Both the sash and fixed light were exterior glazed, back bedded with silicone and held-in-place with an extruded vinyl snap-in glazing bead.

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**AAMA/NWWDA 101/L.S.2-97 TEST REPORT**

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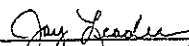
SERIES/MODEL: 300 HP  
TYPE: Aluminum Single Hung Window  
RATING: R40 48 x 72

**SUMMARY OF RESULTS**

Title of Test	Results
Overall Design Pressure	40.0 psf
Operating Force	24 lbs max
Air Infiltration	0.06 cfm/ft <sup>2</sup>
Water Resistance	6.00 psf
Structural Test Pressure	60.0 psf
Deglazing	Passed
Forced Entry Resistance	Passed

Reference should be made to Report No. 01-33332.01 for complete test specimen description and data.

For ARCHITECTURAL TESTING, INC.

  
Jay Leader, Technician

JL:dIm

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

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
3/8" high vinyl hollow bulb gasket	1 Row	Bottom rail
0.270" backed by 0.230" high polypile with center fin	1 Row	Stiles
0.270" backed by 0.210" high polypile with center fin	1 Row	Interior meeting rail

**Frame Construction:** All frame members were constructed of extruded aluminum. All corners were coped, butted, sealed and fastened with two screws per corner. The fixed meeting rail was attached to each jamb with one screw per jamb.

**Sash Construction:** All sash members were constructed of extruded aluminum. All corners were coped, butted, sealed and fastened with one screw per end.

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Metal sweep locks	2	5 3/4" from ends of the interior meeting rail, with integral keeper on the fixed meeting rail
Plastic clip	4	Top and bottom corners of each sash stile
Aluminum clip	2	12" from top of each jamb
Spiral balance system	2	One per jamb

**Drainage:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1/8" diameter weephole	2	6 1/2" from ends of bottom rail
1/8" diameter weephole	2	2 1/4" from ends of fixed meeting rail
1-3/8" wide by 3/16" high	2	Ends of exterior vertical screen leg of sill
1-3/16" wide by 3/16" high	2	Ends of interior vertical screen leg of sill
Sloped sill	1	Sill

**Test Specimen Description: (Continued)**

**Installation:** The window was screwed to the 2 x 8 wood test frame. The window was secured by running a screw through the flange into the buck on the exterior. Thirteen screws were used per head and sill. Twenty screws were used per jamb. The perimeter of the exterior was sealed with silicone.

**Test Results:**

The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test</u>	<u>Results</u>	<u>Allowed</u>
2.2.1.6.1	Operating Force	24 lbs	30 lbs max.
2.1.2	Air Infiltration (See Note #1) @ 1.56 psf (25 mph)	0.06 cfm/ft <sup>2</sup>	0.3 cfm/ft <sup>2</sup> max.
<i>Note #1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/NWWDA 101/I.S.2-97 for air infiltration.</i>			
2.1.3	Water Resistance per ASTM E 547 WTP = 2.86 psf	No leakage	No leakage
2.1.4.2	Uniform Load Structural @ 22.5 psf (exterior) @ 22.5 psf (interior)	0.005" 0.002"	0.186" max. 0.186" max.
2.2.1.6.2	Deglazing Test In operating direction at 70 lbs Interior meeting rail Bottom rail In remaining direction at 50 lbs Left stile Right stile	0.031"/6.2% 0.031"/6.2% 0.000"/0.0% 0.000"/0.0%	0.500"/100% 0.500"/100% 0.500"/100% 0.500"/100%
2.1.8	Forced Entry Resistance per ASTM F 588-97 Type: A Grade: 10 Lock Manipulation Test Test A1 through A7 Lock Manipulation Test	No entrance No entrance No entrance	No entrance No entrance No entrance

Optional Performance

4.3	Water Resistance per ASTM E 547 WTP = 6.00 psf	No leakage	No leakage
4.4.2	Uniform Load Structural @ 60.0 psf (exterior) @ 60.0 psf (interior)	0.049" 0.063"	0.186" max. 0.186" max.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product which may only be granted by the certification program administrator.

For ARCHITECTURAL TESTING, INC:

*Jay Leader*  
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Jay Leader  
Technician

*Bruce W. Croak*  
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Bruce W. Croak  
Project Manager

JL:dlm  
01-33332.01



TEST REPORT

Submitted by: <b>Danvid Window Company</b> 1813 Kelly Boulevard Carrollton, Texas 75006	
Lab Control Number: 01-ML-1129-02-01	Report Date: December 21, 2001
Customer Identification: Danvid	Customer Contact: Ken Novak 972-416-8140
Test Start Date: December 3, 2001	Test Finish Date: December 21, 2001
Description of Product Type:	Aluminum Single Hung
Designation:	H-R35 48 x 72 H-R40 44 x 60*
Specification:	AAMA/NWWDA 101-I.S.2-97
Series/Model:	300/2300 SH
Frame size:	Unit 1: 48 <sup>3</sup> / <sub>8</sub> " x 72 <sup>1</sup> / <sub>4</sub> " Unit 2: 44" x 59 <sup>1</sup> / <sub>2</sub> "
Sash size:	Unit 1: 47 <sup>1</sup> / <sub>8</sub> " x 30 <sup>3</sup> / <sub>8</sub> " Unit 2: 43 <sup>1</sup> / <sub>4</sub> " x 30 <sup>3</sup> / <sub>8</sub> "
Configuration of Test Item:	0/X
Location Where Tests Were Performed: Mavrick Laboratories in Fort Worth, TX	

PRODUCT DESCRIPTION

<p><b>Weatherstripping:</b> One row of pile with fin .210 high at each sash stile. One row of pile with fin .210" high at the sash top rail. One row of vinyl bulb <sup>3</sup>/<sub>8</sub>" diameter at the sash bottom rail full width of the sash. A 1" x 1" x <sup>1</sup>/<sub>8</sub>" thick closed cell foam adhesive backed dust plug was located at each end of the sill sash channel.</p>
<p><b>Hardware:</b> One sweep lock located 5<sup>1</sup>/<sub>2</sub>" on center from each end of the sash top rail. The locks engage a slot in the fixed meeting rail. The locks are secured by two #8 x <sup>3</sup>/<sub>4</sub>" metal screws. An aluminum sash stop is located at the top of each jamb. A spiral balance is located in each jamb and secured to the frame and sash stop with one #8 x <sup>3</sup>/<sub>4</sub>" hex head screw. One plastic sash guide at the top and bottom of each sash stile.</p>
<p><b>Glass:</b> Sealed insulated glass with two pieces of single strength annealed and <sup>1</sup>/<sub>4</sub>" spacer. <sup>5</sup>/<sub>8</sub>" overall thickness.</p>
<p><b>Glazing:</b> Exterior glazed with bedding compound and a snap-in vinyl glazing bead at the exterior.</p>
<p><b>Weep Arrangement:</b> Exterior leg of the sill notched to give a 1<sup>3</sup>/<sub>8</sub>" opening at each end. The sill intermediate leg notched to give a 1" opening.</p>
<p><b>Sealant:</b> All joints sealed with seam sealer full perimeter.</p>

<b>Reinforcement:</b> None
<b>Other features:</b> Frame corners secured with two #8 x 3/4" hex head metal screws. Fixed interlock secured by one #8 x 3/4" hex head metal screw. Sash corners secured by one #8 x 3/4" metal screw. A roll-formed aluminum screen with plastic corner keys was installed for water tests. The sash stiles must be notched at the bottom to allow clearance for the vinyl bulb weatherstripping backing.
<b>Installation Features:</b> The window was secured to a #2 pine 2 x 4 buck with #6 x 1 1/2" wood screws through the nailing fin at each corner and on 12" spacing.

**TEST RESULTS UNIT 1\***

Paragraph No.	Test Method	Title of Test	Results Measured	Allowed
2.2.1.6.1	N/A	Operating Force Open Close	18 lbs 9 lbs	30 lbs 30 lbs
2.1.2	ASTM E 283-91	Air Infiltration Test <sup>1</sup> @ 1.57 psf	.11 cfm/Sq. Ft	.30 cfm/Sq. Ft
2.1.3	ASTM E 547-96	Water resistance @ 2.86 psf Without Screen	No Leakage	No Leakage
2.1.3	ASTM E 547-96	Water resistance @ 2.86 psf With Screen	No Leakage	No Leakage
4.3	ASTM E 547-96	Water resistance @ 5.25 psf Without Screen	No Leakage	No Leakage
4.3	ASTM E 547-96	Water resistance @ 5.25 psf With Screen	No Leakage	No Leakage
2.1.4.2	ASTM E 330-97	Uniform Load Structural <sup>2</sup> Positive Negative 10 Seconds Duration Permanent Set Positive Permanent Set Negative	+52.5 psf -52.5 psf .061" .028"	+52.5 psf -52.5 psf .187" .187"
2.1.8	ASTM F 588-97	Forced Entry Resistance Type A Grade 10 10.1.1 Lock Manipulation 10.2.1.1 Test A1 10.2.1.2 Test A2 10.2.1.3 Test A3 10.2.1.4 Test A4 10.2.1.5 Test A5 10.2.1.7 Test A7 10.2.1.8 Lock Manipulation	No Entry No Entry No Entry No Entry No Entry No Entry No Entry No Entry	No Entry No Entry No Entry No Entry No Entry No Entry No Entry No Entry
2.2.1.6.2	ASTM E 987-94	Deglazing Test Top Rail @ 70 lbs. Bottom Rail @ 70 lbs. Left Stile @ 50 lbs. Right Stile @ 50 lbs.	21.3% 5.6% 6.5% 4.3%	100% 100% 100% 100%