

AAMA THERMAL PERFORMANCE TEST REPORT

Rendered to:

CMI ARCHITECTURAL PRODUCTS, INC.  
608 Fourth Street S.E.  
DeSmet, South Dakota 57231-0475

ATI Report Identification: 02-31410.01  
Test Date: 04/22/1999  
Report Date: 04/07/1999

**Series/Model:** 200T Fixed Over Awning

**Type:** Thermally Broken Fixed Over Awning Aluminum Window

**Test Procedure:** Thermal transmittance coefficient (U) and condensation resistance factor (CRF) testing was performed in accordance with ASTM C236-89 and AAMA 1503-98.

**Test Results Summary:**

	<u>Tested Value</u>	<u>Rating</u>
Condensation Resistance Factor (Frame)	49	CRF Class - C45
Condensation Resistance Factor (Glass)	61	CRF Class - C45
Thermal Transmittance	0.43	U Class - U45

**Overall Size:** 4' 0" wide by 6' 0" high

**Fixed Daylight Opening Size:** 3' 9" wide by 4' 6-1/2" high

**Vent Size:** 3' 11-1/4" wide by 1' 4-9/16" high

**Finish:** Clear anodized aluminum

**Glazing:** The window was glazed with nominal 1" insulating glass comprised of two nominal 1/4" annealed sheets and a desiccant-filled aluminum spacer system with a soft coat low-E on surface #3. The air space in the insulating glass unit was comprised of an argon/air mixture. The glass was set from the interior against 1/8" by 1/2" pre-shimmed butyl tape with aluminum glazing beads and 70 durometer EPDM wedge gasket used on the interior.

**Frame Construction:** The frame consisted of extruded aluminum with the corners miter cut, sealed and secured with crimped aluminum corner keys. The center mullion was secured to the frame with two screws at each end. The frame members contained poured-and-debridged urethane thermal barrier.

**Vent Construction:** The vent consisted of extruded aluminum with the corners miter cut, sealed and secured with crimped aluminum corner keys. All vent members contained poured-and-debridged urethane thermal barrier.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
EPDM bulb	2 rows	Vent perimeter

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Anderberg 4-bar hinge assembly	2	Vent top corners
Truth cam handles	2	Vent bottom rail

**Drainage:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1/4" weep notches	2	Bottom of vent bottom rail aluminum and weatherstripping, 2" from each end

**Condensation Resistance Factor:** CRF tests were conducted in accordance with AAMA 1503-98.

1. Environmental systems started at 11:30 hr., 04/21/99.
2. System was determined to be stable between 5:10 and 7:10 hr., 04/22/99.

The following information, condensed from the test data, was used to determine the condensation resistance factor:

$T_h$	=	Warm side ambient air temperature	69.63°F
$T_c$	=	Cold side ambient air temperature	0.11°F
$FT_p$	=	Average of pre-specified frame temperatures (14)	34.40°F
$FT_r$	=	Average of roving thermocouples (4)	30.64°F
$W$	=	$\frac{FT_p - FT_r}{FT_p - (T_c + 10)} \times 40$	0.0620
$FT$	=	$FT_p (1 - W) + W (FT_r) =$ Frame Temperature	34.17°F
$GT$	=	Glass Temperature	42.55°F
$CRF_g$	=	Condensation resistance factor - Glass	61
		$CRF_g = \frac{GT - t_c}{t_h - t_c} \times 100$	
$CRF_f$	=	Condensation resistance factor - Frame	49
		$CRF_f = \frac{FT - t_c}{t_h - t_c} \times 100$	

The CRF number was determined to be 49 (on the size as reported). When reviewing this test data, it should be noted that the frame temperature (FT) was colder than the glass temperature (GT) therefore controlling the CRF number.

A 49 CRF is a "CRF Class C45" per AAMA/NWWDA 101-I.S. 2-97. Attached to this report is a copy of the data sheet and an isometric drawing indicating thermocouple locations and average surface temperatures.

**Thermal Transmittance:** Tests to determine transmittance (U) were performed in general accordance with ASTM C 236-89 and AAMA 1503-98 under the following conditions:

$t_h$	=	Average warm side ambient temperature	=	69.63°F
$t_c$	=	Average cold side ambient temperature	=	0.11°F
P	=	Static pressure difference across test specimen	=	0.0 psf*

The unit was sealed on the interior with clear tape

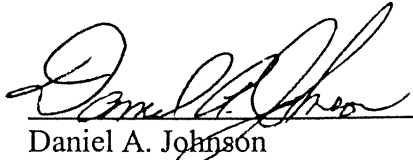
15 mph dynamic wind at exterior

Nominal sample area	24.0 ft <sup>2</sup>
Total measured input to calorimeter	778.52 Btu/hr
Calorimeter correction	- 67.22 Btu/hr
Net specimen heat loss	711.30 Btu/hr
Thermal Transmittance ( $U_s$ )	0.43 Btu/hr.ft <sup>2</sup> F

The thermal transmittance ( $U_s$ ) of 0.43 is a "U-Class U45" per AAMA/NWWDA 101/I.S. 2-97 standard (on the size as reported).

Representative samples of the test specimen and a copy of this report will be retained by ATI for a period of four years. This report is the exclusive property of the client so named herein and is applicable to the sample tested. Results obtained are tested values and do not constitute an opinion or endorsement by this laboratory.

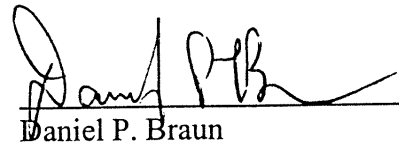
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