



## WDMA TECHNICAL INTERPRETATION 97-10

Approved: 10/97

**DATE OF INQUIRY:** June, 1985

**PERTINENT SPECIFICATION:** ANSI/AAMA/NWDA 101/I.S.2-97, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors"

**SECTION(S) IN QUESTION:** 2.2.13.5.1 Unit Dead Load Test for Greenhouse Windows

**INTERPRETATION REQUESTED:** Describe in detail how the test load is calculated and deflections measured. The section in question states:

"A uniform load of 8 lb/ft<sup>2</sup> (39kg/m<sup>2</sup>) of shelf area (including the bottom pan area) plus the total glazing material weight divided by the total shelf area (including the bottom pan area) shall be applied simultaneously to each shelf and to the bottom pan of an unglazed, vertically mounted unit for a period of 5 minutes. The maximum vertical displacement of the unit in relation to its mounting shall not be greater than L/175, "L" being defined as the width of the unit. In addition, no shelf shall deflect more than L/175 of its span."

### **INTERPRETATION MADE:**

1. A uniform load is to be applied to all the shelves and bottom pan. The test uniform load is calculated as follows:

$$W_1 = [8(A_1 + A_2) + W_2] \left[ \frac{1}{A_1 + A_2} \right]$$

WHERE:  $W_1$  = Test Uniform Load, psf  
 $A_1$  = Total Shelf Area (ft<sup>2</sup>)  
 $A_2$  = Bottom Pan Area (ft<sup>2</sup>)  
 $W_2$  = Total Glazing Material Weight (lbs.)

The above equation can be reduced:  $W_1 = 8 + \left[ \frac{W_2}{A_1 + A_2} \right]$

*Note: It is recommended that the test unit contain the heaviest glazing material that would be furnished.*

2. Example:

A. Test Sample Description:    Width 3'0"            Shelves = 4 @ 34" long x 7" deep  
                                         Height 3'6"            Bottom Pan 34 1/2 x 8  
                                         Depth 9"                Glazing Material Weight = 45 lbs. = W

*Note: Glazing material weight includes glass, glazing gaskets, tape and compound if used.*

B. Calculations:

$$\begin{aligned} \text{Total Shelf Area} = A_1 &= (4) (34) (7) \left( \frac{1}{144} \right) \\ &= 6.61 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Bottom Pan Area} = A_2 &= (34.5) (8) \left( \frac{1}{144} \right) \\ &= 1.92 \text{ ft}^2 \end{aligned}$$

Compute Uniform Test Load:

$$W_1 = 8 + \left( \frac{W_2}{A_1 + A_2} \right)$$

$$W_1 = 8 + \left( \frac{45}{6.61 + 1.92} \right)$$

$$W_1 = 13.3 \text{ psf}$$

The calculated uniform load of 13.3 psf is to be applied to all 4 shelves and the bottom pan.

3. The deflection of each shelf caused by the total uniform test load is measured correcting for end movement. The vertical displacement of the unit caused by the total uniform test load is measured with no correction for end movements.

**REVIEWED/ APPROVED BY:**

COMMITTEE	COMMENTS / ACTION	STATUS
JDMG		
WDMA	Reviewed by NWWDA Standards Maintenance Committee	Approved (with editorial revision to second equation) – 10/97
AAMA	Approved by AAMA Technical Policy Planning Committee as AAMA Technical Interpretation #36.	Approved – 11/85 Ed. Revised – 2/94, 1/98