



Farabaugh Engineering and Testing, Inc.

Project No. T228-02

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ASTM 1592
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING
SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

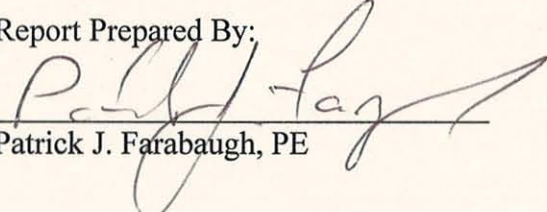
TITE-LOC PLUS ALUMINUM ROOF PANEL

18" WIDE / 0.032" THK


FOR

PETERSEN ALUMINUM CORP.
1005 TONNE RD.
ELK GROVE VILLAGE, IL 60007

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ASTM 1592-01
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING
SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

Purpose

This test method covers the evaluation of the structural performance of Sheet Metal Panels and Anchor to Panel Attachments for roof or siding systems under uniform static air pressure difference.

Test Date

7-9-02 (3 Spans @ 5' oc.)

7-3-02 (7 Spans @ 2' oc)

Test Specimen

Manufacturer: Petersen Aluminum Corp.

1005 Tonne Rd.

Elk Grove Village, IL 60007

Panel: Tite-Loc Plus ALuminum Roof Panel, 0.032" aluminum, 18" Wide

Clip: Tite-Loc Plus Two Piece Low Floating Clip

Panel Length: as shown

Testing Apparatus

Test Chamber: Vacuum Chamber Composed of Wood

Mounting Frame: Hat Shape Subgirts fastened to W6 X 15 Wide Flange Beams

Pressure Indicator: Digital Pressure Indicators from Micro-Pneumatic Logic, Inc.

Caliper: Mitutoyo Digital Caliper, Model No. CD-12" CP

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Installation

- The panels were installed with clips onto 16 ga hat shape subgirts using (2) #12-14 self drilling fasteners per clip. The side joints were seamed with a mechanical seamer. Continuity fasteners were located at the top of the sidelap joints at panel ends.
- The system was inverted and attached to the steel beams with #14 tek fasteners.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts and in the side joints to create a vacuum seal.

Procedure

- The specimen was checked for proper adjustment and all vents closed in the pressure measuring lines.
- The required deflection measuring apparatus' were installed at their specified locations.
- A nominal initial pressure was applied equal to at least four times but not more than ten times the dead weight of the specimen. This nominal pressure was used as the reference zero and initial deflection readings were recorded.
- At each load increment, pressure was maintained for a period of not less than 60 seconds and until the deflection gages indicated no further increase in deflections.
- Successive increments were achieved as above until failure or ultimate load was reached.

The test was conducted according to the procedure in ASTM E-1592-01 and as noted herein. In our opinion the tape and plastic had no influence on the results of the test.

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TEST DATA FOR 18" TITE-LOC PLUS ALUM. PANEL 0.032" 3 SPANS @ 5'-0" oc							
DEFLECTION POINT READINGS (INCHES)							
LOAD (PSF)	D1	D2	D3	D4	D5	D6	REMARKS
0.5	0	0	0	0	0	0	PANEL WT.
10.9	0.064	1.09	0.027	1.025	0.155	1.108	
0.5	-0.01	0.033	0.001	0.033	0.076	0.1	PANEL WT.
16.2	0.115	1.507	0.167	1.523	0.157	1.584	
0.5	-0.013	0.066	-0.001	0.042	0.081	0.147	PANEL WT.
21.4	0.175	1.927	0.202	1.959	0.195	2.019	
0.5	-0.009	0.177	0.019	0.109	0.098	0.256	PANEL WT.
26.6	0.25	2.435	0.312	2.477	0.269	2.556	
0.5	0.026	0.607	0.015	0.043	0.121	0.743	PANEL WT.
31.8	0.401	3.255	0.48	3.249	0.459	3.386	
0.5	0.065	1.35	0.051	0.79	0.165	1.633	PANEL WT.
37.0	0.62	3.725	0.721	3.783	0.705	3.941	
0.5	0.13	1.585	0.121	1.519	0.197	1.815	PANEL WT.

ULTIMATE TEST LOAD = 42.1 PSF (PANEL BUCKLING)

NOTE: SEE SKETCH 1 FOR LOCATION OF PANEL BUCKLING.

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TEST DATA FOR 18" TITE-LOC PLUS ALUM. PANEL 0.032" 7 SPANS @ 2'-0" oc							
DEFLECTION POINT READINGS (INCHES)							
LOAD (PSF)	D1	D2	D3	D4	D5	D6	REMARKS
0.5	0	0	0	0	0	0	PANEL WT.
10.9	0.08	0.969	0.066	1.004	0.05	0.981	
0.5	0.023	0.051	0.012	0.053	0.004	0.054	PANEL WT.
21.4	0.161	1.708	0.142	1.8	0.137	1.766	
0.5	0.024	0.284	0.013	0.212	0.017	0.275	PANEL WT.
31.8	0.301	2.65	0.268	2.807	0.298	2.751	
0.5	0.027	0.959	0.009	0.972	0.051	1.035	PANEL WT.
42.2	0.467	2.855	0.437	3.371	0.479	3.311	
0.5	0.056	1.445	0.027	1.506	0.086	1.557	PANEL WT.
52.6	0.654	3.587	0.664	3.774	0.654	3.708	
0.5	0.112	1.89	0.102	2.074	0.174	2.037	PANEL WT.
63.0	0.873	3.998	0.861	4.243	0.892	4.102	
0.5	0.187	2.407	0.15	2.68	0.247	2.601	PANEL WT.
73.4	1.142	4.493	1.136	4.733	1.217	4.67	
0.5	0.325	2.871	0.318	3.253	0.41	3.146	PANEL WT.
83.8	1.543	5.011	1.514	5.206	1.579	5.115	
0.5	0.51	3.365	0.447	3.633	0.597	3.607	PANEL WT.
94.2	2.041	5.747	2.052	5.879	2.174	5.797	
0.5	0.907	4.165	0.806	4.411	1.011	4.446	PANEL WT.

ULTIMATE TEST LOAD = 104.5 PSF (SIDEJOINT DISENGAGEMENT)

NOTE: SEE SKETCH 2 FOR LOCATION OF SIDEJOINT DISENGAGEMENT.