

## PBH WASHER

### Product Information

Report of Structural Performance Testing of Wall Panels with PBH Washer.

For: Demand Products, Inc.  
1055 Nine North Drive  
Alpharetta, GA 30004  
800-325-7540

By: Intertek Testing Services, NA Inc.  
8431 Murphy Drive  
Middleton, WI 53562  
608-836-4400

Test Date: May 22 and 23, 2002

Report Date: May 23, 2002

Test Report #: 3025759

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Test Report #3025759  
ASTM E 330 Tests  
Specimens: PBH Washer  
Client: Demand Products, Inc.  
Test Date: May 22 and 23, 2002

## INTRODUCTION

This report gives the results of the evaluation of the provided samples (Job #3025759). The test results described in this report are limited to the submitted items.

On May 22 and 23, 2002 Intertek Testing Services NA, Inc. Middleton, WI conducted tests on 3 wall panels in accordance with ASTM E 330, (Test Method to determine the structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference), for Demand Products, Inc. of 1055 Nine North Drive, Alpharetta, GA.

Pressure measurements were taken with WHI Pressure transducer #553 with an accuracy of +/-1 PSF. Deflection measurements were taken with WHI linear transducers #438, 440, and 441 with an accuracy of +/- 0.002".

## SPECIMEN DESCRIPTION

### Structural Performance

Each test panel had overall dimensions of 51" wide by 96" high by 5<sup>3</sup>/<sub>4</sub>" thick. The panels consisted of 18-gauge steel studs 16" o.c., 1/2" exterior grade drywall board, 6-mil poly sheet, 1 1/2" EPS foam, and a stucco finish system over the foam. The foam was attached to the studs with 2" diameter Demand Products PBH Washer and a 2 1/2" self-tapping screw. Two different fastening patterns were used and are described below.

**Pattern A:** PBH washers were placed near ends of each stud and 12" o.c. PBH washers bridged the joints in foam (36 fasteners/washers per 4' by 8' panel).

**Pattern B:** PBH washers were placed 4" from ends of each stud and 8" o.c. PBH washers did not bridge the joints in foam (48 fasteners/washers per 4' by 8' panel).

## PROCEDURE

### Structural Performance Tests

Conducted in accordance with ASTM E-330. Loads were applied in 10 PSF increments until failure. Deflection and set measurements were taken on the drywall board at top, center and bottom. Net deflection and set values were calculated by averaging end movement and subtracting from center movement.

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**TEST RESULTS****Structural Performance**

## Sample 1

Pattern A - 36 fasteners/washers per 4' by 8' panel

Load (PSF)	Net Deflection (IN)	Net Set (IN)
-10	0.067	0.007
-20	0.145	0.008
-30	0.227	0.004
-40	0.315	0.001
-50	0.412	0.005
-60	0.582	0.022
-70	0.625	0.009
-80	0.791	0.041
-90	1.350	0.319
-94	Studs buckled-sample would no longer sustain load	

## Sample 2

Pattern B - 48 fasteners/washers per 4' by 8' panel

Load (PSF)	Net Deflection (IN)	Net Set (IN)
-10	0.064	0.002
-20	0.134	0.001
-30	0.215	0.003
-40	0.298	0.003
-50	0.387	0.006
-60	0.480	0.011
-70	0.580	0.012
-80	0.709	0.030
-90	0.878	0.055
-98	Studs buckled-sample would no longer sustain load	

## Sample 3

Pattern B - 48 fasteners/washers per 4' by 8' panel

Load (PSF)	Net Deflection (IN)	Net Set (IN)
-10	0.056	0.002
-20	0.122	0.004
-30	0.192	0.003
-40	0.270	0.005
-50	0.352	0.006
-60	0.439	0.010
-70	0.525	0.010
-80	0.638	0.022
-90	0.778	0.047
-98	Studs buckled-sample would no longer sustain load	

**CONCLUSIONS**

The mode of failure for all three wall panels with Demand Products PBH Washer was studs buckling at the punch out location in the studs. The average ultimate negative load for all 3 walls tested per ASTM E-330 was -97 PSF.

Test Conducted by: Russ Burt  
Engineering Technician

Report Reviewed by: Jim Turgeson  
Project Manager-Fenestration