



## Laboratory Report P8330.04.12

**Air Permeance Testing  
of  
Grip-Rite® House-Wrap  
in accordance with  
ASTM E2178**

**Prepared for:  
PrimeSource Building Products, Inc.  
1321 Greenway Drive  
Irving, TX 75038**

**Date of Issuance:  
April 17, 2012**

Trinity|ERD

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**CLIENT INFORMATION:** PrimeSource Building Products  
333 Manley Street  
West Bridgewater, MA 02379  
c/o: Pete Barrego

**REFERENCE:** 2007.P8330CT

**SAMPLES:** **Grip-Rite® House-Wrap** is a woven, micro-perforated, polypropylene or polyolefin water-resistive barrier.

**SAMPLE DELIVERY:** Trinity|ERD randomly sampled rolls of said water-resistive barrier materials at the warehouse facility in Waterbury, CT on 08/23/2011 following sampling protocol in accordance with ICC-ES AC85. The material was shipped to our Columbia, SC Laboratory.

**TEST DATE(S):** Air Permeance: 03/23/2012

**ERD TECHNICIANS:** Charles Phillips, Hughie Dixon

**PROPERTIES:** Air Permeance: ASTM E2178

**STANDARDS:** ASTM E2178-03 – *Standard Test Method for Air Permeance of Building Materials*, © ASTM.

**EQUIPMENT:** Air Permeance: ERD E2178 apparatus, Calibrated  
Themometer; Calibrated Barometer; CME  
Laminar Flow Elements



**I. AIR PERMEANCE – ASTM E2178 PER AC38:**

**I.1 Specimen Preparation:**

**I.1.1** A 4 x 4 ft (1.2 x 1.2 m) specimen is placed over a 3.3 x 3.3 ft (1 x 1 m) opening and sealed as directed in Section 7 of ASTM E2178. A polyethylene film is placed over the test specimen and secured in accordance with Section 7.2.11 of ASTM E2178 and tested to determine extraneous air flow. The polyethylene film is then removed and the sample retested as directed by ASTM E2178.

**I.2 Procedure:**

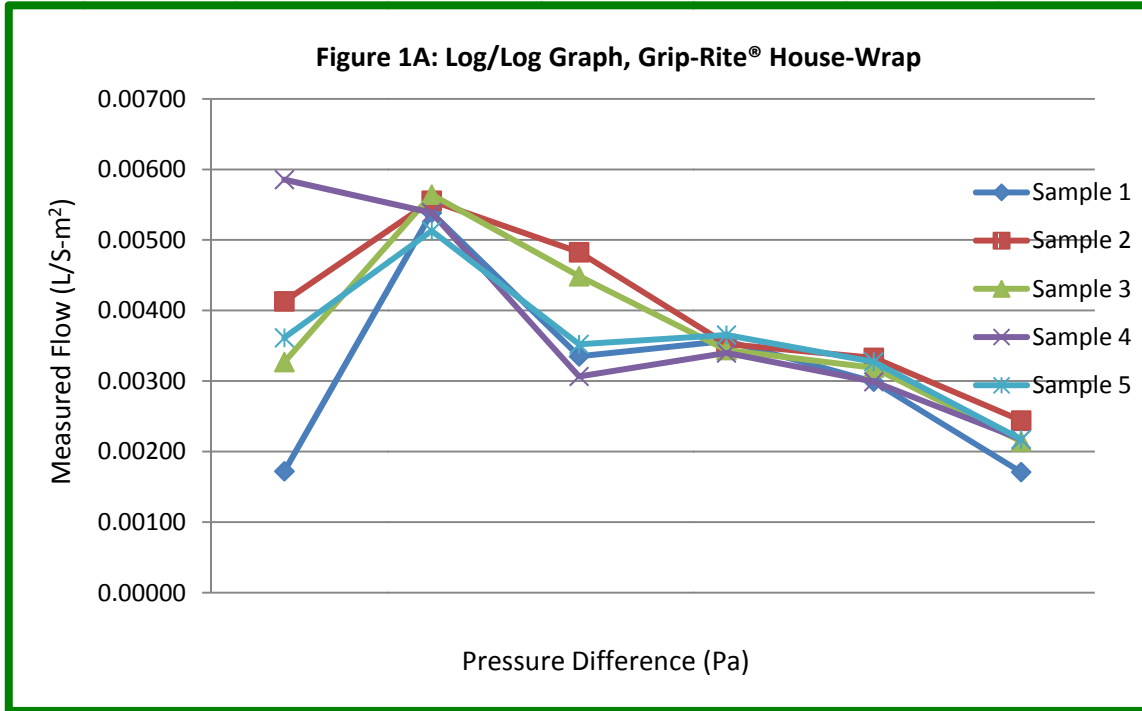
**I.2.1** A pressure differential is created across the specimen using a vacuum motor. The pressure difference was incrementally increased, and for each pressure difference a reading was taken of the air flow rate. Data points were tabulated, graphed, and an air permeance was derived. Five specimens were tested and the average air permeance at 75 Pascals pressure was calculated.

**I.3 Results:**

**Table 1: Test Results, Air Permeance**

Sample	Pressure Pa (psf)	Sample Calculated Measured Flow (L/s·m <sup>2</sup> )					Average	
		1	2	3	4	5	L/s·m <sup>2</sup>	cfm/ft <sup>2</sup>
Grip-Rite® House-Wrap	25 (0.52)	0.00172	0.00413	0.00327	0.00586	0.00361	0.0037	0.0007
	50 (1.04)	0.00539	0.00556	0.00564	0.00539	0.00513	0.0054	0.0011
	<b>75 (1.57)</b>	0.00335	0.00483	0.00449	0.00307	0.00352	<b>0.0039</b>	<b>0.0008</b>
	100 (2.09)	0.00357	0.00353	0.00344	0.00340	0.00365	0.0035	0.0007
	150 (3.13)	0.00299	0.00333	0.00319	0.00299	0.00327	0.0032	0.0006
	300 (6.27)	0.00171	0.00244	0.00215	0.00217	0.00217	0.0021	0.0004
	<b>Average:</b>						<b>0.0036</b>	<b>0.0007</b>
<b>Average @ 75 Pa:</b>						<b>0.0039</b>	<b>0.0008</b>	

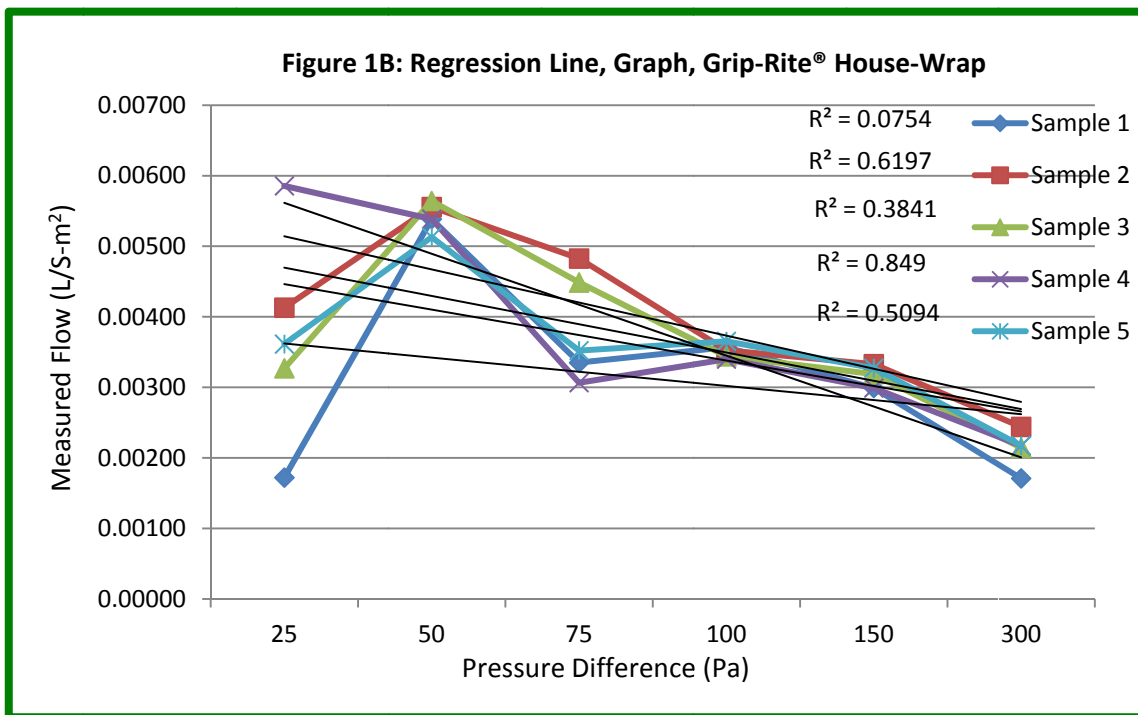
1.3.1 The measured air flow versus pressure difference data is shown in graphic form (log/log graph) for all five specimens. Results are shown below in Figure 1A.



1.3.2 It should be noted that compliance with ASTM E2178, Section 8.2.8 was confirmed for all specimens – whereby re-measurement of air leakage at 100, 75, and 50 Pa did not yield difference greater than 10% from the original measurements.



1.3.3 The flow rate equation shall be established through linear fitting of data by method of least squares for the pressure readings. The coefficient of determination ( $r^2$ ) is calculated and a regression line based on air leakage data is reported.



1.4 Error Analysis:

1.4.1 The 95% confidence interval must be calculated and reported for each test as outlined in ASTM E2178 Appendix A1.

Sample	Test	Upper Limit Factor	Lower Limit Factor
Grip-Rite® House-Wrap	1	0.01	$8.5 \times 10^{-4}$
	2	0.03	$8.9 \times 10^{-4}$
	3	0.04	$5.4 \times 10^{-4}$
	4	0.01	$1.2 \times 10^{-3}$
	5	0.02	$5.7 \times 10^{-4}$



**2. CONCLUSIONS:**

- 2.1 Trinity| ERD has tested Grip-Rite® House-Wrap for air permeance in accordance with ASTM E2178, as set forth in Section 3.5 of ICC-ES AC38.
- 2.1.1 Review of results indicates Grip-Rite® House-Wrap has an air permeance of 0.0039 L/s-m<sup>2</sup> @ 75 Pa. All five specimens displayed an air permeance less than 0.02 L/s-m<sup>2</sup>, as required in Section 3.5 of ICC-ES AC38.

Please contact our office with any questions.

Sincerely,  
TRINITY | ERD

A handwritten signature in black ink, appearing to read "C. Phillips".

Charles Phillips  
Laboratory Manager

A handwritten signature in black ink, appearing to read "Robert Nieminen".

Robert Nieminen, P.E.  
Vice President

**REPORT HISTORY:**

<u>Date</u>	<u>Event</u>	<u>Notes</u>	<u>Authorized By:</u>
04/17/2012	Report Issued	None	RN

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