



# HOME of MAGNUM® BOARD

## "The New Generation Building Material"

Issue Date: 03-2013  
Issue No.: XXIII

Prepared by: DPA  
Checked by: EAG

### MAGNUM® BOARD SANDED BACK PRODUCTS

#### Certified Test Summary & Product Specifications

#### AC308 Criteria- ASTM and UL Procedures - with Additional Testing for Specific Products

Sanded Back Structural and Performance Product Testing Conducted by:

RADCO – Long Beach, CA – (Refer to Certification Letter Exhibit B)

Test Report Numbers: RAD-4224, RAD-4224-S1 and RAD-4451 Rev. 1

PRI Construction Materials Technologies, LLC – Tampa, FL

Test Report Numbers:

Sanded Back Product Fire Testing Conducted/Witnessed by:

Southwest Research Institute – San Antonio, TX

Test Report Numbers: 01.15210.01.101c, 01.11813.02.046,  
01.11810.165a, 01.11810.01.165b and 01.11850.01.431

Underwriters Laboratories – Northbrook, IL

File No. R26120 USA Design No. U061

Underwriters Laboratories, Toronto, Canada

Design No. W490

Additional Testing Conducted by:

PRI – Tampa, FL

Test Report Numbers: 001-02-01, 004-02-01, 002-02-01 and 003-02-01

EMSL Analytical – Cinnaminson, NJ

Test Report Numbers: 361100056, 361100055

TEST / STANDARD	RESULTS			
Flexural Strength – C1185	AS RECEIVED			
	<u>THICKNESS</u>	<u>DIRECTION</u>	<u>AVE FLEXURAL STRENGTH (PSI)</u>	<u>MODULUS OF ELASTICITY (PSI)</u>
	6mm	Machine	2296 PSI	1,158,532
		Cross	2054 PSI	1,145,587
	12mm	Machine	1038 PSI	625,536
		Cross	1508 PSI	719,574
	SATURATED			
	6mm	Machine	2,023 PSI	608,575
		Cross	1,707 PSI	572,930
	12mm	Machine	1,110 PSI	364,706
		Cross	649 PSI	380,366
	AC-308 specifies a minimum average flexural strength of 580 psi. Magnum Board® exceeds this requirement.			
	<u>THICKNESS</u>		<u>MPa</u>	
	6mm		13.245	
	10mm		13.516	
	12mm		10.51	

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Email: [sales@magnumbp.com](mailto:sales@magnumbp.com)

	<table><tr><th colspan="2">THICKNESS</th><th>MPa</th></tr><tr><td>15mm</td><td></td><td>8.88</td></tr><tr><td>18mm</td><td></td><td>7.426</td></tr></table> <p>Sample lot consisted of three-(3) of each thickness. Testing was conducted and the reporting results are the average of the three-(3) tests.</p>	THICKNESS		MPa	15mm		8.88	18mm		7.426				
THICKNESS		MPa												
15mm		8.88												
18mm		7.426												
Dimensions and Tolerances per C1325-04	<p><b>Length:</b> Meets requirements of section 7.4 of ASTM C1186</p> <p><b>Width:</b> Meets requirements of section 7.4 of ASTM C1186</p> <p><b>Thickness:</b> Meets requirements of section 7.5 of ASTM C1186</p> <p><b>Squareness:</b> Meets requirements of section 7.6 of ASTM C1186</p> <p><b>Edge Straightness:</b> Meets requirements of section 7.7 of ASTM C1186</p> <p><b>Surface Finish:</b> See attached pictures depicting our Premium (sanded) back product and our Class A (rolled process) back product.</p>													
Moisture Movement – C1186	<table><tr><th colspan="3">Thickness – Direction – Aver Dim Chg</th></tr><tr><td rowspan="2">6MM</td><td>Machine</td><td>0.01%</td></tr><tr><td>Cross</td><td>0.03%</td></tr><tr><td rowspan="2">12MM</td><td>Machine</td><td>0.04%</td></tr><tr><td>Cross</td><td>0.03%</td></tr></table>	Thickness – Direction – Aver Dim Chg			6MM	Machine	0.01%	Cross	0.03%	12MM	Machine	0.04%	Cross	0.03%
Thickness – Direction – Aver Dim Chg														
6MM	Machine	0.01%												
	Cross	0.03%												
12MM	Machine	0.04%												
	Cross	0.03%												
Water Absorption – C1186	12MM = 23%													
Vapor Transmission (Permeability)	ASTM E96 / E96M Standard test methods for water vapor transmission of materials. See Exhibit A attached hereto for details.													
Standard Test Method for Resistance to Growth of Mold and Mildew – ASTM D-3273	Magnum Board® is ranked 10 of 10 and exceeds the requirements of test method ASTM D-3273. Magnum Board® Products are not a nutrient for mold and mildew.													
Compression Indentation – C1325	No residual deformation was noted following loading and the rest period. Exceeds requirements of C1325.													
Nail Head Pull-Through – C1325	12MM = 1748 lbf. Magnum Board® exceeds the requirements of C1325.													
Falling Ball Impact – C1325	All Magnum Board® specimens exceed the 12” requirements per C1325													
Shear Bond Strength – C1325	<table><tr><th>Mortar</th><th>Avg. Shear Strength (PSI)</th></tr><tr><td>Portland</td><td>168.82</td></tr><tr><td>Latex</td><td>234.32</td></tr></table> <p>Magnum Board® exceeds the requirements of C-1325</p> <p><b>NOTE:</b> Refer to endorsement by Mapei</p>	Mortar	Avg. Shear Strength (PSI)	Portland	168.82	Latex	234.32							
Mortar	Avg. Shear Strength (PSI)													
Portland	168.82													
Latex	234.32													
Humidified Deflection – C1396-06A	Magnum Board® exceeds requirements of ASTM C1396 and AC386.													
Surface Burning Characteristics – E84-05	6MM = Classification A 12MM = Classification A Magnum Board® exceeds the test criteria presented in ASTM E84 and is classified non-flammable.													
Non-Combustible Construction – ASTM E136	Magnum Board® exceeds the test criteria presented in ASTM E136 and is classified as non-combustible.													
Underwriters Laboratory Fire Rating UL263, S101, S102 and ASTM E119	Exceeds requirements for single 12MM (15/32”) layer one (1) hour wall fire rating. <b>File No. R26120 USA Design No. U061, US – UL link is:</b>  <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html</a>													

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		<b>Canada Design No. W490</b> , S102 link for zero smoke develop/zero flame spread - <b>UL link is:</b> <a href="http://database.ul.com/cgi-bin/XYV/template/LISCANADA/1FRAME/index.html">http://database.ul.com/cgi-bin/XYV/template/LISCANADA/1FRAME/index.html</a>  S102 link for zero smoke develop/zero flame spread -  <b>NOTE:</b> Two hour ASTM E-119 single layer wall fire testing has been conducted and hose stream passed, but is not UL certified. These tests were conducted on single layer walls. Magnum Board® did not require retesting at one-half the time to pass hose stream as do gypsum products. These are true one and two hour wall tests.		
Xenon Arc Accelerated Weathering – ASTM G155		All five specimens were examined under 5x magnification following 2,000 hours of exposure. No signs of surface cracking, checking, crazing, erosion, or chalking were observed. Magnum Board® exceeds the requirements of ASTM G155.		
Freeze / Thaw – ASTM C1185		Magnum Board® exceeds the requirements of ASTM C1185 and AC386.		
Toxicity Testing – U-Pitt Protocol		Magnum Board® exceeds the combustion toxicity protocol developed at the University of Pittsburgh, and the requirements for interior finish material as defined by Title 27, Chapter 1, Subchapter 5, Article 5, of the Building Code of the City of New York. <b>NOTE:</b> Magnum Board® is classified as non-toxic and is carcinogen, asbestos and silica free.		
VOC Testing to ASTM D5116		Magnum Board® contains NO Toxic VOC's and exceeds the overall requirements of the "US Green Buildings Council LEED Standard for VOC's".		
Structural Performance		Magnum Board® exceeds the structural requirements of ASTM E330 and AC386.		
Density		Depending on application, Magnum Board® densities may range from 0.85 to 1.15 g/cm³.		
Surface Texture		See Exhibit "C" attached hereto.		
Sanded Back Fully Tested Product:		Magnum Board® sanded back product is smooth on the front side and has a uniform machined texture on the back side.		
Rolled Back, in house tested product only:		Magnum Board® rolled back product is smooth on the front side and has a rolled surface on the back side.		
Color		Off white.		
Basic Compounds		Refer to MSDS posted on website: <a href="http://www.magnumbp.com">www.magnumbp.com</a>		
Transverse Load IAW AC376 – E72				
		Positive Load		Negative Load
		Ultimate Failure		Ultimate Failure
Test Sample	Psf	Kpa	psf	Kpa
1	133.12	6.37	111.80	5.35
2	142.48	6.82	140.82	6.74
3	161.30	7.72	139.36	6.67
Average	145.63	6.97	130.66	6.26
Standard Deviation	14.35	0.69	16.35	0.78
Results of transverse loads exceed the requirements of AC376				
<b>Wet Racking Shear IAW AC376 – E72 Section 15.05</b>				
Test Number	Ultimate Load (lbf)		Lbf / lineal ft.	

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1	3600	450																								
2	3600	450																								
3	2900	363																								
Average	3367	421																								
Standard Deviation	404	51																								
ASTM D696 – 08 Standard Test Method for Determine the Coefficient of Linear Thermal Expansion	<b>Property</b> Thermal Coefficient of Lineal Expansion, $\alpha_L$ , [in/in-°F] 38-90°F <b>Result:</b> $3.97 \times 10^{-6}$																									
Determine the Hygrometric Coefficient of Expansion	Hygrometric Coefficient of Expansion (HCE), unrestrained, for Magnum® Board, 18-mm nominal thickness; [in./in/%RH] 10% - 90% RH <b>Result:</b> $2.08 \times 10^{-5}$																									
Asbestos	Magnum Board® has no asbestos.																									
Carcinogens	There are no carcinogens in Magnum Board® whatsoever. Refer to our U-Pitt toxicity test above.																									
Formaldehyde	Magnum Board® Products do not contain formaldehyde.																									
Off Gassing - the emission of especially noxious gases	Magnum Board® Products do not produce off-gassing																									
<b>STC Values:</b>																										
<b>NOTE:</b> The following results are in house test lab results and are not certified by an approved ICC testing laboratory																										
<input type="checkbox"/> STC Value standard wall system, 12MM both sides, wood or metal stud construction and batts:																										
<b>R Values:</b>																										
<b>NOTE:</b> The following results are either in-house test lab results or published results from SIPA and are not certified by an approved ICC testing laboratory.																										
<input type="checkbox"/> Magnum Board® thermal insulation R value per inch = 1.2 Compared to:																										
Cement Board: .8 Plywood: 1.2 Gypsum Wallboard: .9 Gypsum Sheathing: 1.1 O.S.B. 1.																										
<b>SIP R-Values (Calculated R-Values)</b>																										
<table><tr><th>SIP Panel Thickness</th><th>4 1/2"</th><th>6 1/2"</th><th>8 1/4"</th><th>10 1/4"</th><th>12 1/4"</th></tr><tr><td>EPS</td><td>14.4</td><td>21.6</td><td>27.9</td><td>35.1</td><td>45.9</td></tr><tr><td>XPS</td><td>19.5</td><td>29.5</td><td>38.3</td><td>48.3</td><td>58.3</td></tr><tr><td>Polyurethane</td><td>21.7</td><td>32.9</td><td>N/A</td><td>N/A</td><td>N/A</td></tr></table>			SIP Panel Thickness	4 1/2"	6 1/2"	8 1/4"	10 1/4"	12 1/4"	EPS	14.4	21.6	27.9	35.1	45.9	XPS	19.5	29.5	38.3	48.3	58.3	Polyurethane	21.7	32.9	N/A	N/A	N/A
SIP Panel Thickness	4 1/2"	6 1/2"	8 1/4"	10 1/4"	12 1/4"																					
EPS	14.4	21.6	27.9	35.1	45.9																					
XPS	19.5	29.5	38.3	48.3	58.3																					
Polyurethane	21.7	32.9	N/A	N/A	N/A																					
Consult the panel manufacturer to verify R-values. R-values can vary between SIP manufacturers.																										

## IMPORTANT NOTES – PLEASE READ BEFORE SPECIFYING

### **Sanded Back Product**

1. Is tested to AC386 criteria by IAS Recognized Test Laboratories
2. UL rated fire wall is tested and certified to all above testing requirements.

### **Rolled back finish:**

Is in house tested to specific AC386 requirements

### **Magnum Building Products Product Line includes:**

1. Interior Applications
  - a. Wall Board
  - b. Ceiling Board
  - c. Backer Board
  - d. Underlayment
  - e. Trim Materials
2. Exterior Applications
  - a. Sheathing
  - b. Soffit
  - c. Fascia
  - d. Trim Materials
  - e. Siding

**NOTE: Magnum Board sheathing alone is not tested for roofing or flooring substrate and our warranty does not cover its use in these applications.**

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# EXHIBIT "A"



## CONSTRUCTION MATERIALS TECHNOLOGIES

### LABORATORY TEST REPORT

**Report for:** Magnum Building Products  
10150 Highland Manor Drive  
Suite 200  
Tampa, FL 33610

**Attention:** Ed Gilbert

<b>Product Name:</b>	Magnum® Board (3 mm & 18 mm)	<b>Manufacturer:</b>	Magnum Building Products
<b>Date Received:</b>	July 20, 2011	<b>Source:</b>	Magnum Building Products
<b>PRI Project No.:</b>	MBP-004-02-01	<b>Dates Tested:</b>	July 26 - August 10, 2011

**Subject:** Determine the water vapor transmission performance of 3 mm & 18 mm Magnum® Board in accordance with **ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials.**

**Test Methods:** Testing was completed as described in ASTM E 96 / E 96M -05: *Standard Test Methods for Water Vapor Transmission of Materials*. Procedure A, Desiccant Method, and Procedure B, Water Method, were conducted at 73.4±3.6°F and 50±2% RH. Test specimens were excised from a larger, client-supplied piece of material and sealed along sides and to the cup with wax.

**Product Sampling:** PRI-CMT received product samples on July 20, 2011. PRI-CMT feels that the material tested is representative of the standard manufactured product for which recognition is sought.

Property of Magnum Building Products, LLC

MBP-004-02-01 PRI-CMT Accreditations: IAS TL-189; State of Florida TST5878; Miami-Dade 06-1116.02; CRRC  
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**Results:**

Table 1. ASTM E 96 results for 3 mm Magnum® Board in U.S. Customary Units

Test Sample	Test Method	Property	Specimen Results							Requirement
			#1	#2	#3	#4	#5	Avg	Std Dev	
3 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure A)	WVT (grains/h-ft <sup>2</sup> )	3.92	4.06	3.02	3.87	3.43	3.67	0.43	Report
		Permeance (Perms)	9.58	9.90	7.38	9.44	8.38	8.93	1.04	Report
3 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure B)	WVT (grains/h-ft <sup>2</sup> )	14.7	13.1	13.3	13.7	15.0	13.9	0.9	Report
		Permeance (Perms)	36.0	31.9	32.4	33.4	36.6	34.0	2.1	Report

Table 2. ASTM E 96 results for 3 mm Magnum® Board in SI Units

Test Sample	Test Method	Property	Specimen Results							Requirement
			#1	#2	#3	#4	#5	Avg	Std Dev	
3 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure A)	WVT (g/h-m <sup>2</sup> )	2.73	2.83	2.11	2.70	2.39	2.55	0.30	Report
		Permeance (ng/Pa-s-m <sup>2</sup> )	548	566	422	540	479	511	59.4	Report
3 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure B)	WVT (g/h-m <sup>2</sup> )	10.3	9.1	9.2	9.5	10.4	9.7	0.6	Report
		Permeance (ng/Pa-s-m <sup>2</sup> )	2,058	1,827	1,851	1,908	2,091	1,947	121	Report

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Table 3. ASTM E 96 results for 18 mm Magnum® Board in U.S. Customary Units

Test Sample	Test Method	Property	Specimen Results							Requirement
			#1	#2	#3	#4	#5	Avg	Std Dev	
18 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure A)	WVT (grains/h-ft <sup>2</sup> )	1.51	1.27	1.45	1.33	1.45	<b>1.40</b>	0.10	Report
		Permeance (Perms)	3.69	3.10	3.54	3.24	3.53	<b>3.42</b>	0.24	Report
18 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure B)	WVT (grains/h-ft <sup>2</sup> )	5.08	5.10	6.05	6.94	6.78	<b>6.78</b>	0.89	Report
		Permeance (Perms)	12.4	12.4	14.8	16.9	16.5	<b>14.6</b>	2.2	Report

Table 4. ASTM E 96 results for 18 mm Magnum® Board in SI Units

Test Sample	Test Method	Property	Specimen Results							Requirement
			#1	#2	#3	#4	#5	Avg	Std Dev	
18 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure A)	WVT (g/h-m <sup>2</sup> )	1.06	0.89	1.01	0.93	1.01	<b>0.98</b>	0.07	Report
		Permeance (ng/Pa·s·m <sup>2</sup> )	211	177	202	185	202	<b>196</b>	14	Report
18 mm Magnum® Board @ 73 °F & 50 %RH	ASTM E 96 (Procedure B)	WVT (g/h-m <sup>2</sup> )	3.54	3.55	4.21	4.84	4.72	<b>4.17</b>	0.62	Report
		Permeance (ng/Pa·s·m <sup>2</sup> )	709	712	844	969	946	<b>836</b>	124	Report

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**Statement of Attestation:**

The water vapor transmission of Magnum® Board was determined in accordance with ASTM E 96: *Standard Test Methods for Water Vapor Transmission of Materials* as described herein. Procedure A and Procedure B were utilized. The laboratory test results presented in this report are representative of the material supplied.

Signed:   
Steven Mueller  
Technician

Signed:   
Zach Priest  
Director

Date: August 14, 2011

Date: August 14, 2011

**Report Issue History:**

Issue #	Date	Pages	Revision Description (if applicable)
Original	8/14/2011	9	NA

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## Appendix

1. Test Data Worksheet for 3 mm Magnum® Board Procedure A, Desiccant Method
2. Test Data Worksheet for 3 mm Magnum® Board Procedure B, Water Method
3. Test Data Worksheet for 18 mm Magnum® Board Procedure A, Desiccant Method
4. Test Data Worksheet for 18 mm Magnum® Board Procedure B, Water Method

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## TEST DATA WORKSHEET

ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials

Client: Magnum Building Products

PRI-CMT Project ID: MBP-004-02-01

Product Name: Magnum Board (MgO board)

Miami-Dade Notification: Blank

Product Description: 3mm Magnum Board procedure A

### Test Conditions:

Temperature: 73.0 °F

Cup Size: 0.0641 ft²

Humidity (High): 100 %RH

Description: Test specimens were excised from larger samples, placed into cups containing Desiccant and waxed in place. Wax sealed the test specimen sides (i.e. thickness) as well as to the cup. Prepared specimens were placed in the constant temperature, constant humidity controlled environment to complete testing.

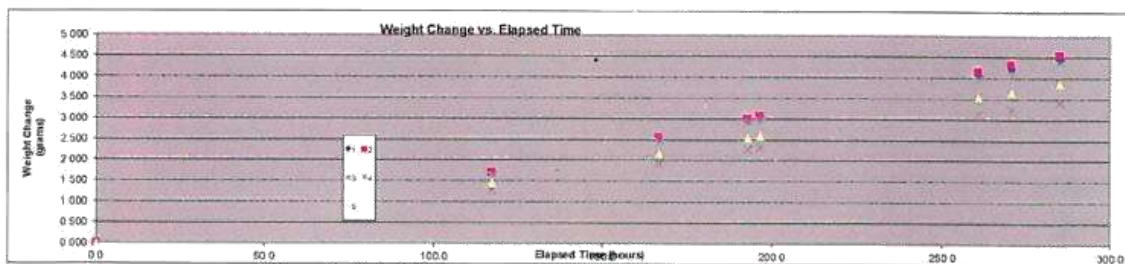
Humidity (Low): 50 %RH

### Test Data:

Sample ID: Thickness (in):		1			2			3			4			5		
Date	Elapsed (hrs)	Measured Weight (g)	Weight Change (g)	Used	452	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used
7/28/11 10:00 AM	0.0	135.090	0.000		135.492	0.000		130.523	0.000		131.615	0.000		130.480	0.000	
8/2/11 7:15 AM	117.3	136.725	1.635		137.194	1.702		131.890	1.367		133.243	1.628		140.930	1.440	
8/4/11 8:20 AM	166.3	137.541	0.816		138.040	0.846		132.436	0.546		134.056	0.813		141.634	0.714	
8/5/11 10:50 AM	192.8	137.979	0.438	+	138.490	0.450	+	132.774	0.338	+	134.496	0.430	+	142.018	0.384	+
8/5/11 2:35 PM	196.6	138.039	0.060	+	138.552	0.062	+	132.817	0.043	+	134.547	0.051	+	142.069	0.051	+
8/8/11 6:40 AM	260.6	139.090	1.051	+	139.636	1.067	+	133.627	0.810	+	135.582	1.035	+	142.990	0.921	+
8/9/11 4:40 PM	270.7	139.246	0.156	+	139.800	0.161	+	133.749	0.122	+	136.737	0.155	+	143.127	0.137	+
8/9/11 7:15 AM	285.3	139.494	0.238	+	140.044	0.244	+	133.936	0.187	+	136.920	0.233	+	143.332	0.205	+

Graphical Analysis Charts	
Chart Set	Start Point
1	OK
2	OK
3	OK
4	OK
5	OK

Sample:	1	2	3	4	5
Area (ft²)	0.0641	0.0641	0.0641	0.0641	0.0641
Gt (grams/hr)	0.252	0.260	0.194	0.248	0.220
RSQ	1.0000	1.0000	1.0000	1.0000	1.0000
WVT (grains/in²-hr)	3.924	4.055	3.025	3.869	3.422
Temp (°F)	73.0	73.0	73.0	73.0	73.0
%RH (high)	100	100	100	100	100
%RH (low)	50	50	50	50	50
Permeance (perms)	9.58	9.90	7.38	9.44	8.38
Thickness	0.000	0.000	0.000	0.000	0.000
Permeability (perm-inch)	9.800	6.050	6.000	6.000	6.000



# Property of Magnum Building Products, LLC

MBP-004-02-01

PRI-CMT Accreditations: IAS TL-189; State of Florida TST5878; Miami-Dade 06-1116.02; CRRC

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TEST DATA WORKSHEET  
ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials

Client: Magnum Building Products  
Product Name: Magnum Board (MgO board)  
Product Description: 3mm Magnum Board procedure B  
PRI-CMT Project ID: MBP-004-02-01  
Miami-Dade Notification: Blank

Test Conditions:

Temperature: 73.0 °F  
Humidity (High): 100 %RH  
Humidity (Low): 50 %RH

Cup Size: 0.0641 ft²

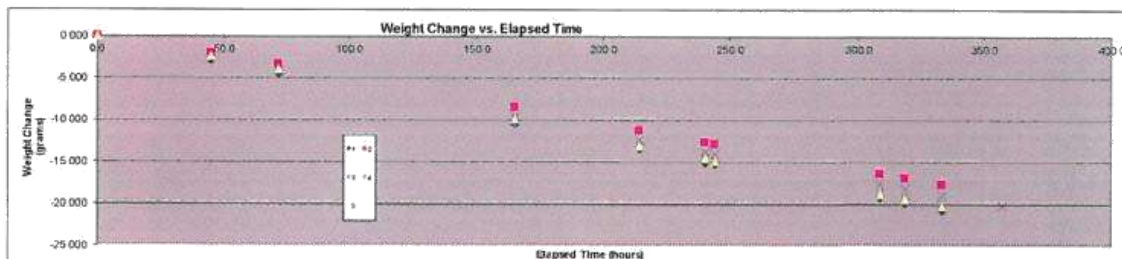
Description: Test specimens were excised from larger samples, placed into cups containing deionized water, and waxed in place. Wax soaked the test specimen sides (i.e. thickness) as well as to the cup. Prepared specimens were placed in the constant temperature, constant humidity controlled environment to complete testing.

Test Data:

Sample ID: Thickness (mil):		1			2			3			4			5		
Date	Elapsed (hrs)	Measured Weight (g)	Weight Change (g)	Used	462	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used
7/26/11 10:25 AM	0.0	127.897	0.000		137.070	0.000		130.965	0.000		129.921	0.000		134.287	0.000	
7/26/11 7:00 AM	44.8	124.973	-2.924		134.993	-2.077		129.307	-2.658		127.263	-2.658		131.851	-2.436	
7/28/11 10:05 AM	71.7	123.270	-1.703		133.590	-1.403		126.704	-1.623		125.639	-1.624		130.299	-1.552	
8/2/11 7:15 AM	164.8	117.313	-5.957	*	128.447	-5.143	*	121.246	-5.538	*	119.247	-6.392	*	124.368	-5.931	*
8/4/11 8:30 AM	214.1	114.336	-3.977	*	125.795	-2.652	*	118.945	-2.300	*	116.726	-2.521	*	121.201	-3.167	*
8/9/11 10:44 AM	240.3	112.738	-1.598	*	124.959	-1.436	*	117.007	-1.479	*	115.183	-1.543	*	119.599	-1.633	*
8/9/11 2:38 PM	244.2	112.462	-0.246	*	124.138	-0.225	*	116.942	-0.225	*	114.948	-0.235	*	119.320	-0.248	*
8/9/11 6:50 AM	306.4	108.535	-3.957	*	120.846	-3.492	*	113.271	-3.571	*	111.213	-3.735	*	115.341	-3.979	*
8/9/11 4:40 PM	318.2	107.823	-0.612	*	120.102	-0.544	*	112.727	-0.544	*	110.642	-0.571	*	114.753	-0.588	*
8/9/11 7:20 AM	332.9	107.052	-0.671	*	119.331	-0.771	*	111.953	-0.774	*	109.629	-0.813	*	113.909	-0.845	*
8/10/11 7:53 AM	357.6							110.713	-1.240	*						

Graphical Analysis Controls	
Run Set	Start Point
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0

Sample:	1	2	3	4	5
Area (ft²)	0.0641	0.0641	0.0641	0.0641	0.0641
Gt (grams/ft²)	0.945	0.839	0.850	0.876	0.960
RSQ	1.0000	1.0000	0.9998	0.9993	0.9998
WVT (grains/ft²-h)	14.742	13.087	13.261	13.664	14.939
Temp (°F)	73.0	73.0	73.0	73.0	73.0
S	0.8195	0.8195	0.8195	0.8195	0.8195
%RH (high)	100	100	100	100	100
%RH (low)	50	50	50	50	50
Permeance (perms)	35.38	31.54	32.38	33.35	36.56
Thickness	0.000	0.000	0.000	0.000	0.000
Permeability (perm-inch)	0.000	0.000	0.000	0.000	0.000



Property of Magnum Building Products, LLC

MBP-004-02-01 PRI-CMT Accreditations: IAS TL-189; State of Florida TST5878; Miami-Dade 06-1116.02; CRRC

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TEST DATA WORKSHEET  
ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials

Client: Magnum Building Products  
Product Name: Magnum Board (MgO board)  
Product Description: 18mm Magnum Board procedure A

PRI-CMT Project ID: MBP-004-02-01  
Miami-Dade Notification: Blank

Test Conditions:

Temperature: 73.0 °F  
Humidity (High): 100 %RH  
Humidity (Low): 50 %RH

Cup Size: 0.0641 ft²

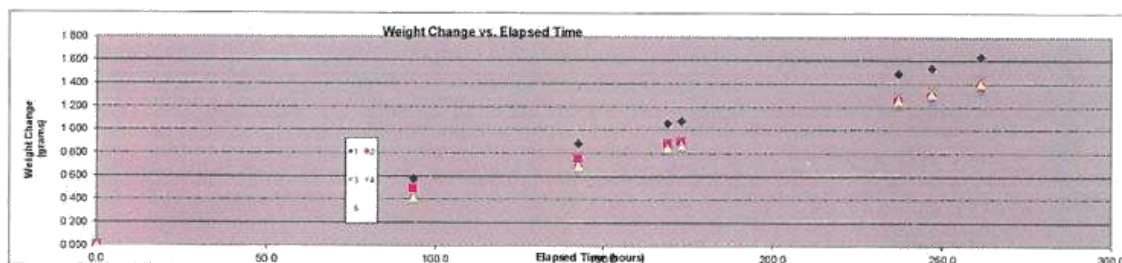
Description: Test specimens were excised from larger samples, placed into/cups containing desiccant, and waxed in place. Wax sealed the test specimen sides (± thickness) as well as to the cup. Prepared specimens were placed in the constant temperature, constant humidity controlled environment to complete testing.

Test Data:

Sample ID:		1			2			3			4			5		
Thickness (mm):																
Date	Elapsed (hrs)	Measured Weight (g)	Weight Change (g)	Used	462	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used
7/29/11 10:00 AM	0.0	237.073	0.000		244.622	0.000		239.367	0.000		240.427	0.000		241.742	0.000	
8/2/11 7:20 AM	93.3	237.645	0.572		245.103	0.483		239.804	0.437		240.832	0.405		242.150	0.408	
8/4/11 6:25 AM	142.4	237.952	0.307	*	245.361	0.258	*	240.084	0.280	*	241.093	0.261	*	242.426	0.276	*
8/5/11 10:45 AM	169.8	238.123	0.171	*	245.699	0.338	*	240.246	0.162	*	241.240	0.147	*	242.596	0.160	*
8/5/11 2:45 PM	172.8	238.144	0.021	*	245.515	0.016	*	240.269	0.023	*	241.259	0.019	*	242.607	0.021	*
8/8/11 6:50 AM	236.8	238.553	0.409	*	245.894	0.349	*	240.660	0.391	*	241.621	0.362	*	242.996	0.391	*
8/8/11 4:45 PM	246.8	238.606	0.055	*	245.908	0.014	*	240.713	0.053	*	241.669	0.048	*	243.051	0.053	*
8/9/11 7:25 AM	261.4	238.700	0.092	*	245.985	0.077	*	240.799	0.086	*	241.746	0.077	*	243.139	0.088	*

Graphical Analysis Overview	
Rate Set	Start Point
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0

Sample:	1	2	3	4	5
Area (ft²)	0.0641	0.0641	0.0641	0.0641	0.0641
Gr (grams/hr)	0.097	0.081	0.093	0.095	0.093
RSD	0.0000	0.0000	0.0000	0.0000	0.0000
WVT (grains/ft²/h)	1.613	1.270	1.449	1.329	1.445
Temp (°F)	73.0	73.0	73.0	73.0	73.0
S	0.0195	0.0195	0.0195	0.0195	0.0195
%RH (high)	100	100	100	100	100
%RH (low)	50	50	50	50	50
Permeance (perms)	3.69	3.10	3.54	3.24	3.63
Thickness	0.000	0.000	0.000	0.000	0.000
Permeability (perm-inch)	0.000	0.000	0.000	0.000	0.000



Property of Magnum Building Products, LLC

MBP-004-02-01 PRI-CMT Accreditations: IAS TL-189; State of Florida TST5878; Miami-Dade 06-1116.02; CRRC

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TEST DATA WORKSHEET  
ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials

Client: Magnum Building Products  
Product Name: Magnum Board (MgO board)  
Product Description: 18mm Magnum Board procedure B

PRI-CMT Project ID: MBP-004-02-01  
Miami-Dade Notification: Blank

Test Conditions:

Temperature: 73.0 °F  
Humidity (High): 100 %RH  
Humidity (Low): 50 %RH

Cup Size: 0.0641 ft<sup>2</sup>

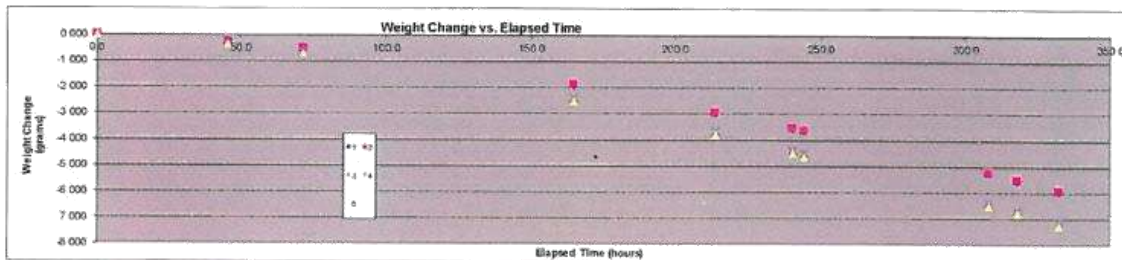
Description: Test specimens were excised from larger samples, placed into the cups containing deionized water, and waxed in place. Wax sealed the test specimen sides (i.e. thickness) as well as to the cup. Prepared specimens were placed in the constant temperature, constant humidity controlled environment to complete testing.

Test Data:

Sample ID: Thickness (mil)		1			2			3			4			5		
Date	Elapsed (min)	Measured Weight (g)	Weight Change (g)	Used	462	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used	Weight (g)	Weight Change (g)	Used
7/26/11 10:30 AM	0.0	242.567	0.000		234.177	0.000		241.515	0.000		238.633	0.000		239.969	0.000	
7/26/11 7:05 AM	45.4	242.263	-0.304	*	233.891	-0.286	*	241.142	-0.374	*	238.282	-0.291	*	239.595	-0.304	*
7/26/11 10:05 AM	71.6	242.025	-0.238	*	233.647	-0.244	*	240.820	-0.321	*	237.965	-0.314	*	239.255	-0.330	*
8/2/11 7:25 AM	184.9	240.634	-1.391	*	232.263	-1.394	*	239.067	-1.254	*	236.175	-1.292	*	237.405	-1.655	*
8/4/11 8:30 AM	214.0	239.596	-1.038	*	231.220	-1.043	*	237.829	-1.238	*	234.899	-1.277	*	236.144	-1.256	*
8/5/11 10:45 AM	240.2	239.000	-0.596	*	230.821	-0.599	*	237.120	-0.709	*	234.167	-0.732	*	235.431	-0.713	*
8/5/11 2:41 PM	244.2	238.065	-0.935	*	230.525	-0.996	*	237.005	-0.114	*	234.050	-0.117	*	235.317	-0.114	*
8/8/11 6:50 AM	306.3	237.329	-1.575	*	228.907	-1.618	*	235.144	-1.862	*	232.142	-1.908	*	233.457	-1.860	*
8/8/11 4:45 PM	318.2	237.023	-0.306	*	228.636	-0.271	*	234.835	-0.306	*	231.929	-0.313	*	233.154	-0.303	*
8/9/11 7:20 AM	332.8	236.629	-0.394	*	228.250	-0.385	*	234.403	-0.435	*	231.377	-0.452	*	232.711	-0.443	*
																</

Graphical Abstract Data (continued)	
Date Test	Start Point
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0

Sample	1	2	3	4	5
Area (ft <sup>2</sup> )	0.0641	0.0641	0.0641	0.0641	0.0641
G (grains/s)	0.326	0.327	0.357	0.445	0.434
RSQ	0.9849	0.9846	0.9894	0.9555	0.9589
WVT (grains/ft <sup>2</sup> ·h)	5.073	5.099	5.645	6.941	6.775
Temp. (°F)	73.0	73.0	73.0	73.0	73.0
S	0.8195	0.8195	0.8195	0.8195	0.8195
%RH (High)	100	100	100	100	100
%RH (Low)	50	50	50	50	50
Permeance (perm)	12.19	12.44	14.75	16.94	16.44
Thickness	0.000	0.000	0.000	0.000	0.000
Permeability (perm-inch)	0.000	0.000	0.000	0.000	0.000



Property of Magnum Building Products, LLC

End of Report

MBP-004-02-01 PRI-CMT Accreditations: IAS TL-189; State of Florida TST5878; Miami-Dade 06-1116.02; CRRC

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## EXHIBIT "B"



RESOURCES  
APPLICATIONS,  
DESIGNS &  
CONTROLS, INC.

March 28, 2013

Daniel P. Armstrong Sr.  
Magnum Building Products, LLC  
405 North Reo Street  
Suite 300  
Tampa, FL 33609

3220 E. 59TH STREET  
LONG BEACH, CA 90805  
Tel (562) 272-7231  
Fax (562) 529-7513  
[www.RADCOinc.com](http://www.RADCOinc.com)  
email: [info@RADCOinc.com](mailto:info@RADCOinc.com)

RE: Testing of Magnum Building Products' magnesium-oxide board

Dear Mr. Armstrong:

This is in response to your email of March 27, 2013 and your request to verify the testing conducted by RADCO on your magnesium oxide board.

RADCO conducted testing on your product per the ICC-ES *Acceptance Criteria for Fiber-reinforced Magnesium-oxide Based Sheets*, (AC308) effective November 1, 2007.

The results are reported in the following test reports:

- RADCO Test Report No. RAD-4224 Rev. I, dated December 16, 2009
- RADCO Test Report No. RAD-4224-S1, dated October 28, 2009
- RADCO Test Report No. RAD-4451, dated September 21, 2009

The results of all testing demonstrate compliance with the ICC-ES *Acceptance Criteria for Fiber-reinforced Magnesium-oxide Based Sheets*, (AC308) effective November 1, 2007.

Sincerely,

RADCO

Sanjay "Jay" Mishra, Vice President  
Testing Laboratories & Code Interface Services  
SM/sm

C:\Data\Documents\Docs-13\magnum building products1.wpd

Property of Magnum Building Products, LLC



EXHIBIT “C”

