HOME of MAGNUM BOARD®

"The New Generation *GREEN* Building Material"

"Install It for Health & Safety-Install It for Life"

Sheathing, Flooring & Roofing Substrate & Siding Products

# MAGNUM "MgO" FIBER REINFORCED BUILDING MATERIALS

## CERTIFIED TEST SUMMARY

**Magnum Board® Fiber Reinforced MgO Building Materials are the most tested and certified MgO building materials in the World. Certifications include International Code Council (ICC) to ASTM test methods and standards, Underwriters Laboratories (UL), Canadian Construction Materials Centre (CCMC), and Conformitè Europëenne (CE) for fire testing.**

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| **TECHNICAL BULLETIN No.:** | 070115.1451 |

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| **Subject:** | Magnum Product Certified Testing Summary & Product Specifications –MBP-IP LLC<br>ICC-AC386 Criteria – ASTM and UL Test Procedures with additional testing for specific products and as required. |
| **Issue Date:** | July 1, 2015 |
| **Issue No.:** | XXXII– January 2022 |

## Standard Density Structural and Performance ProductTesting Conducted by:

**RADCO – Long Beach, CA.**
Test Report Numbers: RAD-4224, RAD-4224-S1 and RAD-4451, Rev. 1

**PRI Construction Materials Technologies, LLC – Tampa, FL**
Test Report Numbers: MBP-001-02-01, MBP-002-02-01, MBP-003-02-01, MBP-004-02-01 and MBP-005-02-01

## Fire Testing Conducted / Witnessed by:

**Southwest Research Institute – San Antonio, TX**
Test Report Numbers: 01.1521.01.101c, 01.11813.02.046, 01.11810.165a, 01.11810.01.165b and 01.11850.01.431

**Underwriters Laboratories – Northbrook, IL**
File Number: R26120 USA Design Number UO61

**Underwriters Laboratories – Toronto, Canada**
Desigtn Number W490

**Exova Warrington Fire – North America**
Report Number: 13-002-529 (A)

**SGS Testing Labs**
Report Number: AJFS1805004403FF-01

## Additional Testing Conducted By

**EMSL Analytical – Cinnaminson, NJ**
Test Report Numbers: 361100056 and 361100055

**Intertek – Middleton, WI**
Test Report Number: 101433709MID-001, Rev 1

**Florida Product Approval**
Magnum MgO Building Materials has achieved Florida Product Approval. Please refer to our ESR 2880 report.

## TEST RESULTS

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| TEST / STANDARD | RESULTS |
|---|---|
| Flexural Strength – C1185 | **AS RECEIVED**<br><br>**THICKNESS** / **DIRECTION** / **AVE FLEXURAL STRENGTH (PSI)** / **MODULUS OF ELASTICITY (PSI)**<br>6MM Machine 2296 PSI 1,158,532<br>Cross 2054 PSI 1,145,587<br>10MM Machine 1900 PSI 787,801<br>Cross 1694 PSI 744,632<br>12MM Machine 1038 PSI 625,536<br>Cross 1508 PSI 719,574<br><br>**SATURATED**<br><br>**THICKNESS** / **DIRECTION** / **AVER FLEXURAL STRENGTH (PSI)** / **MODULUS OF ELASTICITY (PSI)**<br>6MM Machine 2,023 PSI 608,575<br>Cross 1,707 PSI 572,930<br>10MM Machine 1,376 PSI 427,625<br>Cross 1,068 PSI 402,869<br>12MM Machine 1,110 PSI 364,706<br>Cross 649 PSI 380,366<br><br>AC-386 specifies a minimum average flexural strength of 580 psi. Magnum Board® exceeds this requirement. |
| Compressive Strength D2394. | **THICKNESS** 12MM — **PSI** 3190<br><br>NOTE: In-House test results exceeds the requirements of D2394. |
| Dimensions and Tolerances per C1325-04 | **Length:** Meets requirements of section 7.4 of ASTM C1186<br>**Width:** Meets requirements of section 7.4 of ASTM C1186<br>**Thickness:** Meets requirements of section 7.5 of ASTM C1186<br>**Squareness:** Meets requirements of section 7.6 of ASTM C1186<br>**Edge Straightness:** Meets requirements of section 7.7 of ASTM C1186<br>**Surface Finish:** Front surface finish is glass smooth. Back side can be either coarse back or rolled back. |
| Moisture Movement – C1186 | **Thickness** / **Direction** / **Average Dimensional Change**<br>6MM Machine 0.01%<br>Cross 0.03%<br>10MM Machine TBA<br>Cross TBA<br>12MM Machine 0.004%<br>Cross 0.003% |
| Water Absorption 0 C1186 | 12MM = 23% |
| Standard Test Method for Resistance to Growth of Mold and Mildew – ASTM D-3273 | Magnum Board® is ranked 10 fo 10and exceeds the requirements of test method ASTM D-3273. Magnum Board® is not a nutrient for mold and /or mildew. |
| Compression Indentation – C1325 | No resideual deformation was noted following loading and the rest period. Exceeds requirements of C-1325. |
| Nail Head Pull Through – C1325 | 12MM = 174.lbg<br>Magnum Board® exceeds the requirements of C-1325 |

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| Falling Ball Impact – C-1325 | All Magnum Board® specimens exceed the 12" requirements per C-1325 by nearly 2X |
| Shear Bond Strength – C-1325 | **Mortar** **Average Shear Strength –(PSI)**<br>Portland 168.82<br>Latex 234.32<br>Magnum Board® exceeds the requirements of C-1325<br>NOTE: Refer to endorsement by Mapei and the Mapei installation instructions for backer board. |
| Humidified Deflection – C-1396-06A | Magnum Board® exceeds requirements of ASTM C-1396 and AC-386 |
| Surface Burning Characteristics – E84-05 | 6MM - - Classification A<br>12MM - - Classification A<br>Magnum Board® exceeds the test criteria presented in ASTM E84 and is classified non-flammable. |
| Surface Burning Characteristics – Europe EN 13501-1:2007+A1:2009 | Reaction to fire classification: A1 Rating |
| 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 UL-263, ULC S101-07, ULC S102-10, ULC S135-04 and ASTM E119 | Exceeds requirements for single 12mm (15/32" layer one-(1) hour fire wall rating. File No. R26120 USA Design No. U061, BXUV – Fire Resistance Ratings – ANSI/UL Certtified for United States.<br><br>Canada Design No. – W490 Wall Assembly Design Number S102 for zero smoke develop / zero flame spread BXUV7 – Fire Resistance Ratings – CAN/ULC-S101 Certified for Canada.<br><br>NOTE: Two-(2) houjr ASTM E-119 single layer wall fire testing has been conducted and hose stream passed, but is not UL certified. This test Conducted by Southwest Research Institute. 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 based products. These are true one and two hour fire wall test. |
| Xenon Arc Accellerated Weathering – ASTM G155 | All five-(5) specifimens were examined under 5X magnification following 2,000 hours of exposure. No signs of surface cracking, checking, crazing, erosion, or chalking were observed.<br>Magnum Board® exceeds the requirements of ASTM G155. |
| Freeze / Thaw - ASTM C-1185 | Magnum Board® exceeds the requirements of ASTM C-1185 and AC-386.<br>Magnum Board® exceeds the combustion toxcicity 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.<br>NOTE: 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 – E72 | Magnum Board® exceeds the structural requirements of ASTM E72 and AC-386 |
| Permenance (Vapor Transmission) | ASTM E 96 / E 96M -05 Results at bottom of report |
| Density | All Magnum Board® products range in density from 1.0 to 1.05 except 18mm Roofing and Flooring Substrate which has a density of 1.25. |
| Surface Texture | **Magnum Board® Sheathing Textures**<br>Front: Smooth<br>Back: Sanded or Rolled.<br>**Magnum 1-11** |

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| | Front: Wood Grain, Smooth or Sanded<br>Back: Sanded or Rolled<br>**Magnum Siding**<br>Front: Wood Grain, Smooth, or Sanded<br>Back: Sanded or Rolled |
| Color | Off white |
| Basic Compounds | Refer to MBP's MSDS which can be obtained from our website: www.magnumbp.com or by contacting our home offce. |
| Transverse Load iaw AC0376 – E72 | **Positive Load Ultimate Failure** / **Negative Load Ultimate Failure**<br>**Test Sample** Psf Kpa Psf Kpa<br>1 133.12 6.37 111.80 5.35<br>2 142.48 6.82 140.82 6.74<br>3 161.30 7.72 139.36 6.67<br>Average. 145.63 6.97 130.66 6.26<br>Standard Deviation 14.35 0.69 16.35 0.78<br>Results of transverse loads exceed the requirements of AC-376 |
| Wet Racking Shear IAW AC-376 – E72 Section 15.05 | **Test Number** / **Ultimate Load (LBF)** / **LBG / Lineal FT**<br>1 3,600 450<br>2 3,600 450<br>3 2,900 363<br>Average 3,367 421<br>Standard Deviation 404 51 |
| ASTM D696 – 08 Standard Test Method to Determine the Coefficient of Linear Thermal Expansion | Thermal Coefficient of Lineal Expansion, al, [in/in-°F] 38-90°F<br>Result: 3.97 X 10_6 |
| Determine Hygrometric Coefficient of Expansion | Hygrometric Coefficient of Expansion-(HCE), unrestrained, for Magnnum® Board, 18mm nominal thickness; [in/in/%RH] 10% - 90% RH<br>Result: 2.08 X 10_5 |
| Determine the Thermal Coefficient of Linear Expansion of Magnum Board® | Thermal Coefficient of Linear Expansion, 3.97 X 10_6 al, [in/in-°F]<br>Result: 38 – 90°F |
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| Asbestos | Magnum Board® is Asbestos free |
| Carcinogens | Magnum Board® is Carcinogen free.<br>Refer to MBP U-Pitt toxicity test report above. |
| Formaldehyde | Magnum Board® is formaldehyde free |
| off-gassing – The emission of especially noxious gasses | Magnum Board® Products do not off gas |
| STC Values | STC-48 based on a standard wall system using 12mm Magnum Board® sheathing on both sides of a wall with either wood or metal stud construction and batts.<br>NOTE: These results are in house test lab results and are not certified by an approved ICC testing laboratory. |
| R Values | Magnum Board® thermal insulation "R" value per inch is 1.2 as compared to:<br>Cement Board .8<br>Plywood 1.2<br>Gypsum Wallboard .9<br>Gypsum Sheathing 1.1<br>OSB 1.0 |

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| Florida Product Approval | Magnum Fiberglass Reinforced MgO Building Materials are Florida Product approved. Please refer to page 3 of 3, section 2.0 entitled "Conclusions" of our ESR-2880 FBC Supplement dated December 2021 thru Decembrer 2022 for specific information regarding this approval. |

## Permenance (Vapor Transmission):

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

ASTM E 96 (Procedure A)
WVT (grains/h·ft2) 3.67 0.43
Permeance (Perms) 8.93

ASTM E 96 (Procedure B)
WVT (grains/h·ft2) 13.9
Permeance (Perms) 34.0

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

ASTM E 96 (Procedure A)
WVT (g/h·m2) 2.55
Permeance (ng/Pa·s·m2) 511

ASTM E 96 (Procedure B)
WVT (g/h·m2) 9.7
Permeance (ng/Pa·s·m2) 1,947

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

ASTM E 96 (Procedure A)
WVT (grains/h·ft2) 1.40
Permeance (Perms) 3.42

ASTM E 96 (Procedure B)
WVT (grains/h·ft2) 6.78
Permeance (Perms) 14.6

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

ASTM E 96 (Procedure A)
WVT (g/h·m2) 0.98
Permeance (ng/Pa·s·m2) 196

ASTM E 96 (Procedure B)
WVT (g/h·m2) 4.17
Permeance (ng/Pa·s·m2) 836

# IMPORTANT NOTES – PLEASE READ BEFORE SPECIFYING

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1. For technical details, refer to Magnum Board® specifications.
2. For installation instructions, refer to specific Magnum Board® product installation instructions.
3. See footer for contact instructions

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