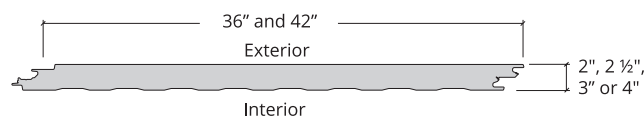




INSULATED METAL PANELS

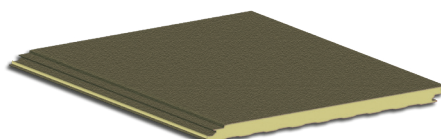
TUFF WALL® / TUFF-CAST™

The Tuff Wall® and Tuff-Cast™ panels are designed for exterior applications where an aggregate look is preferred. The exterior skin of the panel is embossed flat, while the interior skin has the embossed light Mesa profile. Tuff Wall® has a finish similar to stucco, providing the masonry look many designers and communities desire. The Tuff-Cast™ exterior is finished with look of precast concrete. The exterior textured surface of the panel is a factory applied, hard aggregated fiber reinforced polymer coating called Tuff Cote®. Tuff Cote® finish offers an extremely durable, impact and abrasion resistant coating that withstands severe weather conditions.

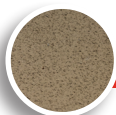


Features and Benefits:

- Offers an aggregate finish with the thermal efficiency of an insulated metal panel.
- Utilizes concealed clips, eliminating thermal short circuits.
- A durable finish that is highly resistant to impact and abrasion.
- A 10-year limited warranty.



TUFF WALL®



TUFF-CAST™

Product Specifications

Applications: Wall (Vertical or Horizontal)

Coverage Widths: 36", 42"

Thicknesses: 2", 2½", 3", 4", 5"*, 6"*

Lengths:

8'-0" to 32'-0" for horizontal textured

8'-0" to 40'-0" for vertical textured

Attachment: Concealed fastening system

Insulation Material: Non-CFC foamed-in-place polyurethane foam cured to achieve a minimum density of 2.2 pounds

Accessories: Fasteners, sealants, standard and custom trim

Exterior Gauge: 24 (standard); 22 (optional)

Interior Gauge: 26 (standard); 24, 22 (optional)

Exterior Finishes: Tuff Wall® or Tuff-Cast™

Interior Finishes: Embossed, light Mesa profile

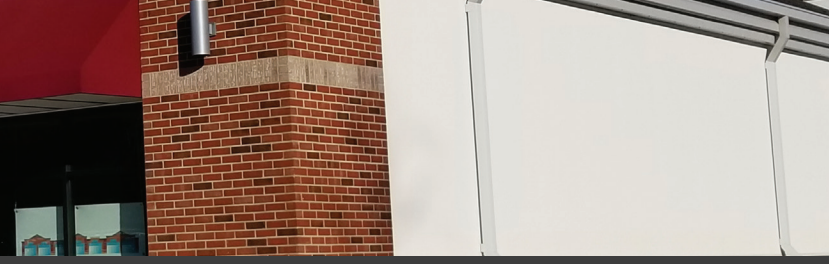
Exterior Coatings: Applied Finishes

U-Factors and R-Values**

| U-Factor (BTU/h-ft ² ° F) | | R-Value (h-ft ² ° F/ BTU) | |
|--------------------------------------|--------|--------------------------------------|-------|
| PANEL WIDTH: 42" | | PANEL WIDTH: 42" | |
| | 75° | | 75° |
| 2" | 0.0669 | 2" | 14.95 |
| 2½" | 0.0500 | 2½" | 20.00 |
| 3" | 0.0400 | 3" | 25.00 |
| 4" | 0.0307 | 4" | 32.57 |
| 5" | 0.0264 | 5" | 37.88 |
| 6" | 0.0224 | 6" | 44.64 |

*5" and 6" CF Tuff-Cast and Tuff Wall available with Mesa, nominal ½" deep profile only

**Based on ASTM C518, ASTM C1363 and thermal modeling, 75° F core mean temp.



TUFF WALL® / TUFF-CAST™

INSULATED METAL PANELS

| CATEGORY | CHARACTERISTIC | TEST METHOD | PURPOSE | RESULT |
|-----------------------|--|---|---|--|
| ENVIRONMENTAL | Thermal Transmission | ASTM C518 | Measure the heat transmission coefficient per unit thickness (k-factor) | 0.140 BTU-in/hr-ft ² ·° F (7.14/inch) at 75° F mean temperature 0.126 BTU-in/hr-ft ² ·° F (7.94/inch) at 40° F mean temperature 0.118 BTU-in/hr-ft ² ·° F (8.47/inch) at 20° F mean temperature |
| | | ASTM C1363 | Measures the resistance to heat flow (or R-Value) of a construction assembly in a guarded hot box | Varies up to R-8.5/inch of panel thickness at 40° F mean temperature (See Appendix A) |
| | Air Leakage Through Wall Panel Joints | ASTM E283 | Determines the air leakage characteristics of metal wall panels under specified air pressure differences at ambient conditions | 0.01 cfm/ft ² at 20 psf static pressure |
| | Water Penetration Through Wall Panel Joints | ASTM E331 | Determines the resistance to water penetration of metal wall panels under uniform static air pressure difference | No uncontrolled water penetration through the panel joints at a static pressure of 20 psf |
| FOAM PROPERTIES | Foam Density | ASTM D1622 | Determines the apparent density of rigid cellular plastics | 2.3 pcf |
| | Foam Compressive Strength | ASTM D1621 | Determines the behavior of cellular materials under compressive load | 15 psi through-thickness 22 psi other directions |
| | Foam Tensile Strength | ASTM D1623 | Measures the tensile strength of the foam from a cored sample | 30 psi through-thickness 33 psi lowest any other direction |
| | Foam Shear Strength | ASTM C273 | Measures the shear strength of the foam from a cored sample | 16 psi lowest in any direction |
| FIRE RESISTANCE | Surface Burning Characteristics | ASTM E84 | Provides comparative measurements of surface flame spread and smoke density measurements relative to that of select grade red oak and fiber-cement board surfaces under specific fire exposure conditions | Flame Spread index of 20, Smoke Developed index of 350 |
| | Room Fire Performance | FM 4880 | Evaluates insulated roof and wall panels, interior finishes or coatings, and exterior wall systems for their performance in regard to fire | Class 1 Rating of wall and roof panels for use in unlimited height structures |
| | | NFPA 286 | Fire tests for the flammability characteristics of wall and ceiling interior finishes | The Panels meet the criteria of the IBC Section 803.1.2.1 |
| | | CAN/ULC S101 | Standard method of fire endurance tests of building construction and materials | The Panels provide 15-minute remain-in-place fire resistance rating |
| | | CAN/ULC S102 | Standard method of test for surface burning characteristics of building material and assemblies | Flame Spread index of 0 Smoke Developed Index of 45 Fuel Contributing Value of 0 |
| | | CAN/ULC S134 | Standard method of fire test of exterior wall assemblies | The Panels meet the criteria published in the standard |
| | CAN/ULC S138 | Standard method of test for fire growth of insulated building panels in a full-scale room configuration | The Panels meet the criteria published in the standard | |
| Wall Fire Performance | NFPA 285 | Evaluation of fire propagation characteristics of exterior non-load bearing wall assemblies in regard to fire | Panels meet the requirement of the standard | |
| STRUCTURAL | Uplift Resistance | ASTM E72 ASTM E330 | Provides a standard procedure to evaluate or confirm structural performance under uniform static air pressure difference | See Load Chart Section |
| | Positive Load Resistance | ASTM E72 | Tests the behavior of segments of wall construction under conditions representative of those encountered in service | See Load Chart Section |
| WALL LISTINGS | Wall Performance – FM Global® (See Note 1 below) | FM 4881 | Sets performance standards for panel walls including wind load resistance and hail resistance Requires a Class 1 rating by FM Global Standard 4880 as a prerequisite | See FM Global Approval Guide for Building Products complete listings |

Notes: 1. Wall panels with textured coatings are not approved for the FM 4881 test method.

Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. In a continuing effort to refine and improve products, MBCI reserves the right to discontinue products at any time or change specifications and/or designs without incurring obligation. To ensure you have the latest information available, please inquire or visit our website at www.mbc.com. Application details are for illustration purposes only and may not be appropriate for all environmental conditions, building designs or panel profiles. Projects should be designed to conform to applicable building codes, regulations and accepted industry practices. If there is a conflict between this manual and project erection drawings, the erection drawings will take precedence. MBCI's insulated metal panel product line is manufactured by Metl-Span®.

