Mitsubishi Plastics Composites America, Inc.

ALPOLIC® MATERIALS

1. Product Name

ALPOLIC®/fr Composite Fire Resistive Metal Panels

2. Manufacturer

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3. Product Description

BASIC USE

ALPOLIC®/fr Composite Metal Panels are used for cladding of non-residential and residential structures. They are manufactured, fabricated and installed to withstand stress from deflection and thermal movement and to maintain performance criteria stated by the manufacturer.

COMPOSITION & MATERIALS

ALPOLIC/fr Composite Fire Resistive Metal Panels are 4 or 6 mm thick with a mineral filled fire resistive thermoplastic core material that meets performance characteristics specified when fabricated into composite assembly. Face sheets are aluminum 3105-H14 alloy, or equivalent, 0.020" (0.51 mm) thick. Sheets are thermally bonded in continuous process to core material.

FINISHES

ALPOLIC/fr panels are available with fluorocarbon and polyester coatings. The standard fluorocarbon finish is a Lumiflon® (FEVE) based resin. Lumiflon-based fluoropolymer resin coatings meet or exceed values expressed in AAMA 2605 where relevant to coil coatings. Custom Kynar® (PVDF) based fluorocarbon finishes along with natural metals (zinc, stainless steel, and titanium) are available.

COLORS

A pallet of bright, vibrant and vivid colors in a wide gloss range is available. A Class 1 anodized finish is available, as well as a Stone and Timber series finish.

LIMITATIONS

Deflection of perimeter framing member should not exceed L/175 normal to plane of the wall; deflection of individual panels should not exceed L/60. At connection points of framing members to anchors, anchor deflection in any direction should not exceed 1/16" (1.6 mm). Allow for free horizontal and vertical thermal movement, due to expansion and contraction of components over a temperature range. Fabrication, assembly and erection procedures should take into account the ambient temperature range at the time of the respective operation. Wall design should feature provisions to drain to the exterior face of the wall any leakage of water at joints and any condensation that can occur within the construction.

4. Technical Data

APPLICABLE STANDARDS

ASTM International

- ASTM C976 Standard Test Method for Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box (Withdrawn 2002)
- ASTM D696 Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer
- ASTM D1781 Standard Test Method for Climbing Drum Peel for Adhesives
- ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics
- ASTM E8 Standard Test Method for Tension Testing of Metallic Materials
- ASTM E72 Standard Test Methods for Conducting Strength Tests of Panels for Building Construction
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E108 (Modified) Standard Test Methods for Fire Tests of Roof Coverings
- ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials
- ASTM E283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
- ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
- ASTM E413 Standard Classification for Rating Sound Insulation

American Architectural Manufacturers Association (AAMA) - AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels

National Fire Protection Association (NFPA) - NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics

of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

Underwriters Laboratories of Canada, Ltd. (ULC) - CAN/ULC S134M

APPROVALS

- International Building Code (IBC) Research
- National Building Code (Canada)
- City of New York
- City of Los Angeles
- Miami Dade

PHYSICAL/CHEMICAL PROPERTIES

Tested for resistance to delamination as follows:

- Peel strength (ASTM D1781) - 22.5 in-lbs/in (100 N-m/m) minimum
- No degradation in bond performance after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F (21 degrees C)
- Coefficient of expansion (ASTM D696) - 13 x 10^{-6} in/in/°F
- Tensile yield 4 mm (ASTM E8) - 6344 psi (44 MPa)
- Tensile strength 4 mm (ASTM E8) - 7126 psi (49 MPa)
- Elongation - E8: 4 mm - 5%
- Thermal conductance (ASTM C976) - 10.75 Btu/(ft^2 x h x °F) (18 W/(m^2 x K))
- Sound transmission coefficient (ASTM E413) - 26

FIRE PERFORMANCE

- Flamespread (ASTM E84) - 0
- Smoke developed (ASTM E84) - 10 (for 4 mm FR)
- Surface flammability - Pass when tested per modified ASTM E108
- Flash point (ASTM D1929) - 811 degrees F (433 degrees C)
- Ignition temperature (ASTM D1929) - 837 degrees F (447 degrees C)
- NFPA 285 Intermediate Scale Multi Story Apparatus Test - Passed (4 and 6 mm)
- UBC 26-3 Room Corner Test - Passed (4 mm)
- ASTM E119 One Hour and Two Hour Rated Installs - Passed (4 mm)
- CAN/ULC S134M Canadian Full Scale Test - Passed (4 mm)

Fire test performance has established approval on Types 1, 2, 3, 4 and 5 construction throughout the United States and Canada.

5. Installation

PREPARATORY WORK

Field Measurements

Verify actual dimensions and openings by field measurement before fabrication. Show recorded measurements on shop drawings.

Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays. Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures. Include details showing thickness and dimensions of various system parts, fastening and anchoring methods, locations of joints and gaskets, and location and configuration of joints necessary to accommodate thermal movement. Submit selection and verification samples for finishes, colors and textures.

Delivery & Storage

Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Finish of panels is protected by heavy duty removable plastic film during production. Panels are packaged for protection against transportation damage. Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by ALPOLIC. Store panels in well-ventilated space out of direct sunlight. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).

Avoid contact with any other materials that might cause staining, denting or other surface damage.

METHODS

Shop fabricate to sizes and joint configurations indicated on the drawings. Where final dimensions cannot be established by field

measurement, provide allowance for field adjustment as recommended by the fabricator. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle. Fabricate with sharply cut edges, with no displacement of aluminum sheet or protrusion of core.

Production Tolerances

- Width - ± (2 mm/m)
- Length - ± (4 mm/m)
- Thickness - ± 0.008" (0.2 mm) for 4 mm panel
- Bow - Maximum 0.5% length or width
- Squareness - Maximum 0.2" (5 mm)
- Edges of sheets shall be square and trimmed with no protrusion of core material

Install panels plumb, level and true, in compliance with manufacturer's recommendations. Anchor panels securely in place, in accordance with fabricator's approved shop drawings. Comply with fabricator's instructions for installation of concealed fasteners and with provisions of specifications for installation of joint sealers.

Installation Tolerances

Maximum deviation from horizontal and vertical alignment of installed panels is 0.25"(6.4 mm) in 20' (6 m), non-cumulative. Complete installation recommendations are available from the manufacturer.

PRECAUTIONS

Repair panels with minor damage so that repairs are not discernible at a distance of 10' (3 m). Remove and replace panels damaged beyond repair. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.

BUILDING CODES

Current data on building code requirements and product compliance can be obtained from ALPOLIC technical support specialists. Installation must comply with requirements of all applicable local, state and national code jurisdictions.

6. Availability & Cost

AVAILABILITY

Contact manufacturer for information on distribution and local availability.

COST

Budget installed cost information can be obtained from the manufacturer.

7. Warranty

Contact manufacturer for information on warranty conditions, exclusions, duration and remedies.

8. Maintenance

These panels, when properly installed, require no specific maintenance. An occasional pressure washing can be required depending on local environmental conditions. Periodic inspection for sealant integrity is advised to ensure long-term system performance.

9. Technical Services

A staff of trained personnel offers design assistance and technical support. For technical assistance, contact ALPOLIC, Mitsubishi Plastics Composites America, Inc.

10. Filing Systems

- SmartBuilding Index (SBI)
- MANU-SPEC®
- Additional product information is available from the manufacturer upon request.