Mitsubishi Plastics Composites America, Inc.
401 Volvo Parkway
Chesapeake, VA 23320
Phone: (800) 422-7270
Fax: (757) 436-1896
E-mail: info@alpolic.com
www.alpolic-northamerica.com

This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat*™, *SectionFormat*™ and *PageFormat*™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets [ ]; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies composite metal panels for exterior and interior applications marketed under the ALPOLIC® trade name by Mitsubishi Plastics Composites America, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 07 42 13
METAL WALL PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Composite Metal panels.

1. Applications of composite metal panels include:

a. Exterior installation of composite metal panels.

b. Interior installation of composite metal panels.

Specifier Note: Revise Paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

B. Related Sections: Section(s) related to this section include:

1. Cold-Formed Metal Framing: Division 05 Cold-Formed Metal Framing Sections.
2. Sheet Metal Flashing and Trim: Division 07 Flashing and Sheet Metal Sections.
3. Joint Sealers: Division 07 Joint Sealers Sections.
4. Aluminum Windows: Division 08 Windows Sections.
5. Glazing: Division 08 Glass and Glazing Section.
6. Metal Framed Curtain Wall: Division 08 Glazed Curtain Wall Sections.

Specifier Note: Article below can be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 01 References Section may establish the edition date of standards. This Article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

1.02 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. ASTM International (ASTM):

1. ASTM D1781 Standard Test Method for Climbing Drum Peel for Adhesives.
2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E108 (Modified) Standard Test Methods for Fire Tests of Roof Coverings.
4. 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.

5. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors By Uniform Static Air Pressure Difference.
6. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors By Uniform Static Air Pressure Difference.

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

D. Underwriters Laboratories Inc. (UL):
1. UL 94 Standard for Flammability of Plastic Materials for Parts in Devices and Appliances.

E. International Organization for Standardization (ISO):
1. ISO 9001-2000 Quality Management Systems - Requirements.

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional, not dimensional, tolerances of a complete system. Limit descriptions to composite and operational properties to extent necessary to link multiple components of a system and to interface with other systems.

1.03 SYSTEM DESCRIPTION

Specifier Note: Edit Paragraph below to suit project requirements.

A. Performance Requirements: Provide composite metal panels which have been manufactured, fabricated and installed to withstand loads from deflection and thermal movement and to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Three subparagraphs below are generally applicable only to curtain wall systems and large wall areas. Delete this Article altogether, or modify it as appropriate for simple composite panel installations. Alternatively, refer to system manufacturer's technical data for additional details. Edit text to suit project requirements; add text for performance criteria as applicable below.

B. Deflection and Thermal Movement: Provide systems that have been tested and certified to conform to the following criteria under wind loading of [Specify test loading] psf (__ kPa) inward and [Specify test loading] psf (__ kPa) outward:
1. Normal Deflection: Deflection of perimeter framing member not to exceed L/175 normal to plane of the wall; deflection of individual panels not to exceed L/60.
2. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
3. Thermal Movements: Allow for free horizontal and vertical thermal movement, due to expansion and contraction of components over a temperature range from [Specify temperature range] (___ – ___ degrees F) (___ – ___ degrees C).
a. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
b. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.

C. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:
1. Air Leakage (ASTM E283): Not more than 0.06 (cfm)/sf of wall area (0.003 (L/s) m^2), when tested at 1.57 psf (0.075 kPa).
2. Water Penetration (ASTM E331): No water infiltration under static pressure at a differential of 10% of inward acting design load, 6.24 psf (0.299 kPa) minimum, after 15 minutes.
a. Water penetration is defined as the appearance of uncontrolled water in the wall.
b. Wall design shall feature provisions to drain to the exterior face of the wall any leakage of water at joints and any condensation that may occur within the construction.

D. Structural: Provide systems that have been tested in accordance with ASTM E330 at a design pressure of [Specify pressure] psf (__ kPa) and have been certified to be without permanent deformation or failures of structural members.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this Article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 01 Submittal Procedures Section.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal

Procedures Section.

B. Product Data: Submit product data, including manufacturer's SPEC-DATA product sheet, for specified products.

C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures.

1. Include details showing thickness and dimensions of the various system parts, fastening and anchoring methods, locations of joints and gaskets and location and configuration of joints necessary to accommodate thermal movement.

D. Samples: Submit selection and verification samples for finishes, colors and textures.

1. Selected Samples: Manufacturer's color charts or chips illustrating full range of colors, finishes and patterns available for composite metal panels with factory-applied finishes.

2. Verification Samples:

a. Structural: 12 inch × 12 inch (305 × 305 mm) sample composite panels in thickness specified, from an available stock color, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval. Include panel assembly samples not less than 24 inches × 24 inches (610 × 610 mm), showing 4-way joint.

b. Include separate sets of draw down samples on aluminum substrate, not less than 3 inches × 5 inches (76 × 127 mm), of each color and finish selected, for color approval. Larger samples of standard colors are available with production applied coatings.

E. Quality Assurance Submittals: Submit the following:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.

3. Manufacturer's Instructions: Manufacturer's installation instructions.

4. Manufacturer's Field Reports: Manufacturer's field reports.

F. Closeout Submittals: Submit the following:

1. Warranty: Warranty documents specified herein.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate Article below with Division 01 Quality Assurance Section.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in the installation of work similar to that required for this project.

Specifier Note: Retain Paragraph below to suit project requirements; otherwise, delete Paragraph below.

a. Certificate: When requested, submit certificate indicating qualification.

2. Manufacturer Qualifications: Company with a minimum of 5 years of continuous experience manufacturing panel material of the type specified:

a. Able to provide specified warranty on finish.

b. Able to provide a list of 5 other projects of similar size, including approximate date of installation and the name of the Architect for each.

c. Able to produce the composite material without outsourcing of coating or lamination process.

d. Able to provide certificate of registration of ISO 9001-2000.

3. Fabricator Qualifications: Company with at least 3 years of experience on similar sized metal panel projects and qualified by the panel material manufacturer. Capable of providing field service representation during construction.

Specifier Note: Retain Paragraph below for erected assemblies, either onsite or offsite, required for review of construction, coordination of work of several sections, testing or observation of operation. Mock-ups establish standards by which work will be judged. Coordinate below with Division 01 Quality Control, Mock-Up Requirements Section.

B. Mock-Ups: Install at project site a job mock-up using acceptable products and approved installation methods. Obtain Owner's and Architect's acceptance of finish color (draw down samples to be used for color approval of nonstandard coil coated colors), texture and pattern and workmanship standard. Comply with Division 01 Quality Control, Mock-Up Requirements Section.

Specifier Note: Edit Paragraph below to specifying mock-up size.

1. Mock-up Size: [Specify size].
2. Maintenance: Maintain mock–up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

Specifier Note: Coordinate Paragraph below with Division 01 Project Management and Coordination, Project Meetings Section.

C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, installation instructions and warranty requirements. Comply with Division 01 Project Management and Coordination, Project Meetings Section.

D. Field Quality Control: Comply with panel system manufacturer's recommendations and guidelines for field forming of panels.

Specifier Note: Article below should include special and unique requirements. Coordinate Article below with Division 01 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 01 Product Requirements Sections.

B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1. Protection: Protect finish of panels by applying heavy duty removable plastic film during production.
2. Delivery: Package composite wall panels for protection against transportation damage. Provide markings to identify components consistently with drawings.
3. Handling: Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1. Storage: Store panels in well-ventilated space out of direct sunlight.
   a. Protect panels from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
   b. Slope panels to ensure positive drainage of any accumulated water.
   c. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).
2. Damage: Avoid contact with any other materials that might cause staining, denting or other surface damage.

1.07 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

Specifier Note: Coordinate Article below with Conditions of the Contract and with Division 01 Closeout Submittals, Warranty Section.

1.08 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not a limitation of, other rights Owner may have under the Contract Documents.

Specifier Note: Coordinate Paragraph below with manufacturer's warranty requirements.

1. Warranty Period:
   a. Panel Integrity: 10 years commencing on Date of Substantial Completion.
   b. Finish: [Specify number of years] commencing on Date of Substantial Completion.

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases

may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining “or equal” products.

2.01 COMPOSITE METAL PANELS

A. Manufacturer: Mitsubishi Plastics Composites America, Inc.

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete Paragraph below per project requirements and specifier’s practice.

1. Contact: 401 Volvo Parkway, Chesapeake, VA 23320; Telephone (800) 422-7270; Fax: (757) 436-1896; E-mail: info@alpolic.com; website: www.alpolic-northamerica.com.

B. Proprietary Product: ALPOLIC Composite Metal Panels.

1. Approved Fabricator - Acmpanelworx Inc.

357 Croft Drive.,Tecumseh ,Ontario N8n-2L9, telephone (519) 739-2380; fax (519) 739-1609; e-mail mark@acmpanelworx.com ; website www.acmpanelworx.com ;

Specifier Note: Edit Paragraph below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 01 Project Requirements, Product Substitutions Procedures Section.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted.

Specifier Note: Retain article below for alternates required for project; state wall panel work covered by alternate. Coordinate with Part 1 General Summary Article herein, applicable Division 01 Sections, and other Bid and Contract Documents. Consult Mitsubishi Plastics Composites America/ALPOLIC on the use of alternates. Delete article below if alternates are not required.

2.03 ALTERNATES

A. Contract Provisions and Division 01 Requirements: [Specify coordination with provisions and requirements].

B. Alternates:

1. Base Bid/Contract Manufacturer: [Specify base bid/contract manufacturer].
    a. Product: [Specify product base bid/contract brand/trade name with product attributes and characteristics].
2. Alternate No. [Specify #]: [Specify alternate manufacturer].
    a. Product: [Specify product alternate brand/trade name with product attributes and characteristics].
3. Alternate No. [Specify #]: [Specify alternate manufacturer].
    a. Product: [Specify product alternate brand/trade name with product attributes and characteristics].

2.04 COMPOSITE METAL PANEL MATERIALS

A. Composite Metal Panels:

1. Core: Thermoplastic material that meets performance characteristics specified when fabricated into composite assembly.
2. Face Sheets: Aluminum alloy 3105 H14, 0.020 inch (0.51 mm) thick and as follows: [Choose coil or spray as applicable to quantity].
    a. Coil coated with a fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.

Specifier Note: Delete Paragraph above and retain following paragraph for quantities less than 2000 ft^2 (186 m^2).

    b. Spray coated with specified finish [Less than 1000 ft^2 (93 m^2) quantities].
    c. Thermally bonded in a continuous process, under tension, to the core material.
3. Bond Integrity: Tested for resistance to delamination as follows:
    a. Peel Strength (ASTM D1781): 22.5 in-lb/in (100 N-m/m) minimum.
    b. 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).
4. Fire Performance:
    a. Flamespread (ASTM E84): 25 maximum (4 and 6 mm).
    b. Smoke Developed (ASTM E84): 450 maximum (4 and 6 mm).
    c. Surface Flammability (Modified ASTM E108): Pass (4 and 6 mm).
    d. V-O Rating (4 mm): Comply with UL 94.

B. Production Tolerances:

1. Width: +/- 2 mm.
2. Length: +/- 4 mm.
3. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
4. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
5. Bow: Maximum 0.5% length or width.
6. Squareness: Maximum 0.2 inch (5 mm).
7. Edges of sheets shall be square and trimmed.

Specifier Note: Edit Paragraph below. Select required panel thickness.

C. Panel Thickness: [4 mm] [6 mm].

2.05 ACCESSORIES

A. General: Provide fabricator's standard accessories, including fasteners, clips, anchorage devices and attachments.

2.06 RELATED MATERIALS

A. General: Refer to other related sections for related materials, including cold-formed metal framing, flashing and trim, joint sealers, aluminum windows, glass and glazing and curtain walls.

2.07 FABRICATION

A. General: Shop fabricate to sizes and joint configurations indicated on the drawings.

1. Where final dimensions cannot be established by field measurements, provide allowance for field adjustment as recommended by the fabricator.
2. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.
3. Fabricate with sharply cut edges, with no displacement of aluminum sheet or protrusion of core.

2.08 FINISHES

Specifier Note: Retain or delete Paragraph below per project requirements. Refer to manufacturer's SPEC-DATA® sheet for availability of finishes and colors.

A. Factory Finish: A fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.

2.09 SOURCE QUALITY

A. Source Quality: Obtain composite panel products from a single manufacturer.

PART 3 EXECUTION

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify that substrate conditions are acceptable for product installation.

3.03 PREPARATION

A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

Specifier Note: Coordinate Article below with fabricator's recommended installation details.

3.04 INSTALLATION

A. General:

1. Install panels plumb, level and true, in compliance with fabricator's recommendations.
2. Anchor panels securely in place, in accordance with fabricator's approved shop drawings.
3. Comply with fabricator's instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch (6.4 mm) in 20 feet (6.1 m), non-cumulative.

3.05 FIELD QUALITY REQUIREMENTS

Specifier Note: Edit Paragraph below. Establish number and duration of periodic site visits with Owner and fabricator, and specify below. Consult fabricator for services required. Coordinate Paragraph below with Division 01 Quality Assurance Section. Delete if fabricator's field service not required.

A. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator's instructions.

Specifier Note: Coordinate below Article with Division 01 Execution Requirements, Starting and Adjusting, Cleaning and Protecting Installed Construction Section.

3.06 ADJUSTING

A. Adjusting:

1. Repair panels with minor damage such that repairs are not discernible at a distance of 10 feet (3.1 m).
2. Remove and replace panels damaged beyond repair.
3. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.
4. Remove from project site damaged panels, protective film and other debris attributable to work of this section.

Specifier Note: Coordinate Article below with Division 01 Execution Requirements, Cleaning Section.

3.07 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

Specifier Note: Coordinate Article below with Division 01 Execution Requirements Section.

3.08 PROTECTION

A. Protection: Protect installed product's finish surfaces from damage during construction.

1. Institute protective measures as required to ensure that installed panels will not be damaged by work of other trades.

END OF SECTION