



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® Exotic Metals Series, Titanium Composite Material (TCM) trade name. This product is manufactured 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 for Exterior and Interior Applications.

Specifier Note: Revise paragraph below to suit project requirements. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraph below. Add section numbers and titles per CSI *MasterFormat* and specifier's practice. In the absence of related sections, delete paragraph below.

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

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References 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. It is a listing of all references used 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:

1. ASTM C393 Standard Test Method for Flexural Properties of Sandwich Constructions.
2. ASTM D732 Standard Test Method for Shear Strength of Plastics by Punch Tool.
3. ASTM E8 Standard Test Methods for Tension Testing of Metallic Materials.
4. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
5. ASTM E108 (Modified) Standard Test Methods for Fire Tests of Roof Coverings.
6. 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.
7. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
8. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

C. 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 required to link components of a system together and to interface with other systems.

1.03 SYSTEM DESCRIPTION

A. Design Requirements: [Specify design requirements].

B. Performance Requirements: Provide metal panel products/systems 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 Paragraphs 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.

1. 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:
 - a. 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.
 - b. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
 - c. 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).
 - 1) Buckling, opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects of thermal movement will not be permitted.
 - 2) Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.
2. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:
 - a. Air Leakage (ASTM E283): Not more than 0.06 (cfm)/ft² of wall area (0.003 (L/s) m²), when tested at 1.57 psf (0.075 kPa).
 - b. 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.
 - 1) Water penetration is defined as the appearance of uncontrolled water in the wall.
 - 2) 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.

3. 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 manufacturer's product data and installation instructions including manufacturer's SPEC-DATA® sheets.
- 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 and textures.
 1. Verification Samples: 8 inch x 8 inch (203 x 203 mm) sample composite panels in thickness specified, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval.
 - a. Include panel assembly samples not less than 12 inches x 12 inches (305 x 305 mm), showing 4-way joint.
- E. Quality Assurance/Control Submittals: Submit the following:
 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.
- F. Closeout Submittals: Submit the following:
 1. Warranty documents specified herein.

Specifier Note: Article below should include statements of 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: Utilize an installer having demonstrated experience on projects of similar size and complexity.
 2. Manufacturer Qualifications: Utilize a manufacturer with a minimum of 5 years of continuous experience manufacturing panel material of the type specified:
 - a. 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.
 - b. Able to provide certificate of registration to 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.
 - a. Capable of providing field service representation upon request during construction.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 01 Regulatory Requirements Section. Repetitive statements should be avoided.

Specifier Note: Retain paragraph below if mock-up is required.

- B. Mock-Ups: [Specify requirements for mock-up].
1. Subject to acceptance by owner, mock-up may be retained as part of finish work.
 2. If mock-up is not retained, remove and properly dispose of mock-up.

Specifier Note: Retain paragraph below if preinstallation meeting is required.

- 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.

Specifier Note: Article below should include specific protection and environmental conditions required during storage. Coordinate article below with Division 01 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 01 Product Requirement Section.
- B. 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. Protect finish of panels by applying heavy duty removable plastic film during production.
 2. Package composite wall panels for protection against transportation damage.
 3. Provide markings to identify components consistently with drawings.
 4. 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 environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
1. Store panels in well-ventilated space out of direct sunlight.
 2. Protect panels from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
 3. Slope panels to ensure positive drainage of any accumulated water. Do not store panels in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).
 4. Avoid contact with any other materials that may cause staining, denting or other surface damage.

Specifier Note: In article below, state physical or environmental limitations or criteria for installation such as weather, temperature, humidity, ventilation or illumination required for proper installation or application.

1.07 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: [Specify project environmental requirements.].

Specifier Note: Include statements that reference documents where information may be found pertaining to such items as existing structures or geophysical reports. Describe conditions of existing work subject to reworking or modification.

- B. Existing Conditions and Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and 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. Use this article to require special or extended warranty or bond covering the work of this 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 contract documents.

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

1. Warranty Period: Panel warranty 10 years beginning with 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 METAL ROOF AND WALL PANELS

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain, edit or delete paragraph below to suit project requirements and specifier practice.

- A. Manufacturer: Mitsubishi Plastics Composites America, Inc.
 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 Products/Systems: Metal Roof and Wall Panels, including the following:
 1. ALPOLIC Exotic Metals Series, Titanium Composite Material (TCM).
 - a. Panel Composition: 0.3 mm Titanium face sheet and 0.3 mm stainless steel back sheet bonded to noncombustible mineral filled core.
 - b. Panel Face Sheet Finish: Titanium dull finish.
 - c. Panel Thickness: 4 mm.
 - d. Standard Width: 1000 mm.
 - e. Length: Less than 7200 mm.
 - f. Tolerance, Width: +/- 2.0 mm.
 - g. Tolerance, Length: +/- 4.0 mm.
 - h. Tolerance, Thickness: +/- 0.2 mm.
 - i. Tolerance, Bow: Maximum 0.5% of length or width.
 - j. Tolerance, Squareness: Maximum 5.0 mm.
 - k. Tensile Strength (ASTM E8): 7.0 kg/mm².
 - l. Yield Strength (ASTM E8): 6.1 kg/mm².
 - m. Elongation (ASTM E8): 11.1%.
 - n. Flexural Elasticity (ASTM C393): 5000 kg/mm².
 - o. Flexural Rigidity (ASTM C393): 27 x 10³ kg x mm²/mm.
 - p. Punching Shear Resistance, Maximum Load, 50 mm diameter (ASTM D732): 3080 kg.
 - q. Punching Shear Resistance (ASTM D732): 4.9 kg/mm².
 - r. Surface Burning Characteristics, Flamespread Index (ASTM E84): Passed.
 - s. Surface Burning Characteristics, Smoke Developed Index (ASTM E84): Passed.
 - t. Surface Flammability (Modified ASTM E108): Pass.

Specifier Note: Edit Article 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: Specify subordinate or secondary items that aid and assist primary products specified above or are necessary for preparation or installation of those items.

2.03 ACCESSORIES

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

Specifier Note: Describe items that must be shop manufactured, fabricated or assembled before being delivered to the site.

2.04 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.

Specifier Note: Describe any shop or factory finishing.

2.05 FINISHES

- A. Titanium dull finish.

Specifier Note: Specify requirements for quality control at offsite fabrication plants.

2.06 SOURCE QUALITY CONTROL

- A. Fabrication Tolerances: [Specify fabrication tolerances].
- B. Tests, Inspection: [Specify requirements for tests and inspections].

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. Comply with the instructions and recommendations of the metal roof and wall panel manufacturer.

Specifier Note: Specify requirements where an unusually high quality of workmanship is required.

3.02 ACCEPTABLE INSTALLERS

- A. [Specify acceptable installers].

Specifier Note: Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

3.03 EXAMINATION

- A. Site Verification of Conditions:
1. Verify that site conditions are acceptable for installation of metal roof and wall panels.
 2. Do not proceed with installation of metal roof and wall panels until unacceptable conditions are corrected.

Specifier Note: Specify actions required to physically prepare the surface, area or site or to incorporate the primary products of the section.

3.04 PREPARATION

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

Specifier Note: Coordinate article below with manufacturer's recommended installation requirements.

3.05 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 Division 07 Section [Specify Section number.] for installation of joint sealers.
4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch in 20 feet (6.4 mm in 6.1 m), noncumulative.

Specifier Note: Specify the tests and inspections required for installed or completed work.

3.06 FIELD QUALITY CONTROL

- 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: Specify the final actions required to prepare installed equipment or other completed work to properly function or perform.

3.07 ADJUSTING**A. General:**

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 damaged panels from project site.

Specifier Note: Specify the final actions required to clean installed equipment or other completed work to properly function or perform. Coordinate article below with Division 01 Execution Requirements (Cleaning) Section.

3.08 CLEANING**A. General:**

1. Remove temporary coverings and protection of adjacent work areas.
2. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.
3. Remove and lawfully dispose of protective film and other debris attributable to work of this section.

Specifier Note: Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 01 Execution Requirements Section.

3.09 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity on the site.

END OF SECTION