



Metl-Span ThermalSafe Insulated Metal Wall and Ceiling Panels

Metl-Span's ThermalSafe insulated metal wall and ceiling panels (IMP) are developed to protect against fire penetration. Unlike traditional wall materials, this fire resistant IMP offers a level of flexibility architects, contractors, and building owners won't find in any other product. They feature one step—one crew—installation due to Metl-Span's double tongue-and-groove interlocking side joint feature which enhances the fire resistance characteristic of the panel.

Metl-Span ThermalSafe mineral wool core panels are tested to 1-, 2-, and 3-hour fire resistant rating for vertical or horizontal walls and a 90 minute rating for ceiling applications. They provide good thermal performance and protection from the elements. Metl-Span ThermalSafe panels consist of metal facings bonded to a structural mineral wool core to create composite panels which achieve fire resistance ratings under the most demanding of conditions. The panels are made from environmentally friendly raw materials and have no VOCs and CFCs affecting the ozone layer or adding to global warming potential.

IMPs offer many advantages for building owners, designers and contractors. Some of these benefits include reduced building operational expenses, accelerated construction schedules, earlier business starts and much more. Metl-Span insulated metal panels are ideal for many applications, including architectural, commercial, industrial and institutional markets.

Metl-Span manufactures insulated metal panels with the most technologically advanced manufacturing plants across North America. Metl-Span's insulated metal panels are available in several different wall and roof profiles. The vast color and applied finished offering for our insulated metal panels allow for a multitude of design opportunities. Whether you're looking for design options, easy to install efficient materials, or to save money on energy and maintenance costs, our panels make the difference.

Consult your local Metl-Span sales representative for design assistance or visit metlspan.com for more information.

SECTION 07 42 13 - INSULATED FIRE-RESISTANT METAL WALL AND CEILING PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fire-resistant-thermal-insulation-core metal wall and ceiling panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

Specifier: If retaining this optional article, edit list below to correspond to Project.

- A. Division 01 Section "Sustainable Design Requirements" for related LEED general requirements.
- B. Division 05 Section "Structural Steel Framing" for steel framing supporting metal panels.
- C. Division 05 Section "Cold-Formed Metal Framing" for cold-formed metal framing supporting metal panels.
- D. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal copings, flashings, and reglets and roof drainage items in addition to items specified in this Section.
- E. Division 07 Section "Manufactured Roof Specialties" for manufactured copings, reglets, and roof drainage items in addition to items specified in this Section.
- F. Division 07 Section "Joint Sealants" for liquid Joint Sealants for installation of metal wall panels.
- G. Division 13 Section "Metal Building Systems" for steel framing supporting metal panels.

1.3 REFERENCES

Specifier: If retaining this optional article, edit list below to correspond to Project after editing this Section.

- A. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures
- B. ASTM International (ASTM): www.astm.org:
 - 1. ASTM A653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
 - 3. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
 - 4. ASTM C518 - Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 5. ASTM C612 - Specification for Mineral Fiber Block and Board Thermal Insulation
 - 6. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
 - 7. ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates
 - 8. ASTM D4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films
 - 9. ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction

10. ASTM E84 - Test Methods for Surface Burning Characteristics of Building Materials
11. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials
12. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
13. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
14. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
15. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference

C. FM Global (FM): www.fmglobal.com:

1. ANSI/FM 4880 American National Standard for Evaluating Insulated Wall and Roof/Ceiling Assemblies (currently not available in 43-inch width)

1.4 QUALITY ASSURANCE

- A. Manufacturer/Source: Provide metal panel assemblies and accessories from a single manufacturer -approved under an accredited third party quality control program.
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.

Specifier: Retain "Approval of Comparable Products" Paragraph below if Owner allows substitutions but requires strict control over qualifying of substituted manufacturers.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
 - A. Product data, including certified independent test data indicating compliance with requirements.
 - B. Samples of each component.
 - C. Sample submittal from similar project.
 - D. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
 - E. Sample warranty.
 - F. Certificate of approval from an accredited 3rd-party quality control program.
2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
3. Approved manufacturers must meet separate requirements of Submittals Article.

Specifier: Manufacturer qualifying of installers is recommended for larger projects. Metl-Span requires Installer and supervisor certification when project requirements include extended warranty.

- A. Installer Qualifications: Experienced Installer [certified by metal panel manufacturer] with minimum of five years experience with successfully completed projects of a similar nature and scope.
 1. Installer's Field Supervisor: Experienced mechanic [certified by metal panel manufacturer] supervising work on site whenever work is underway.

Specifier: Retain "Buy American Compliance" Paragraph below and edit as appropriate for Federal projects and for public works projects utilizing Federal funds; consult project Contracting Officer. Coordinate with Submittals Article.

B. **Buy American Compliance:** Materials provided under work of this Section shall comply with the following requirements:

1. Buy American Act of 1933 BAA-41 U.S.C §§ 10a – 10d.
2. Buy American provisions of Section 1605 of the American Recovery and Reinvestment Act of 2009 (ARRA).

1.5 ADMINISTRATIVE REQUIREMENTS

A. **Preinstallation Meeting:** Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, metal panel installer, metal panel manufacturer's technical representative, inspection agency, and related trade contractors.

1. Coordinate building framing in relation to metal panel system.
2. Coordinate openings and penetrations of metal panel system.
3. Coordinate work of Division 07 Sections "Roof Specialties" and "Roof Accessories" and openings and penetrations and manufacturer's accessories with installation of metal panels.

1.6 ACTION SUBMITTALS

A. **Product Data:** Manufacturer's data sheets for specified products.

Specifier: Retain and edit below to comply with Project requirements for LEED or other sustainable design requirements. Reference to EA Credit 1 applies if Contractor is charged with determining final U-values required for Project.

B. **LEED Submittals:**

1. EA Credit 1: Optimize Energy Performance: Provide testing or modeling results demonstrating U-values provided in accordance with this section are in compliance with ASHRAE 90.1, including Appendix G.
2. Credit MR 4 Recycled Content: Product data indicating the following:
 - A. Material costs for each product having recycled content.
 - B. Percentages by weight of post-consumer and pre-consumer recycled content for each item.
 - C. Total weight of products provided.

C. **Shop Drawings:** Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, curbs, vents, snow guards, lightning arresting equipment, and special details. Make distinctions between factory and field assembled work.

1. Include data indicating compliance with performance requirements.
2. Indicate points of supporting structure that must coordinate with metal panel system installation.
3. Include structural data indicating compliance with performance requirements and requirements of local authorities having jurisdiction.

- D. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.
- E. Samples for Verification:
 1. Provide 12-inch- (305 mm-) long section of each metal panel profile.
 2. Provide color chip verifying color selection.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Results: Indicating compliance of products with requirements.
- B. Qualification Information: For Installer firm and Installer's field supervisor.
- C. Accreditation Certificate: Indicating that manufacturer is approved under an accredited third-party Quality Control Program, including IAS AC472 and based upon chapter 17 of the International Building Code (IBC).

Specifier: Retain "Buy American Certification" Paragraph below if required; coordinate with corresponding requirement in Quality Assurance article.

- D. **Buy American Certification:** Manufacturers' letters of compliance acceptable to authorities having jurisdiction, indicating that products comply with requirements.
- E. Florida State Building Code Compliance: Indicating that products comply with requirements of Florida State Building Code. www.floridabuilding.org/pr/pr_app_srch.aspx (currently not available in 43-inch width)
- F. Manufacturer's Warranty: Sample copy of manufacturer's warranty.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Manufacturer's Warranty: Executed copy of manufacturer's warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components, or other damage. Protect panels and trim bundles during shipping. Protect painted surfaces with a strippable protective covering before shipping.
 1. Deliver, unload, store, and erect metal panels and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
 2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.10 WARRANTY

Specifier: Warranty terms in "Special Manufacturer's Warranty" and "Special Panel Finish Warranty" Paragraphs are available from Metl-Span. Verify that other allowable manufacturers furnish warranty meeting requirements.

- A. Special Manufacturer's Warranty: Submit Manufacturer's two (2) year limited warranty providing panels to be free from defects in materials and workmanship, beginning from the

date of substantial completion excluding coil coatings (paint finishes) that are covered under a separate warranty.

- B. The installation contractor shall issue a separate warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.
- C. Special Panel Finish Warranty: Submit Manufacturer's limited warranty on the exterior paint finish for adhesion to the metal substrate and limited warranty on the exterior paint finish for chalk and fade.

Specifier: Retain finish warranty paragraph that corresponds to selected metal panel finish system. Coordinate chalk and fade performance with applicable Metl-Span finish and color found at www.metlspan.com. Metl-Span warrant applies to exterior finish only.

- 1. Fluoropolymer Two-Coat System:
 - a. Color fading in excess of [5] or [10] for copper, silver metallic and bright red; Hunter units per ASTM D 2244.
 - b. Chalking in excess of [6] for copper, silver metallic and bright red or [8] rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.
- 2. Modified Silicone-Polyester Two-Coat System:
 - a. Color fading in excess of [5] or [7] for crimson red; Hunter units per ASTM D 2244.
 - b. Chalking in excess of [7] for crimson red or [8] rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.
- 3. Other finish options available; additional information can be found at metlspan.com or contact Metl-Span at 972.221.6656.

PART 2 - PRODUCTS

2.1 MANUFACTURER

Specifier: Retain basis of design manufacturer and products listed in this Article where allowed. If inserting comparable manufacturers, carefully review products and engineering capabilities in relation to requirements of this Section, to ensure that other approved manufacturers offer products meeting Metl-Span's standards.

- A. Basis of Design Manufacturer: Metl-Span, a Nucor company.; Lewisville, Texas Tel: 972.221.6656; Email: info@metlspan.com; Web: metlspan.com.
- B. Provide basis of design product [, or comparable product approved by Architect prior to bid].

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide metal panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.
- B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, as determined by ASTM E72 or ASTM E1592 applied in accordance with ICC AC 04, Section 4, Panel Load Test Option or Section 5, Panel Analysis Option:

Specifier: Consult structural engineer and edit structural performance requirements below as required by local codes. Insert structural data below if not indicated on drawings. Select applicable deflection limit.

1. Wind Loads: Determine loads based on applicable building code, wind speed, importance factor, exposure category, and internal pressure coefficient indicated on drawings.
- C. Wind Pressure: Certify capacity of metal panels by testing of proposed assembly.
1. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of 1/240 of the span with no evidence of failure.
- D. Fire Performance Characteristics: Provide metal panel systems with the following fire-test characteristics determined by indicated test standard as applied by UL or other testing and inspection agency acceptable to authorities having jurisdiction. (UL currently not available in 43-inch width)

Specifier: Retain "Fire-Resistance-Rated Assemblies" Paragraph for projects where fire-resistance-rated assemblies are required. Metl-Span ThermalSafe panels are components of the following fire-resistance-rated wall assemblies:

1. The finished panel in a four (4) inch thickness shall meet the requirements of a one (1) hour fire resistant rating for non-bearing wall, listed by UL per design number U050 for US and design number W021 for Canada. Listed by Intertek for US and Canada per design number MSN/IMWP 60-01. (UL currently not available in 43-inch width)

2. The finished panel in a six (6) inch thickness shall meet the requirements of a two (2) hour fire resistant rating for non-bearing wall, listed by Intertek for US and Canada per design number MSN/IMWP 120-01.

3. The finished panel in a seven (7) inch thickness shall meet the requirements of a two (2) hour fire resistant rating for non-bearing wall, listed by UL per design number U050 for US and design number W021 for Canada. (UL currently not available in 43-inch width)

4. The finished panel in an eight (8) inch thickness shall meet the requirements of a three (3) hour fire resistant rating for non-bearing wall listed at UL per design number U050 for US and design number W021 for Canada. Listed by Intertek for US and Canada per design number MSN/IMWP 180-01. (UL currently not available in 43-inch width)

5. The one (1) and two (2) hour fire rated wall panel shall meet the requirements of penetration fire stop conditions listed by UL in accordance with ASTM E 814 (per UL designs W-N-1001 thru W-N-7001, for US and Canada). Opening can be located on or off panel unit joints. (UL currently not available in 43-inch width)

6. The finished panel in a six (6) inch thickness shall meet the requirements of a one and a half (1-½) hour resistant rating for a ceiling, listed by Intertek for US and Canada per design number MSN/CP 90-01.

7. Testing for items 1, 2, 3, 4 and 6 were conducted in accordance with ASTM E119, CAN/ULC S101 and UL 263. (UL currently not available in 43-inch width)

Fire window and fire door assemblies and penetration assemblies are available that maintain one- and two- hour fire-resistance ratings of wall panels

1. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

- E. Surface-Burning Characteristics: The insulating core shall have been tested per ASTM E 84. The core shall have:
 - 1. Flame spread index: 0.
 - 2. Smoke developed index: 0.
- F. Wall Panels FM Approvals Listing: Comply with FM Approvals 4880. Provide metal wall panel assembly listed in FM Approvals' "Approval Guide." (currently not available in 43-inch width)
- G. Combustibility of Core Material: Non-combustible when tested in accordance with ASTM E136.
- H. Wall Panel Air Infiltration, ASTM E283:
 - 1. Maximum 0.04 cfm/sq. ft. (0.20 L/s per sq. m) at static-air-pressure difference of 12 lbf/sq. ft. (575 Pa).
- I. Wall Panel Water Penetration Static Pressure, ASTM E331: No uncontrolled water penetration at a static pressure of 20 lbf/sq. ft. (958 Pa).
- J. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

Specifier: Retain "Wall Panel Thermal Performance" Paragraph to obtain comparable thermal performance data for proposed panels. The specific configuration of thermal performance testing has a significant impact on the published results. The thermal performance testing performed by Metl-Span and described below conforms to industry standard testing.

- K. Wall Panel Thermal Performance:
 - 1. Thermal Resistivity and Resistance (R-value) of mineral wool core indicated per ASTM C518 at 75 degree mean temperature.
 - 2. Heat Transfer Coefficient (U-factor) of panel assembly determined in accordance with one of the following:
 - A. ASTM C1363 testing conducted at a mean temperature of 75 deg. F (24 deg. C) heat flow horizontal, utilizing test specimen of minimum 64 sq. ft. (5.9 m2) incorporating at least two side joints, and not including air films
 - B. Finite element modeling in accordance with ASHRAE 90.1 Appendix A.

2.3 INSULATED METAL WALL PANELS

- A. Fire-Resistant-Thermal-Insulation-Core Metal Wall Panels: Structural metal panels consisting of exterior metal sheet with Santa Fe heavy embossing (currently not available in 43-inch width), Light Striated (currently not available in 43-inch width) or Ultra-Light Mesa profile 1/32-inch- (0.79-mm-) and interior metal sheet with Ultra-Light Mesa profile 1/32-inch- (0.79-mm-) deep, with structural mineral wool core factory-bonded during fabrication in thermally-separated profile, with tongue-and-groove panel edges designed to form weathertight seals, attached to supports using exposed or non-exposed fasteners.
 - 1. Basis of Design: **Metl-Span, ThermalSafe.**

Specifier: Select one of three metal substrates listed below. "Aluminum-Zinc Alloy-Coated Steel Sheet" Paragraph corresponds to BIEC International, Inc. <http://galvalume.com/> Galvalume substrate, available prepainted from Metl-Span.

Second "Aluminum-Zinc Alloy-Coated Steel Sheet" Paragraph describes Galvalume Plus with clear acrylic coating for use as exposed metallic finish.

2. **Zinc Metallic Coated (Galvanized) Steel Sheet:** ASTM A 653/A 653M, SS Grade 37, G90 (Z275), structural quality.
3. **Aluminum-Zinc Alloy-Coated Steel Sheet:** ASTM A792/A792M, structural quality, **Grade 50, Coating Class AZ50 (Grade 340, Coating Class AZM150)** prepainted by the coil-coating process per ASTM A 755/A 755M.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements.**

- A. Exterior Face Sheet: [26 gauge] [24 gauge] coated thickness, with stucco embossed surface or [26 gauge Santa Fe]
 - 1) Finish: [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic color system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
- B. Interior Face Sheet: [26 gauge] [24 gauge] coated thickness, with stucco embossed surface.
4. Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system] [304 Stainless Steel] [316 Stainless Steel].
 - 1) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
5. Panel Edge: Flush double tongue-and-groove joinery combined with integral spline providing uninterrupted continuity of mineral wool core.
6. Structural Insulating Core: Mineral wool, ASTM C612, Type IV B, Category 2, non-combustible, with oriented strand fibers aligned perpendicular to metal facing panels.
 - A. Nominal density of 8.5 lb/cu. ft. (128 kg/cu. m),
 - B. Thermal resistivity of 3.61 deg F x h x sq. ft./Btu x in. at 75 deg F (30.2 K x m/W at 24 deg C).
7. Panel Width: [42 inches (1067 mm)] [44 inches (1118 mm)].
8. Panel Thickness: [4 inch (102 mm)] [5 inch (127 mm)] [6 inch (152 mm)] [7 inch (178 mm)] [8 inch (203 mm)] [As required to meet performance requirements] [as shown on drawings].

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Metl-Span literature. Coordinate with information on drawings. Consult Metl-Span representative for details.

9. **Thermal Resistance R-Value:** [insert corresponding value] deg. F * hr * sq. ft./Btu ([insert corresponding value] K * sq. m/W).
10. **Heat Transfer Coefficient (U-factor):** [insert corresponding value] Btu/hr * sq. ft. * deg. F ([insert corresponding value] W/K * sq. m).

2.4 METAL WALL PANEL ACCESSORIES

- A. General: Provide complete metal panel assemblies incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings. Provide required fasteners, closure strips, and sealants as indicated in manufacturer's written instructions.
- B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.
- C. Panel Fasteners: Self-tapping screws and other acceptable fasteners recommended by metal panel manufacturer. Provide corrosion-resistant fasteners with heads matching color of metal panels by means of factory-applied coating, with weathertight resilient washers.
- D. [Joint Sealants](#): Refer to requirements for silicone sealant in Section 07 92 00 "[Joint Sealants](#)."

2.5 FABRICATION

- A. General: Provide factory fabricated and finished metal panels, trim, and accessories meeting performance requirements, indicated profiles, and structural requirements.
- B. Fabricate metal panel joints configured to accept sealant tape providing weathertight seal and preventing metal-to-metal contact and minimizing noise resulting from thermal movement.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings.

2.6 FINISHES

- A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- B. Exterior Face Sheet Coil-Coated Finish System
 - 1. Silicone-Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat, [meeting solar reflectance index requirements].
 - A. Basis of Design: Metl-Span, Silicone Polyester.

[Specifier: Metl-Span's fluoropolymer coatings are based on Arkema, Inc. Kynar 500 and Solvay Solexis Hylar 500 PVF2 resins.](#)

- 2. Fluoropolymer Two-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, [meeting solar reflectance index requirements].
 - A. Basis of Design: Metl-Span, Fluoropolymer.

[Specifier: Select interior face sheet finish from four options below; USDA White color is standard unless otherwise indicated. Verify with Metl-Span; not all finishes are available on all products.](#)

PRODUCT DATA SHEET 1 - Interior Face Sheet Coil-Coated Finish System

- 2.1 Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat
 - A. Basis of Design: Metl-Span, Igloo White
- 2.2 Silicone-Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat
 - A. Basis of Design: Metl-Span, Silicone Polyester

- 2.3 Fluoropolymer Two-Coat System: 0.2-mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat
- A. Basis of Design: Metl-Span, Fluoropolymer
- 2.4 Vinyl Plastisol Two-Coat System: 0.2 mil primer with 4 mil high solids plastisol finished with PVC technology.
- A. Basis of Design: Metl-Span, Vinyl
- 2.5 304 and 316 Stainless Steel: 2B 304 or 2B 316 Stainless Steel.
- A. Basis of Design: Metl-Span, Stainless Steel

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine metal panel system substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panels.
1. Inspect framing that will support insulated metal panels to determine if support components are installed as indicated on approved shop drawings and are within tolerances acceptable to metal panel manufacturer and installer. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of metal panels.
 2. Panel Support Tolerances: Confirm that metal panel supports are within tolerances acceptable to metal panel manufacturer but not greater than the following:
 - A. 1/4 inch (6 mm) in 20 foot (6100 mm) in any direction.
 - B. 3/8 inch (9 mm) over any single roof plane.
 - C. At Girt Spacing 10 feet (3048 mm) or more: 1/4 inches (6 mm), out only.
 - D. At Girt Spacing Less Than 10 feet (3048 mm): 1/8 inches (3 mm), out only.
- B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with insulated metal panel installation.

3.2 METAL PANEL INSTALLATION

- A. Exposed or Non-Exposed Fastener, Bonded Fire-Resistant-Thermal-Insulation-Core Metal Wall Panels: Install metal panel system in accordance with manufacturer's written instructions, approved shop drawings [requirements of fire-resistance-rated assembly indicated], and project drawings. Install metal panels in orientation, sizes, and locations indicated. Anchor panels and other components securely in place. Provide for thermal and structural movement.
- B. Attach panels to metal framing using screws, fasteners, sealants, and adhesives recommended for application by metal panel manufacturer.
1. Fasten metal panels to supports with fasteners at each location indicated on approved shop drawings, at spacing and with fasteners recommended by manufacturer.
 2. Cut panels in field where required using manufacturer's recommended methods.
 3. Provide weatherproof jacks for pipe and conduit penetrating metal panels.
 4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by metal panel manufacturer.

- C. Attach panel flashing trim pieces to supports using recommended fasteners and joint sealers.
- D. [Joint Sealants](#): Install elastomeric [Joint Sealants](#) where indicated in manufacturer's written instructions and where additionally required for weatherproof performance of metal panel assemblies.
 - 1. Seal panel base assembly, openings, panel head joints, and perimeter joints using joint sealers indicated in manufacturer's written instructions.
 - 2. Prepare joints and apply sealants per requirements of Division 07 Section "[Joint Sealants](#)."

3.3 ACCESSORY INSTALLATION

- A. General: Install metal panel accessories with positive anchorage to building and weathertight mounting; provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
 - 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
 - 3. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.

3.4 FIELD QUALITY CONTROL

[Specifier: Retain "Testing Agency" Paragraph and edit options when scope and complexity of metal roof panel installation justifies independent inspection and testing provisions.](#)

- A. **Testing Agency:** [Owner will engage] [Engage] an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

3.5 CLEANING AND PROTECTION

- A. Remove temporary protective films immediately in accordance with metal panel manufacturer's instructions. Clean finished surfaces as recommended by metal panel manufacturer.
- B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION