

SECTION 095810 – ACRYLOYL ENGINEERED POLYMER LAY-IN CEILING PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Acryloyl engineered polymer lay-in ceiling panels and accessories for interior ceilings.
- B. Related Sections:
 - 1. Section 068320 - GFRP Composite Molded Architectural Shapes.
 - 2. Section 083110 – Acrylic Access Doors and Panels.
 - 3. Section 095800 – Closed Edge GFRP Insulated Lay-In Ceiling Panels.
 - 4. Section 095820 – Fiberglass Suspended Ceiling Inverted Tee Rail System.

1.3 REFERENCES

- A. ASTM D 523 - Standard Test Method for Specular Gloss.
- B. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- C. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics.
- D. ASTM D 696 - Standard Test Method for Coefficient of Linear Thermal Expansion.
- E. ASTM D 790 - Standard Test Methods for Flexural Properties.
- F. ASTM D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- G. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impresser.
- H. ASTM E 84 - Surface Burning Characteristics of Building Materials.
- I. Classification of Reaction to Fire Performance in accordance with EN 13501-1 + A1.
- J. Canadian Military Standard (Mils) 1073.2 - Impact Resistance Test.
- K. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

- L. New York City MEA Approval 414-04-M - University of Pittsburgh Test Protocol for Measurement of Acute Lethality of Thermal Decomposition Products from Specimen.
- M. ASTM E 831 – Standard Test Method for Linear Thermal Expansion of Solid Materials by Thermo-Mechanical Analysis
- N. ISO 846 - Plastics - Evaluation of the action of microorganisms- Resistance to Fungi & Bacteria Test method
- O. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- P. ASTM D 3274 - Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Fungal or Algal Growth, or Soil and Dirt Accumulation
- Q. ISO 2812-4 and ASTM D1308-02 - Chemical Resistance Testing of Arcoplast engineered polymer panels
- R. Determination of Extractives Residue according to US FDA 21 CFR 177.2600 Arcoplast finishing compound/sealant
- S. Living Building Challenge Criteria - Declare Label Compliant.

1.4 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's product data including installation instructions.
- B. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating composite ceiling panels, tape adhesive, and gaskets.
 - 1. Indicate size and location of ceiling openings and penetrations.
 - 2. Indicate method of sealing joints, openings, and penetrations.
 - 3. Changes in ceiling planes, openings, and intersections with vertical element.
 - 4. Ceiling access door dimensions and location.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Composite Acryloyl Lay-in Ceiling Panel: Set of 6-inch square.
- D. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

1.5 WARRANTY

- A. Warranty: Submit manufacturer's standard warranty. The manufacturer guarantees the product supplied shall be free of defects in material or workmanship under normal use and service.
 - 1. Warranty Period: Five years from date of delivery.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Size and location of initial access modules for lay-in ceiling panels.
 - 2. Items penetrating finished lay-in ceiling including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Monitoring systems.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance and Repair Data: For finishes to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lay-In Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.
 - 2. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer certified by composite panel Manufacturer for type of installation required.
- B. Only manufacturer trained and certified specialty applicators shall be considered for the construction of extreme environment facilities.
 - 1. Minimum Applicator requirements:
 - a. Minimum 2 years' experience in construction of extreme environment facilities.
- C. Mockups: Before installing entire installation, build ROOM MOCK-UP to demonstrate mechanics, aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical lay-in ceiling area as shown on Drawings.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage:

1. Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
2. Composite Panels: Store flat.
3. Finishing Compound: Store for a maximum of 6 months from date of shipment at temperature of 50 degrees F to 80 degrees F (10 degrees C to 27 degrees C).
4. Adhesive: Store for a maximum of 6 months from date of shipment at temperatures below 80 degrees F (27 degrees C).

C. Before installing lay-in ceiling panels, permit them to reach room temperature.

D. Handling: Protect materials and finish from damage during handling and installation in accordance with manufacturer's instructions.

1.11 FIELD CONDITIONS

A. Do not install lay-in ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above lay-in ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning lay-in ceiling panel installation.

B. Maintain the following conditions during and after installation in areas to receive materials.

1. Minimum Temperature: 60 degrees F (15 degrees C).
2. Relative Humidity: 20 to 60 percent.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design: Subject to compliance with requirements, provide the following **by Arcoplast, 106 Crafton Drive, O'Fallon, Missouri 63366**. Toll Free (888) 736-2726. Phone (636) 978-7781. Fax (636) 978-7782. Web Site www.arcoplast.com.

1. The following components meet critical environment and high containment facility requirements. SUBSTITUTION ARE NOT ALLOWED.

2.2 ACRYLOYL ENGINEERED POLYMER LAY-IN CEILING PANELS

A. Ceiling Panels: Acryloyl engineered polymer panels impregnated with fire-rated resin and fire-rated fillers.

1. Panel Thickness:
 - a. 1/4 inch (6mm).
 - b. 3/8 inch (9.5mm).

2. Edge Type:
 - a. Square.
 - b. Tegular, (3/8 inch 9.5mm panel only)
3. Sizes: 2 x 2 (600mm x 600mm), 2 x 4 (600 mm x 1200mm).
4. Color: To be selected from manufacturers full line of available colors.

B. Performance Requirements

1. Surface Burning Characteristics, ASTM E 84, Whole Panel, Class A.
 - a. Flame Spread Index: 25.
 - b. Smoke Development: 450.
2. Toxicity Test: UPITT Protocol, MEA64-96-M, Solid Colors.
3. Water Absorption: ASTM D 570, 0.01 percent.
4. Gloss Property: ASTM D 523, 97.8 reflectance at 85 degree light source.
5. Barcol Hardness: ASTM D 2583, 58.

2.3 SUSPENSION SYSTEM

- A. Refer to Section 095820 – Fiberglass Suspended Rail System for ceiling suspension system.

2.4 ACCESSORIES

A. Sealant:

1. Option 1: Silicone Dowsil 786 for sealing between lay-in ceiling panel and grid flange (per USDA requirements).
2. Option 2: Sealant: Arcoplast A-1010 Bio-Seal two component chemical cure sealant for stainless steel and composite conduits at lay-in ceiling panel junctions, and all MEP penetrations.

B. Gasket:

1. Option 1: TR35 Foam Seal - 1/16" x 1/2" (1.5mm x 12.4mm) polyethylene closed cell foam - Color White - Factory applied to rail sections.
2. Option 2: TR35 Aqua Fin Seal - 5/16" x 1/2" (7.9mm x 11.1mm) Clear silicone gasket extrusion -Factory applied to rail sections.
3. Option 3: TR35 Bubble Seal - 1/4" x 1/2" (6mm x 12.5mm) Clear silicone gasket extrusion - Factory applied to rail sections.

C. Ceiling Panel Latch: White molded plastic latch with nylon bolt & nut assembly set.

D. Fasteners: Coated or stainless steel screws, size and type consistent with installation conditions.

E. Hold-down clips.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, including structural framing to which lay-in ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect lay-in ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of lay-in ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of lay-in ceiling panels to balance border widths at opposite edges of each lay-in ceiling. Avoid using less-than-half-width panels at borders and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install lay-in ceiling panels to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Install lay-in ceiling panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 2. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, space as recommended by panel manufacturer's written instructions unless otherwise indicated.
 - 3. For USDA Registered Establishment projects, replace hold-down clips with a continuous ribbon of Dowsil Silicone 786 (White) applied directly on the edge of the of the inverted tee rail prior to installing the lay-in ceiling panel. Remove any excess and clean thoroughly.
 - 4. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.
- C. Field cut panels as necessary in accordance with manufacturer's instructions.
- D. Sealants: Apply sealants in accordance with sealant manufacturer's instructions and shop drawings.
 - 1. Seal joints, openings, and penetrations in accordance with manufacturer's instructions and shop drawings.
- E. Repair minor damages to composite ceiling panel finish in accordance with manufacturer's instructions and as approved by Architect.

- F. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.
- G. Primary ceiling panel system shall be installed and sealed per manufacturers written instructions to comply with project requirements and testing; including but not limited to the following:
 - 1. Rooms tested for positive/negative pressure.
 - 2. Room sterilized for micro-bacterial decontamination without risk of transfer of fumes to adjoining spaces.
 - 3. Rooms sealed to prevent cross-contamination between rooms and service corridors.

3.4 CLEANING

- A. Clean exposed surfaces of lay-in ceiling panels, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace lay-in ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 PROTECTION

- A. Protect installed composite ceiling panels from damage.
- B. Allow 24 hours curing time before pressure wash down, sanitation and decon procedures.

END OF SECTION 095810