

DIVISION _____

Specification Section # _____

**BIO/CR-4
Hygienic Ceiling System**

PART 1 GENERAL

Furnish and install the Bio/CR-4 Hygienic Ceiling System as described in this Section. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications apply to work in this section.

1.1 RELATED WORK: (NOTE TO SPECIFIER: Include appropriate detail drawings and information pertinent to the specific project.)

1.2 SUBMITTALS

1.2.1 Submit # _____ samples of the materials to be used to show corner and joining details as well as final panel finish.

1.2.2 All parties wishing to have materials considered as equals for this project must submit such materials for evaluation to the design professional at least 10 (ten) days prior to bid date. Bidders not complying with this requirement will be considered non-responsive.

1.3 QUALITY ASSURANCE

1.3.1 Provide Single Source responsibility for the supply of all ceiling finish materials used in the installation.

1.3.2 A Contractor approved by Manufacturer must perform installation.

1.4 DELIVERY, HANDLING AND STORAGE

1.4.1 Deliver materials packaged so that materials are clearly marked and identifiable showing the following:

- A) Product Name
- B) Manufacturer's Name
- C) Component Designation

1.4.2 Handle Materials by methods to prevent damage

1.4.3 Inspect direct job-site deliveries to assure that quantities are correct and that materials comply with specifications and are not damaged.

1.4.4 Replace, at no cost to owners, materials that are found defective either in manufacture, handling or storage.

1.4.5 Store materials on site at the final installation temperature for at least 24 hours prior to, during, and after installation.

1.5 WARRANTY

1.5.1 Provide a limited 10 year warranty for materials and installation against any defects in manufacturing and workmanship

Life Science Products, Inc. Technical Specification
Bio/CR-4 Hygienic Ceiling Specification

1.6 JOB CONDITIONS

- 1.6.1 A Representative of the Manufacturer shall visit the job-site with the Contractor prior to installation to insure that field conditions are acceptable for installation.
- 1.6.2 For 24 hours before, during the installation, and for 72 hours after the installation, maintain temperature and relative humidity at in-service conditions.

PART 2 PRODUCTS

For the purposes of this specification, Bio/CR-4 Hygienic Ceiling System by Life Science Products, Inc. (800-638-9874) is used as the standard.

2.1 MATERIALS

- 2.1.1 System Overview: The ceiling system as specified shall consist of composite ceiling panels manufactured from materials having physical properties as specified in Section 2.1.3 below. Panels shall have a consistent smooth semi-gloss finish.
- 2.1.2 Panels: The panels used in this system shall be Bio/CR-4 composite ceiling panels. The panels shall be 6 mm thick and shall be of an aggregate of components made of polymer, metal and resin composite that form a durable composite ceiling panel. The exposed face is composed of fabric and gel coat with a smooth face. The surface finish is semi-gloss and the panel assembly shall be ASTM E 84 Class A for smoke and flame spread. The panel will be supplied in standard 48" x 10' size. The vertical edge shall be routed to for a modified recessed ship lap design that allows for direct fastening to the ceiling studs. The final recess shall be filled with a 100% solids LEED compliant urethane adhesive which shall also provide a gloss finish consistent with the panel face. Inside corners shall be formed of urethane sealant with a ½ inch radius and outside corners shall be 16 gauge, 304 stainless steel corner guards with 1/8" radius and 3" wings. Stainless corner moldings shall be adhesive mounted.

- 2.1.3 The panels shall have the following properties:

Composite Panel Fire Rating: **Panel assembly Class 1 ASTM E 84 for flame spread of 25 or less**

Light Reflectance @ 85: **94.3**

Minimum Weight: **1.7 lbs. per square foot**

Finish: **Polyester gel coat smooth (no print through)**

Panel thickness: **6 mm**

Color: **White**

Finish: **Semi-Gloss**

Hardness: ASTM D-785 **46 Barcol**

Flexural Mod ASTM D-790-07: **557,693**

Flexural Strength-ASTM D 790-07: **5325 psi**

Water Vapor Transmission ASTM E-96: **< 0.0001 perms**

Air Permeance ASTM E-2178 (L/s/m²): **0.00001 @ 300 pa**

Tensile Strength: ASTM D-638: **3272 psi**

Tensile Mod ASTM D-638: **511,000**

Coefficient of Linear Thermal Expansion CLTE (mm mm C) ASTM D-696: **4.30 E -05**

Compressive Strength ASTM D-695: **5364 psi**

Modulus: ASTM D695: **49,873 psi**

Life Science Products, Inc. Technical Specification
Bio/CR-4 Hygienic Ceiling Specification

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|---------------------|-------------------------|------------------|
| Chemical Resistance | 20% Acetic Acid | Occasional Spill |
| | 50% Citric Acid | Good |
| | 20% Nitric Acid | Occasional Spill |
| | 30% Hydrochloric Acid | Occasional Spill |
| | 10% Hydrofluoric Acid | Occasional Spill |
| | Hydrogen Peroxide | Good |
| | 40% Potassium Hydroxide | Good |
| | 40% Sodium Hydroxide | Good |
| | 50% Sulfuric Acid | Good |
| | Urea | Good |

2.1.4 The joint adhesive/sealant shall have the following properties:

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| Hardness Shore D | ASTM D-1706 | 70 - 80 |
| Tensile Strength | ASTM D-638 | 3,000 psi min. |
| Flexural Strength | ASTM D-790 | 4,000 psi min. |
| Thermal Shock | Mil F-52505 | No cracking or loss of adhesion |
| Abrasion Resistance (Taber Abrader, CS-17 Wheels, 1000 gm. load, 1000 cycles) | ASTM D-4060 | .035 gm loss |
| Ultimate Elongation | ASTM D-638 | 20% min. |

PART 3 EXECUTION

- 3.0.1 Make sure that the substrate is smooth, flush and free of imperfections that will interfere with the even contact of the panel with the substrate.
- 3.0.2 Apply adhesive of type recommended by Manufacturer to the entire back side of the panel, all the way to the edge. Follow Manufacturers recommendations for application and "open times" of the adhesive.
- 3.0.3 Panels are designed to be mounted directly the ceiling substrate. Put the panels in place against the substrate approximately ½ inch above the floor. Place fastening screws at both the top and bottom of the panel to secure the top and bottom edges of the panels first. Secondly, attach the panels along the edge by inserting mounting screws in the joining joint between the panel and assure that the screw head remains below the face of the panel.
- 3.0.4 If necessary, apply pressure to the center of the panel using a weighted lever until adhesive cures.
- 3.0.5 Mask the panel edges for protection and fill the vertical seams between panels with urethane adhesive recommended by manufacturer. Fill to a plane that will fill the seam flush with the adjacent panel surface. Finish the adhesive/sealant and remove the masking before the adhesive has set.
- 3.0.6 Inside corners shall be formed of urethane sealant with a ½ inch radius and outside corner moldings shall be 16 gauge, 304 stainless steel corner guards with 1/8" radius and 3" wings. Stainless corner moldings shall be adhesive mounted.
- 3.0.7 The ceiling angle and flooring cove base will cover top and bottom screw lines respectively. Be sure to consult the appropriate trades to assure the lower mounting screws are within the cove base field.