

SECTION 09 77 23

SOUND-ABSORPTIVE PANELS

PART 1 - GENERAL

1.1 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions, and Division 01 – General Requirements apply.

1.2 SECTION INCLUDES

Specifier Note: Delete options in first paragraph below that are not included in this section.

- A. 180 Degree Diffuser fabric finish wall panels.
- B. 180 Degree [Reflector] [Diffuser] [fabric-wrapped] [painted] wall panels.

1.3 RELATED SECTIONS

Specifier Note: In this article, specify work specified in other sections that is related to work of this section.

- A. Section 09 29 00 - Gypsum Board: Wall substrate construction.

Specifier Note: The following paragraph is a sample that may be used in this article. Add to or delete from the following as appropriate for the specific project.

- B. Section [xx xx xx] - [Section Title]: [Include brief description of work specified in another section that is related to the work of this section.]

1.4 SUBMITTALS

Specifier Note: In this article, specify various types of data to be furnished by the contractor before, during, or after construction. Topics included in this article are: product data, shop drawings, samples, design data, test reports, certificates, manufacturers' instructions, manufacturers' field reports, qualification statements, and closeout submittals.

- A. Submit under provisions of Section [01 33 00] [_____].
- B. Product Data: Submit for each type of fabric finish, panel edge, core material, and anchoring device indicated.
- C. LEED Submittals:
 - 1. Product Data for MR Credit 4.1 [and Credit 4.2]: Submit documentation indicating percentages of post-consumer and pre-consumer recycled content for products having recycled content including a statement of cost for each product having recycled content.
 - 2. Product Data for EQ Credit 4.1: Submit documentation for installation adhesives including a printed statement of VOC content and chemical components.
- D. Shop Drawings: Submit for wall panels. Indicate mounting devices and details; details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge and core materials. Include elevations showing panel sizes and direction of fabric weave.
- E. Samples: For each type of fabric finish from wall panel manufacturer's full range.

1. Fabric Finish: Submit full-width by approximately 12 inches long sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.
 2. Panel Edge: 12-inch long sample(s) showing each edge profile, corner, and finish.
 3. Core Material: 12-inch square sample at corner.
 4. Mounting Devices: Full-size samples.
 5. Assembled Panels: Approximately 12 by 12 inches, including joints and anchoring devices.
- F. Maintenance Data: Indicate fabric manufacturer's written cleaning and stain removal recommendations.
- G. Warranty: Submit sample indicating items covered and length of warranty.

1.5 QUALITY ASSURANCE

Specifier Note: In this article, describe qualifications, regulatory requirements, certifications, field samples, mock-ups, and pre-installation meetings.

- A. Manufacturer Qualifications: Company specializing in manufacturing fabric-wrapped panels with 10 years minimum experience.
- B. Source Limitations: Obtain panels through one (1) source from a single manufacturer.
- C. Fire-Test Response Characteristics: Provide mineral wool wall panel cores with the following fire-test response characteristics as determined by testing per ASTM E136:
 1. Flame-Spread Rating: 0.
 2. Smoke-Developed Index: 0.
- D. Mockups: Construct mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials, fabrication, and installation.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver panels in manufacturer's original, unopened and labeled packages.
- B. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
- C. Protect from damage due to weather, excessive temperature, and construction operations.

1.7 WARRANTY

- A. Manufacturer's standard form in which manufacturer warrants against any defects in workmanship or breakdown of the core material for two (2) years from date of delivery.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: The design for fabric-wrapped panels is based on products manufactured by Perdue Acoustics, 4210 Hester Drive, Amarillo, TX 79124; telephone: 800.729.9402, fax 806.374.9450; email: info@perdueacoustics.com ; Web Site: www.perdueacoustics.com.
- B. Substitutions are not permitted.

2.2 SOUND-ABSORPTIVE PANELS

Specifier Note: Select one of the options from the following paragraphs and delete the others.

- A. 28-Inch 180 Degree Diffisorber Fabric Finish Panels: Mineral wool core with fiberglass mat front and back; spray back inside with thin resin fiberglass chop diaphragm with reinforced corners.
 - 1. Core Properties: Flame spread of zero (0), smoke developed rating of zero (0); minimum tensile strength of 2631 lbs/sq ft breaking load, and compressive resistance of 480 lbs/sq ft at 10 percent compression, and horizontal sag of not more than 1/2-inch in four (4) ft.
 - 2. Fabric Finish: Selected from manufacturer’s standard fabric. Bond fabric to face and edges and return at edges a minimum of two (2) inches on back of panels. Provide panels with flat, wrinkle-free surface and tailored corners.
 - a. Rating: Rating of fabric used determines rating of panel as a unit.
 - b. Recycled Content: Provide fabric with post-consumer recycled content.
 - 3. Acoustical Properties: NRC numbers in accordance with ASTM C423 for Type A mounting. Certifiable acoustical data must be provided by an NVLAP-approved, independent testing laboratory.
 - a. Sound Absorption Coefficients (Fabric Finish – 2’ Spaced Arrangement):

125 Hz	1.87	1000 Hz	2.59
250 Hz	1.64	2000 Hz	2.33
500 Hz	2.46	4000 Hz	2.32
		NRC	2.25

2.3 SOUND-DIFFUSIVE PANELS AND SOUND-REFLECTIVE PANELS

- A. 28-Inch 180 Degree Fabric Finish or Fire Retardant Sprayed Diffusers: 0.20-inch thick high-impact styrene weighing approximately 1-1/2 lbs/sq ft; square edges; curve 28-inch width of diffuser in perfect half circle 14 inches at thickest point. Panel consists of end-to-end series of complex chambers diffusing sound in all directions and at all frequencies from 100 Hz to 18,000 Hz, as proven by testing in both time domain and frequency domain. Diffusion chambers are based on manufacturer’s patent using formulas on non-incident mathematics and cannot be used without permission.

Specifier Note: Fabric facing and paint finish in following two (2) subparagraphs are optional. Delete subparagraphs if optional finishes are not used.

- 1. Fabric Finish: Selected from manufacturer’s standard fabric. Bond fabric to face and edges and return at edges a minimum of two (2) inches on back of panels. Provide panels with flat, wrinkle-free surface and tailored corners.
 - a. Rating: Rating of fabric used determines rating of panel as a unit.
 - b. Recycled Content: Provide fabric with post-consumer recycled content.
- 2. Paint Finish: Selected from manufacturer’s standard paint colors. Ensure complete paint coverage over entire unit.
- 3. Acoustical Properties: Absorption numbers in accordance with ASTM C423 for Type A mounting. Certifiable acoustical data must be provided by an NVLAP-approved, independent testing laboratory.
 - a. Sound Absorption Coefficients:

100 Hz	.28	500 Hz	.26
125 Hz	.32	1000 Hz	.23
250 Hz	.31	2000 Hz	.13
		NRC	.25

b. Sound Absorption Coefficients (Fabric Finish):

100 Hz	.34	500 Hz	.58
125 Hz	.33	1000 Hz	.57
250 Hz	.40	2000 Hz	.54
		NRC	.50

B. 28-Inch 180 Degree Reflector Fabric-Wrapped Diffusers: 0.20-inch thick high-impact styrene weighing approximately 1-1/2 lbs/sq ft; square edges.

1. Fabric Finish: Selected from manufacturer’s standard fabric. Bond fabric to face and edges and return at edges a minimum of two (2) inches on back of panels. Provide panels with flat, wrinkle-free surface and tailored corners.
 - a. Rating: Rating of fabric used determines rating of panel as a unit.
 - b. Recycled Content: Provide fabric with post-consumer recycled content.
2. Paint Finish: Selected from manufacturer’s standard paint colors. Ensure complete paint coverage over entire unit.
3. Acoustical Properties: NRC numbers in accordance with ASTM C423 for Type A mounting. Certifiable acoustical data must be provided by an NVLAP-approved, independent testing laboratory.

a. Sound Absorption Coefficients:

100 Hz	.30	500 Hz	.17
125 Hz	.23	1000 Hz	.14
250 Hz	.22	2000 Hz	.16
		NRC	.20

b. Sound Absorption Coefficients (Fabric Finish):

100 Hz	.27	500 Hz	.14
125 Hz	.26	1000 Hz	.13
250 Hz	.21	2000 Hz	.20
		NRC	.25

2.4 ACCESSORIES

- A. Fastening Devices: Manufacturer’s standard "Concealed Multiple-Perforation Fastening Devices" (EZ-Clips). Provide in the following quantities:
 1. 28-Inch 180 Degree Diffuser: Two (2) per unit.
- B. Fastening Devices: Manufacturer’s standard Z-clips. Provide in the following quantities:
 1. 28-Inch 180 Degree Diffuser: Two (2) per unit
 2. 28-Inch 180 Degree Reflector: Two (2) per unit.
- C. Adhesives: As recommended by manufacturer with a VOC content of 70 g/L or less when calculated in accordance with 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements that affect installation and with requirements for installation tolerances. Notify the Architect in writing of conditions detrimental to proper completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure wall areas to receive panels and establish layout to balance border widths at opposite edges of each area. Avoid using less-than-half-width panels at borders, and comply with layout shown on wall elevations.
- B. Coordinate work that penetrates the walls. Provide cutouts for wall-mounted items and penetrations accurately and cleanly.

3.3 INSTALLATION

- A. Install in strict accordance with manufacturer's written installation instructions and recommendations and approved shop drawings. Coordinate installation with adjacent work to ensure proper clearances.
- B. Install each diffuser panel EZ-Clip on the wall, with attachment screws appropriate to the substrate, so that it will impale the panel approximately six (6) inches in from each corner and approximately six (6) inches in from each side on longer panels.
- C. Apply paneling adhesive in a 3/8-inch bead 1-1/2 inches in from edge before impaling panel on EZ-Clips.
- D. Install each reflector panel "L-bracket" on the wall, with attachment screws appropriate to the substrate.
- E. Do not field alter the diffuser or reflector panels.

3.4 CLEANING AND PROTECTION

- A. Clean exposed surfaces of panels in accordance with manufacturer's recommendations.
- B. Protect installed panels from damage or soiling until completion of project.
- C. Remove and replace panels that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION