

SECTION 09830

LOW FREQUENCY SHELIVING ABSORBER (MODEX PLATE)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Low frequency shelving absorber (Model Modex™ Plate)

1.02 RELATED SECTIONS

- A. Section 06400 – Architectural Woodwork

1.03 DEFINITIONS

- A. The Modex Plate shall offer absorption from either 35-100Hz or from 50 Hz to 500 Hz, utilizing a damped metal plate resonator principle. The Modex Plate shall provide low frequency shelving absorption, with minimal high frequency attenuation. The Modex Plate shall consist of a “Type 1” or “Type 2” powder coated metal plate backed by a proprietary bonded 3.94” damping layer, which provides resilience for mass spring piston resonance, damping of the plate bending modes and porous absorption for the longer wavelengths that diffract around the metal plate. The white powder coated front plate is resiliently attached to a white powder coated, perforated metal perimeter frame, which allows sound to access the polyester backing. The perforated metal perimeter frame shall contain a regular array of holes spaced uniformly horizontally and vertically apart. The Modex Plate shall be resiliently mounted to “L” shaped wall mounting brackets.

1.04 SYSTEM DESCRIPTION

- A. Design Requirements: Surface or corner applied porous materials lose efficiency at low frequencies, because the particle velocity or air movement associated with these long wavelengths is low. The Modex™ Plate is pressure activated and is most effective in high pressure dihedral or trihedral surface locations. The Modex™ Plate consists of Type 1 or Type 2 metal plate backed by 3.94” damping layer. The system shall react in a mass-spring manner, offering absorption via three mechanisms. First, the metal plate shall provide piston absorption at the lowest part of the performance bandwidth by vibrating against the “spring” of the porous backing. Second, the bending modes of the free-moving plate shall be heavily damped by the proprietary adhesive coupling with the porous backing. Lastly, mid-frequency sound waves diffract around the plate’s edges to be propagated and, thus, dissipated in the deep passive porous absorber layer. Together, these mechanisms shall offer efficient low frequency shelving absorption in a shallow profile of only 4 inches for the Type 1 units and 4.25” for the Type 2 units.

- B. Performance Requirements:

1. Random Incidence Sound Absorption Coefficients (α): Tested by independent, accredited, NVLAP facility according to ISO 354 for a type A mounting, with a Type 1 powder coated metal plate.

Hz	50	63	80	100	125	160	200	250	315	400
α	0.63	0.8	1.05	1.07	1.15	0.86	0.94	0.83	0.75	0.7

Hz	500	630	800	1000	1250	1600	2000	2500	3150	4000
α	0.58	0.5	0.4	0.38	0.35	0.33	0.25	0.22	0.26	0.16

2. Large scale impedance tube testing with a cross section of 1.6 x 1.2 m and a special approach (T-Room) monitoring the decay times of the lowest axial modes in a 5x4x3 meter room, with and without the sample present on one of the opposing surfaces.

Type 1

Hz	34	42	57	68	84
α	.15	.28	.67	1.15	1.12

Type 2

Hz	34	42	57	68	84
α	.30	.97	.83	.80	.60

1.05 SUBMITTALS

- A. Product Data: Submit standard manufacturer product cutsheet showing product, standard dimensions and selected options.
- B. Design Data / Test Reports: Submit sound absorption coefficients.

1.06 QUALITY ASSURANCE

- A. Flame Spread / Smoke Developed Characteristics: Tested by independent, accredited NVLAP facility according to DIN 4102 B1.

1.07 DELIVERY STORAGE AND HANDLING

- A. Packing, Shipping, Handling and Unloading: Modex Plates are susceptible to damage and shall be removed from packaging and handled with care. Units shall be carried by a minimum of 2 people. Units shall never be set down on finished powder coated metal faces, only on backside.
- B. Storage and Protection: Store Modex Plates in original packaging until ready to install. Store Modex Plates in temperature and humidity controlled conditions for 24 hours prior to installation and protect from moisture and infestation.

C. Acceptance at Site: Installation constitutes complete acceptance.

1.08 PROJECT CONDITIONS

A. Project Environmental Requirements: Installation area shall be enclosed, protected from weather and be temperature and humidity controlled prior to unpacking and installing Modex Plates.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. RPG Diffusor Systems, Inc., 651-C Commerce Drive, Upper Marlboro, MD 20774
301-249-0044 (telephone), 301-249-3912 (facsimile), <http://www.rpginc.com>.

2.02 MATERIALS

- A. The front plate shall be Type 1 or Type 2 rust resistant, powder coated metal plate.
- B. The perimeter frame shall be rust resistant, powder-coated, perforated metal.
- C. The backing material shall be 2.5 pcf density sound dampening material.

2.03 MANUFACTURED UNITS

- A. Unit Dimensions
Type 1 Unit: Height 59.06" x 39.4" x 3.94"
Type 2 Unit: Height 59.75" x 40" x 4.25"
- B. Weight
Type 1 Unit: 70 lbs
Type 2 Unit: 85 lbs

2.04 ACCESSORIES

- A. Wall Cleats: Units shall be supplied with (2) "L" shaped aluminum mounting cleats running the inside width of the perimeter frame.
- B. Mounting Screws: Mounting screws for the "L" shaped aluminum cleats and screws to secure the Modex Plate frame to the mounting cleats through resilient washers shall be supplied.

2.05 FINISHES

A. Shop Finishing: Units shall be supplied with a white powder coat finish.

PART 3 EXECUTION

3.01 INSTALLERS

A. Only qualified installers with 3 years (minimum) experience installing similar products shall install diffusors.

3.02 EXAMINATION

- A. Site Verification of Conditions: Commencement of installation constitutes acceptance of prior work.

3.03 PREPARATION

- A. Protection: Protect surrounding work so as to avoid damage during installation of the Modex Plate.
- B. Surface Preparation: Inspect substrate and ensure surface is flat, plumb, clean and dry without protruding elements that would otherwise interfere with installation.

3.04 INSTALLATION

- A. Field measure the inside height dimension of the unit and mark the wall to determine the location of the top and bottom “L” brackets.
- B. Attach the “L” brackets to the wall with the vertical section of the “L” below the horizontal leg, so that the unit can slide over and conceal the cleats.
- C. There shall be three rubber grommets, in existing holes, on the top and the bottom of the unit. One in the center and two, six holes from either end.
- D. Slide the Modex Plate over the “L” brackets and screw, using the included self tapping screws, through supplied rubber grommets into the mounting brackets to secure the unit at the top and bottom.

3.05 CLEANING

- A. After installation, clean dirt and dust from powder coated surface with white, cotton cloth. Do not scratch the powder coated surface with a hard abrasive cleaner.

3.06 PROTECTION

- A. After installation, protect Modex plates against dirt, scratching and contact.

END OF SECTION