Omniffusor™

The First Two Dimensional QRD® From The Acoustical Industry's Leading Innovator

Conventional acoustic treatments have relied on absorption for reflection control. Unfortunately, this can "deaden" the room and make it unsuitable for speech or music. Diffusive ceilings are one of the most effective ways to simultaneously control room reflections and provide a natural ambiance. The Omniffusor™ uniformly scatters sound arriving from any direction into many directions, providing ideal distribution and coverage. It's unique shape creates an attractive, visually interesting acoustical surface.

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Problem and Solution

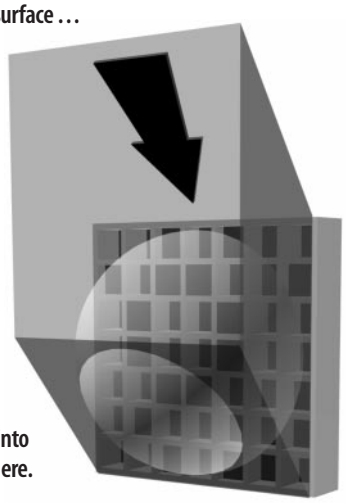
Problem

Specular reflections from flat, hard surfaces cause strong reflections that corrupt speech intelligibility and degrade music quality. Typically, fabric wrapped absorptive panels are used to control interfering reflections, with the undesirable side effect of deadening the space.

Solution

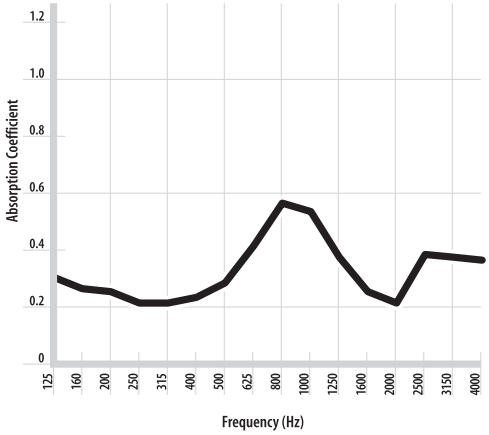
The Omniffusor™ is the first 2D QRD®. It offers twice the reflection attenuation of the 1D QRD® because it uniformly scatters sound into a hemisphere. The Omniffusor™ provides uniform, omnidirectional, broad bandwidth diffusion in an attractive ceiling or wall design element.

Sound strikes a two dimensional diffusing surface …



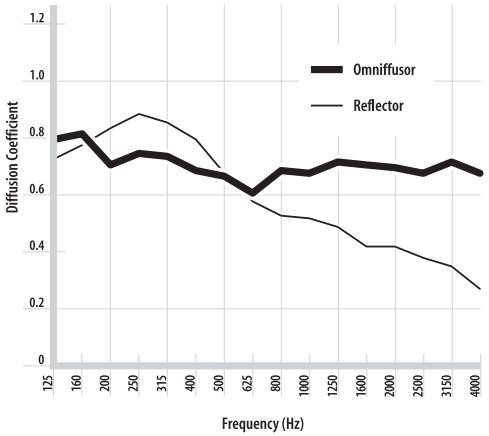
…and is uniformly scattered into a hemisphere.

Performance Specifications



Absorption

While the primary function of the Omniffusor™ is to provide broad bandwidth diffusion, it also offers a modest and beneficial amount of absorption across the frequency spectrum with a small emphasis at about 800Hz.



Diffusion

The Omniffusor™ offers significant diffusion compared to a flat reflector panel above the diffraction limit of 565 Hz, which is determined by the dimensions of the panel. Above this frequency, the graph indicates how the reference reflector becomes more and more specular as the frequency increases, whereas the Omniffusor™ provides a constant diffusivity.

Installation

Wooden Omniffusors™ can be wall mounted or suspended in a T-bar grid. For wall installation, plexiglass Omniffusors™ should be flush mounted into a framed opening. Decorative trim can be added to conceal the perimeter joint.

FEATURES

- *2D QRD® reflection phase grating*
- *Uniform hemispherical scattering for all angles of incidence*
- *Simultaneously offers diffusion and moderate mid band absorption*
- *2D QRD® provides twice the diffusive specular attenuation of a 1D QRD®*
- *Available in furniture grade hardwoods and plexiglass*
- *Available in modular 2' x 2' panels*

BENEFITS

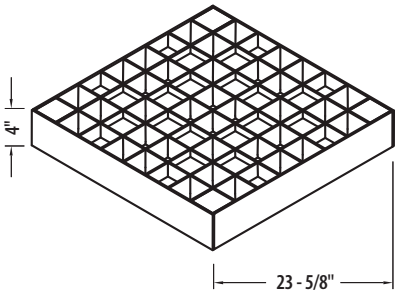
- *The 2D QRD® provides phase variation in two orthogonal directions for uniform omnidirectional scattering*
- *Hemispherical scattering makes the Omniffusor™ ideal for ceiling applications because the incident sound is uniformly distributed throughout the room from a planar ceiling surface*
- *The omnidirectional diffusive attenuation, coupled with moderate mid band absorption, provides ideal reflection control without deadening the space*
- *The wide range of wood finishes makes the Omniffusor™ an attractive architectural addition to a space*
- *Modular 2' x 2' panels can be wall mounted or suspended in a 15/16" heavy duty T-bar ceiling grid*

APPLICATIONS

Mastering studios, Performing arts facilities, Post production studios, Broadcast studios, Worship spaces, Recording studios, Listening rooms, Home theaters, Conference rooms

SPECIFICATIONS

- *Size: 23-5/8" (L) x 23-5/8" (W) x 4" (D)*
- *Standard finish is clear lacquered birch*
- *Custom wood species and finishes available*



Omniffusor™

Standard Unit Construction

Rotary Cut, Uniform White Birch
Clear Coat
2' height x 2' width nominal (1' 11-5/8" x 1' 11-5/8") x 4" deep

Product Options*, **

Custom units can be supplied with contrasting well and divider veneers, species, and finishes

Veneer Selection
Uniform White Birch
White Maple
Red Oak
White Oak
White Ash
Honduran Mahogany
American Cherry
Custom wood species (based on availability)
Melamine wood grain or solid color (not Class A Fire Rated)

Finish Selection
Unfinished
Clear Coat only (satin lacquer finish)
Stained and unfinished
Stained and clear coat
Painted

Option Sheet

Note:

All dimensions are allowed a tolerance of ± 1/16" due to material shrinkage and variations.

** Most options merit an increase or, in some cases, a decrease in pricing compared to the standard unit.*

*** Due to material availability, RPG® reserves the right to change options at any time. Therefore, any special options—whether listed or not—must be confirmed prior to submittal of P.O. and acceptance verified by RPG® Diffusor Systems, Inc.*

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Wood Two Dimensional Diffusor

CSI Specifications

A The Wood Two Dimensional Diffusor shall be the model Omniffusor™ Wood as manufactured by RPG Diffusor Systems, Inc., Upper Marlboro, MD 20774. Tel: 301-249-0044, Fax: 301-249-3912.

B The Wood Two Dimensional Diffusor shall be fabricated from 1/4" Class A Birch (or specify other suitable finish) veneer plywood.

C The Wood Two Dimensional Diffusor shall work on the two dimensional reflection phase grating principle, using an array of square wells of equal widths separated by thin dividers. The depths of the wells shall be based on the phase-shifted prime 7 quadratic residue number theory sequence.

D The Wood Two Dimensional Diffusor shall all be installed in the same orientation to preserve the two dimensional symmetry of the surface.

E Absorption Coefficients and Noise Reduction Coefficient for the product shall be measured by an independent, accredited NVLAP facility according to the test methods as defined by ASTM C 423 and ASTM E 795. Random incidence Absorption Coefficients for the product in an E-400 mounting shall be as follows:

125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	NRC
0.30	0.21	0.28	0.53	0.21	0.36	0.30

F Diffusion Coefficients for the product shall be measured in accordance with the recommendations of the Audio Engineering Society Working Group SC-04-02 boundary measurement technique. The directional diffusion coefficient is given by the standard deviation of the 1/3-octave polar response, for a given angle of incidence, and normalized by the response of a flat panel of similar size. The average incidence diffusion coefficients determined at 5° intervals between ± 85° are listed below at octave-band centers. The mean and standard deviation (SD) of the 1/3-octave-band coefficients are also tabulated.

125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	Mean	SD
0.79	0.74	0.66	0.67	0.69	0.67	0.70	0.05

G Flame Spread and Smoke Developed shall be tested by an independent, accredited NVLAP facility according to the test methods as defined by ASTM E 84 and NFPA 255. The Wood Two Dimensional Diffusor shall have a composite Flame Spread Rating of less than 25 and a Smoke Development of less than 450.

H The Wood Two Dimensional Diffusor shall be supplied with a lacquered finish.

I The overall dimensions shall be 23-5/8"(H) x 23-5/8"(W) x 4"(D) and weigh no more than 22 pounds.

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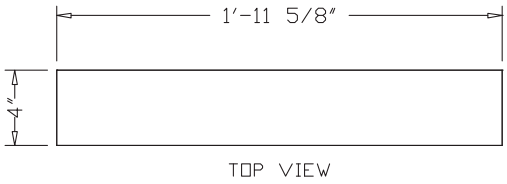
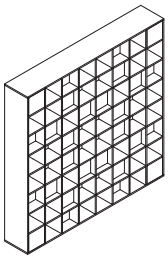
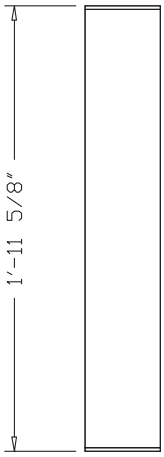


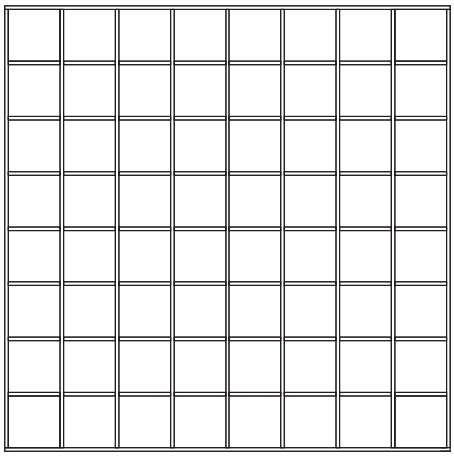
TOP VIEW

2' x 2' Cutsheet





LEFT SIDE



FRONT VIEW

Project:

Specifier:

Drawing Number:

Date:

Tolerance: ± 1/16"

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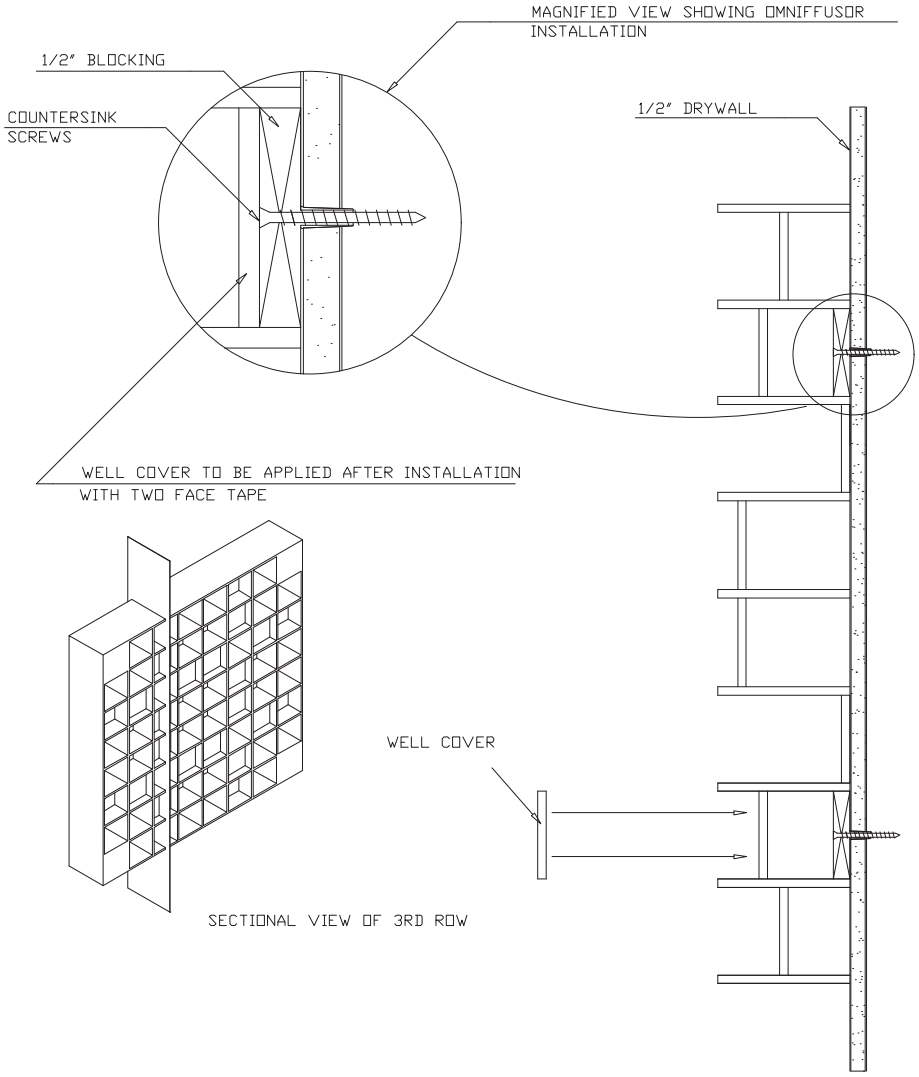


Wall Mount

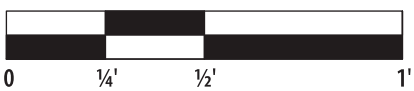
Project:

Specifier:

Drawing Number:

Date:

All dimensions should be field verified prior to installation.



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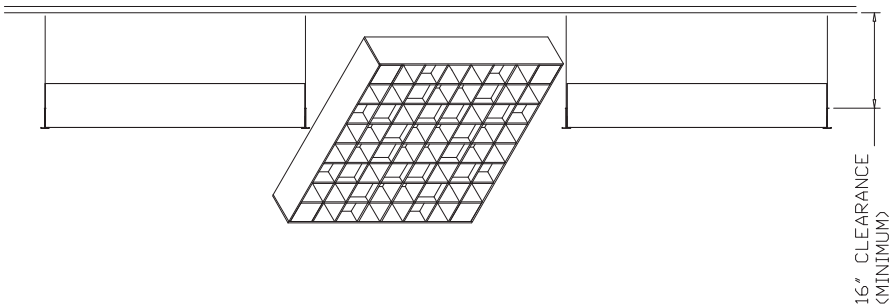
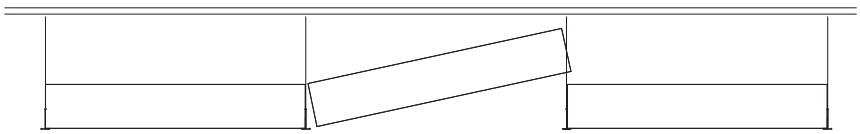
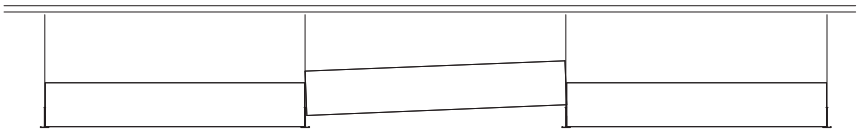


T-Bar Tilt and Drop





Project:

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Date:

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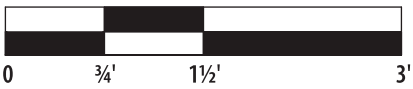

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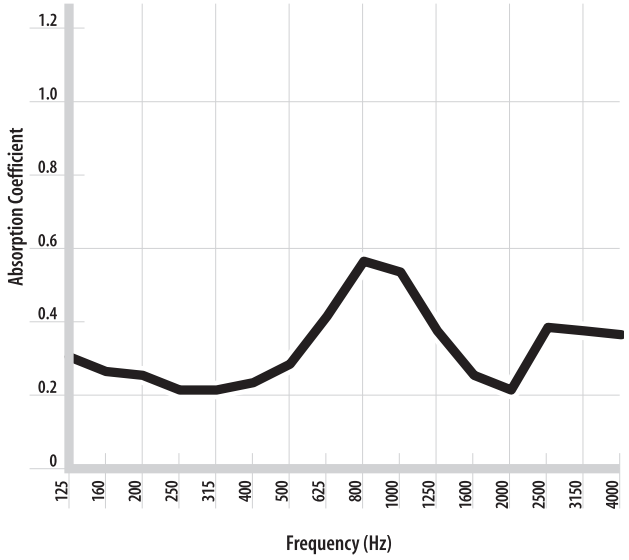
Absorption Coefficients



Hz	Absorption Coefficient
125	0.30
160	0.26
200	0.25
250	0.21
315	0.21
400	0.23
500	0.28
630	0.41
800	0.56
1000	0.53
1250	0.37
1600	0.25
2000	0.21
2500	0.38
3150	0.37
4000	0.36

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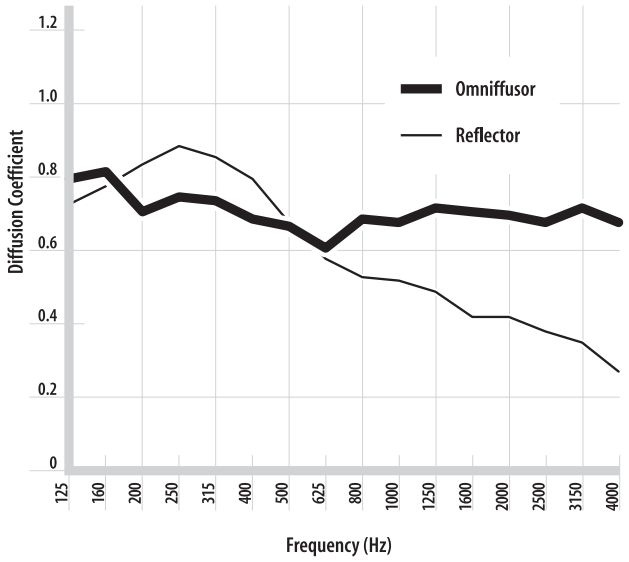

Hz	Omniffusor™	Reflector
125	0.79	0.72
160	0.81	0.77
200	0.70	0.83
250	0.74	0.88
315	0.73	0.85
400	0.68	0.79
500	0.66	0.67
630	0.60	0.57
800	0.68	0.52
1000	0.67	0.51
1250	0.71	0.48
1600	0.70	0.41
2000	0.69	0.41
2500	0.67	0.37
3150	0.71	0.34
4000	0.67	0.26

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