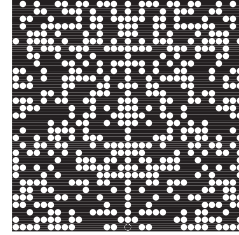


Flatffusor™



*The First Flat Sound Diffusor
From The Acoustical Industry's
Leading Innovator*

Well balanced acoustical designs contain an appropriate combination of absorption, reflection, and diffusion. In many applications, however, limited budget or surface treatment thickness preclude the use of diffusion. Absorptive, fabric wrapped panels are specified for lack of an alternative. Unfortunately, wide area application may lead to an acoustically "dead" environment without "air" or ambiance. To solve this problem, RPG® developed the first flat, zero depth diffusor: the Flatffusor™. The Flatffusor™ simultaneously provides uniform sound diffusion at high and mid band frequencies and crosses over to pure absorption below the diffusive cutoff.

The energy that is not diffused is absorbed.



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Problem and Solution

Problem

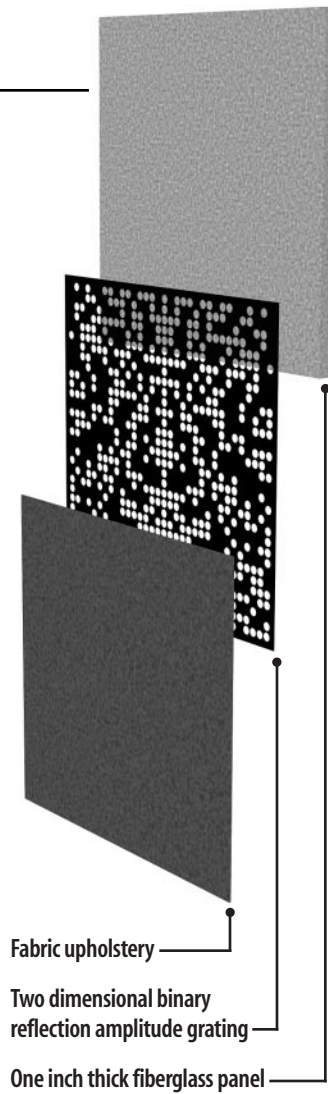
Budget constraints and available surface depth for acoustical applications may prevent owners from using RPG®'s traditional number theory diffusors in their rooms, thus denying them the opportunity to realize the significant benefits of sound diffusion technology.

Solution

To overcome these problems, RPG® developed the first economical flat diffusor called the Flatffusor™. This new diffusor differs from the reflection phase grating (RPG) diffusors pioneered by RPG® 15 years ago. Traditional RPG® diffusors vary the phase of the incoming sound by reflection from 1 dimensional wells or 2 dimensional phase blocks whose depths are based on number theory sequences. The Flatffusor™ offers sound diffusion by varying the amplitude of the incident sound rather than the phase, forming a variable impedance, binary amplitude grating.

An optimal 2 dimensional binary sequence is used to determine the spatial positions of absorptive and reflective areas. The absorptive areas are represented by a 0 and the reflective areas by a 1. The sizes of the binary elements are less than half a wavelength of the upper frequency limit. The Flatffusor™ is designed to provide uniform diffusion between 1 and 16 kHz. This mechanism is an effective new innovation in offering sound diffusion from a flat surface.

The Flatffusor™ looks very much like a fabric wrapped absorptive panel, yet it provides an attractive alternative to RPG®'s furniture grade or molded diffusors.



FEATURES

- Omnidirectional diffusion from a thin, flat binary amplitude grating
- Optimal two dimensional binary sequence offers uniform diffusion over a wide frequency range
- Acoustical functionality is concealed with an upholstered decorative fabric

BENEFITS

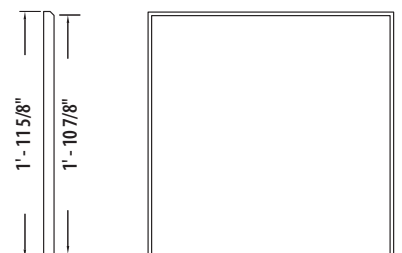
- Provides high frequency diffusion in the form of a shallow depth flat panel in situations where space is limited
- Offers an alternative to higher priced one dimensional and two dimensional broad bandwidth diffusors, which require greater surface depth
- Can be used to cover large areas without creating an acoustically "dead" space
- Can be used to provide acoustic gain in conference rooms, classrooms, and auditoriums to improve speech intelligibility and reduce fatigue
- Provides greater sound coverage for speech and music
- Highly effective in creating a passive surround sound mixing environment for all 5.1 formats

APPLICATIONS

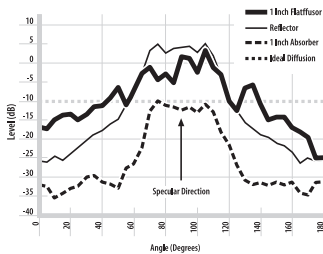
Project studio control rooms, studios, vocal and isolation rooms, drum booths, gobos, individual practice rooms, band rehearsal rooms, nightclubs, and performance stages.

SPECIFICATIONS

- Size: 2' (H) x 2' (W) x 1" (D)
- Weight: 2.5 lbs
- Standard fabric: Guilford of Maine FR701 #298
- Beveled edge

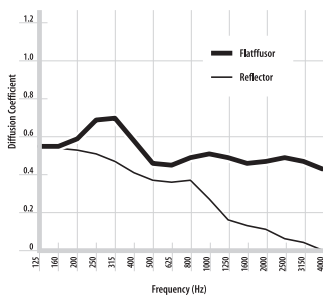


Performance Specifications



Angular Scattering Response

For normally incident sound, the graph illustrates the angular response at 12.5 kHz. The flat reflector scatters sound primarily into the 90° specular direction. The wall mounted absorptive panel has similar response, only attenuated. The Flatffusor™ Panel decreases specular scattering and more closely approaches the uniform ideal diffusion line.



Diffusion

The performance of a scattering surface is characterized by the diffusion coefficient, which is the standard deviation of the 1/3 octave angular response, shown above at 12.5 kHz. The graph illustrates how uniformly the Flatffusor™ scatters sound across the frequency spectrum, compared to a reflective panel, for normal incidence.

Installation

Installation of the Flatffusor™ is quick and easy. Simply use construction adhesive or the supplied impaling clips to mount the panel to walls or ceiling.

Standard Unit Construction

2' height x 2' width nominal (1' 11-5/8" x 1' 11-5/8") x 1" deep
Guilford of Maine FR701 #298 Fabric
6 lb. density fiberglass
Binary Amplitude Diffusor™ Template
Beveled edges

Product Options*, **

Unit Size

2' height x 2' width nominal (1' 11-5/8" x 1' 11-5/8") x 1" deep

Edge Conditions

Units are provided with a 3/8" beveled edge

Option Sheet

Note:

All dimensions are allowed a tolerance of $\pm 1/16"$ 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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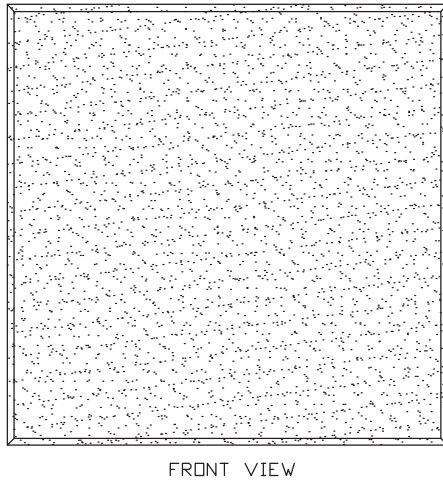
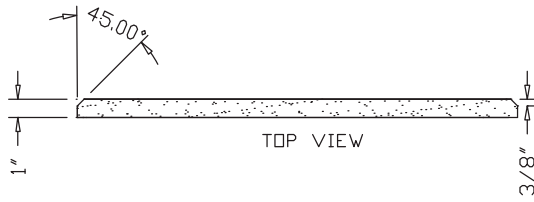
Fabric Wrapped Acoustical Panel

- A** The Fabric Wrapped Acoustical Panel shall be the Flatffusor™ as manufactured by RPG® Diffusor Systems, Inc., Upper Marlboro, MD 20774. Tel: 301-249-0044, Fax: 301-249-3912.
- B** The Fabric Wrapped Acoustical Panel shall be fabricated from molded fiberglass cores covered with a rigid template. Edges shall be square and plum to within a tolerance of 1/16". The Fabric Wrapped Acoustical Panel shall be of the thickness and sizes indicated on the drawings.
- C** Fiberglass cores shall have a minimum density of not less than 6lbs/ft³ (or enter other desired density).
- D** Provide mechanical clip mounting system (or specify other desired mounting such as construction adhesive or hook and loop fasteners) as per manufacturer's recommendations.
- 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 a 1" thick, 6lbs/ft³ density product in an E-400 mounting shall be as follows:
- | 125Hz | 250Hz | 500Hz | 1000Hz | 2000Hz | 4000Hz | NRC |
|-------|-------|-------|--------|--------|--------|------|
| 0.07 | 0.37 | 0.73 | 0.97 | 1.08 | 0.85 | 0.80 |
- F** 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 Flatffusor™ shall have a composite Flame Spread Rating of less than 25 and a Smoke Development of less than 450.
- G** The Fabric Wrapped Acoustical Panel shall be supplied in a Guilford of Maine FR701 #298 fabric.
- H** The overall dimensions shall be 1' 11-5/8"(H) x 1' 11-5/8"(W) x 1"(D) and weigh no more than 4 pounds.

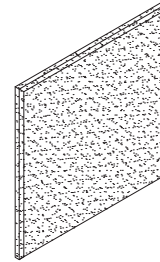


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Flatffusor™



2' x 2' Cutsheet



Project: _____

Specifier: _____

Drawing Number: _____

Date: _____

Tolerance: $\pm 1/16"$

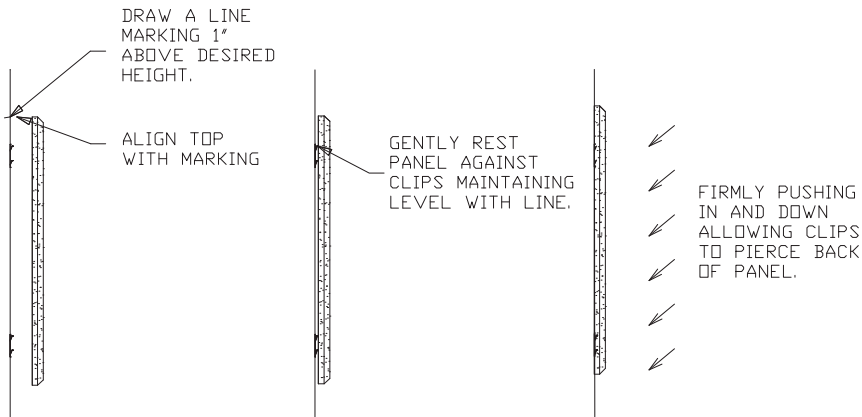
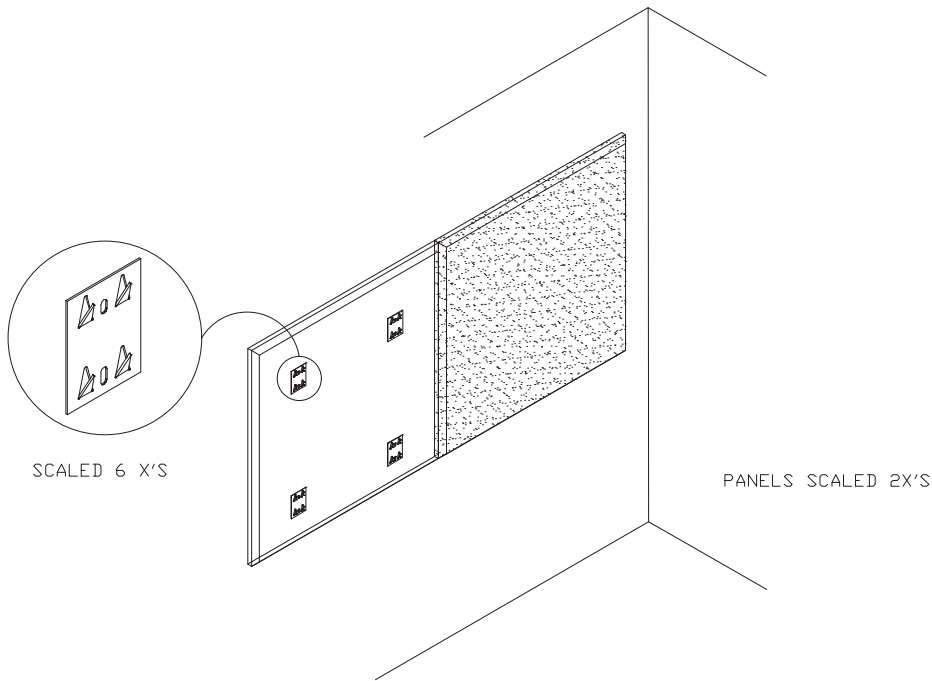


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Flatffusor™

Surface Mount



Project:

Specifier:

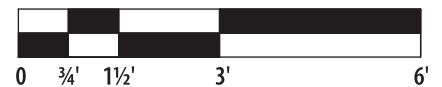
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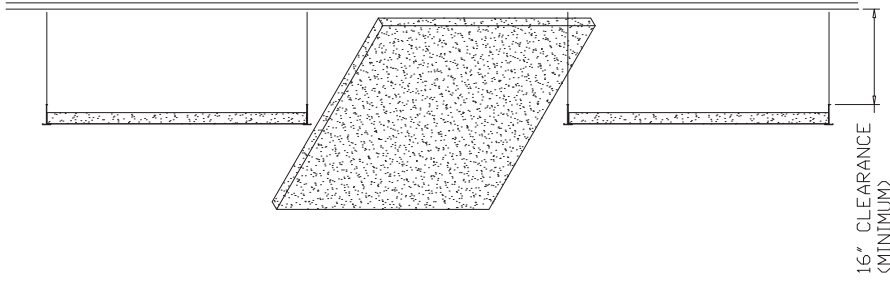
All dimensions should be field verified prior to installation.



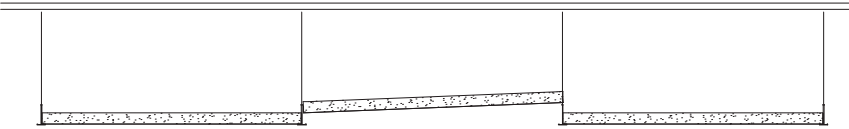
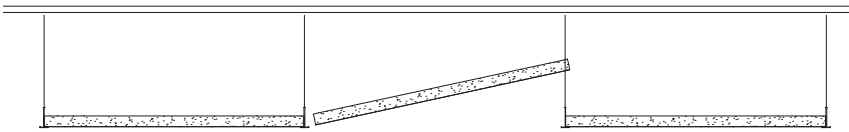
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Flatffusor™



T-Bar Tilt and Drop



Project:

Specifier:

Drawing Number:

Date:

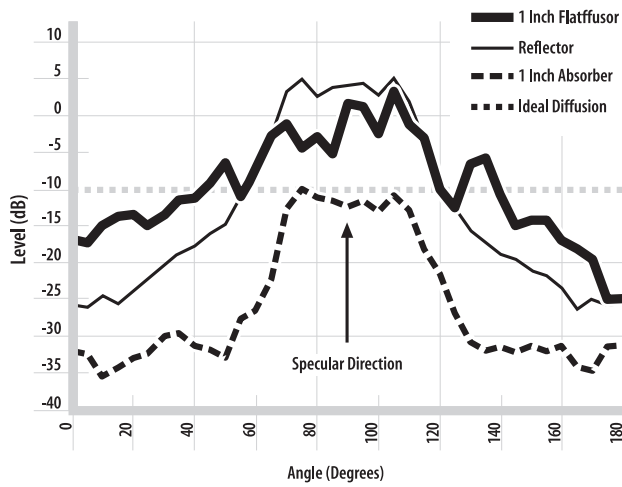
All dimensions should be field verified prior to installation.



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Angular Scattering Response

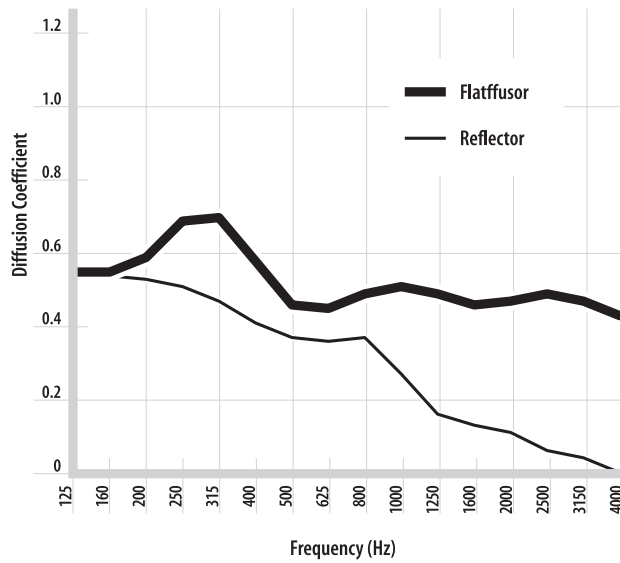


Angle	Flatffusor™	Reflector	1InchAbsorber
0	-17.13	-26.05	-31.83
5	-17.37	-26.14	-32.33
10	-14.76	-24.56	-35.52
15	-13.75	-25.63	-34.31
20	-13.47	-23.68	-33.00
25	-14.55	-22.23	-32.45
30	-13.13	-20.45	-29.91
35	-11.07	-18.81	-29.63
40	-11.28	-17.79	-31.65
45	-9.24	-16.12	-31.89
50	-6.46	-14.85	-32.97
55	-10.90	-11.08	-27.69
60	-9.00	-7.31	-26.82
65	-2.75	-1.99	-22.32
70	-1.15	3.20	-12.70
75	-4.46	4.91	-9.94
80	-2.89	2.56	-11.25
85	-5.25	3.77	-11.61
90	1.59	4.04	-12.43
95	1.17	4.36	-11.62
100	-2.76	2.74	-12.88
105	3.25	5.05	-10.89
110	-1.24	1.86	-12.82
115	-3.38	-3.09	-18.04
120	-9.68	-7.98	-21.47
125	-12.17	-12.58	-26.90
130	-6.63	-15.37	-30.83
135	-5.80	-17.42	-32.04
140	-10.75	-18.93	-31.77
145	-15.24	-19.61	-32.22
150	-14.28	-20.81	-31.38
155	-14.28	-21.82	-32.09
160	-17.17	-23.52	-31.64
165	-18.19	-26.37	-34.23
170	-19.63	-25.26	-34.72
175	-25.01	-25.88	-31.46
180	-25.08	-25.87	-31.55



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Diffusion Coefficients



Hz	Flatffusor™	Reflector
125	0.55	0.57
160	0.55	0.54
200	0.59	0.53
250	0.69	0.51
315	0.70	0.47
400	0.58	0.41
500	0.46	0.37
625	0.45	0.36
800	0.49	0.37
1000	0.51	0.27
1250	0.49	0.16
1600	0.46	0.13
2000	0.47	0.11
2500	0.49	0.06
3150	0.47	0.04
4000	0.43	0.00



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