

# BAD™ Panel



*The First Digital, Flat and Curved 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 physical depth 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 Binary Amplitude Diffusor™, the first flat, zero depth diffusing absorber. A BAD™ Panel simultaneously provides uniform sound diffusion at high frequencies and crosses over to pure absorption below the diffusive cutoff frequency. The energy that is not diffused is absorbed. The BAD panel allows complete tonal balance and increased speech intelligibility in gypsum board and concrete block rooms, where

standard fabric wrapped panels remove the all important high frequency sound.



**The Sound of Innovation™**

# Problem and Solution

## Problem

Traditional fabric wrapped panels offer a cost effective, low profile aesthetic approach to providing reflection and reverberation control. However, these panels offer little sound diffusion and large area application may lead to an acoustically "dead" space. Variable impedance arrays offer some help, but cannot provide diffusion at high frequencies.

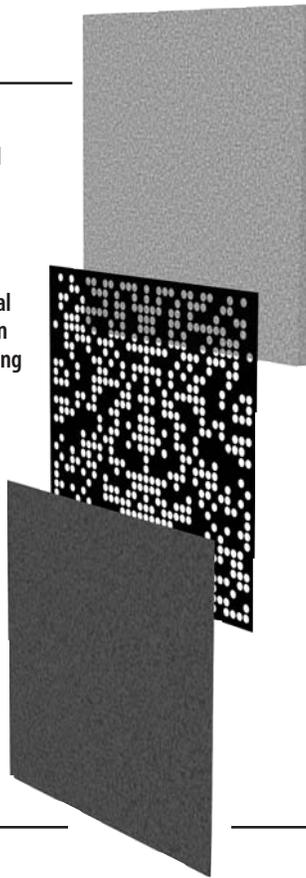
## Solution

RPG® developed an innovative variable impedance panel by fabric wrapping a resorptive binary template consisting of reflective areas and holes over a semi-rigid fiberglass panel. The resulting Binary Amplitude Diffusor™ flat or curved panel provides high frequency diffusion and mid frequency absorption.

Semi-rigid fiberglass panel

Two dimensional binary reflection amplitude grating

Acoustically transparent fabric



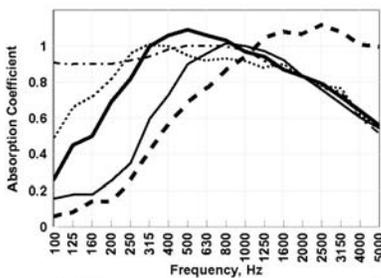
## FEATURES

- Simultaneous diffusive and absorptive sound control in a thin, decorative, cost effective panel
- Optimal binary reflection amplitude grating containing resorptive elements
- Acoustical functionality concealed with decorative upholstered fabrics or commercial stretch fabric systems
- Excellent mid frequency absorption

## BENEFITS

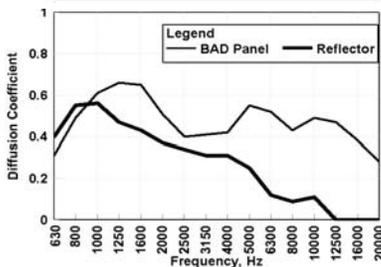
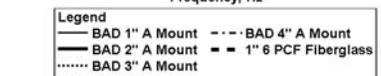
- Provides sound diffusion in a shallow depth, flat panel
- Simultaneously offers diffusion and absorption for an integrated design
- Reflections can be diffusively attenuated without creating a "dead" space
- Extends the performance of absorptive fabric wrapped panels and stretch fabric systems at competitive prices
- Can be used to provide acoustic gain in conference rooms, classrooms, and auditoriums to improve speech intelligibility and reduce listener fatigue
- Diffusory surfaces provide mid frequency absorption to balance the response in rooms with diaphragmatic gypsum board surfaces and excessive high frequency absorption
- Suitable as stretch fabric core material

# Performance Specifications



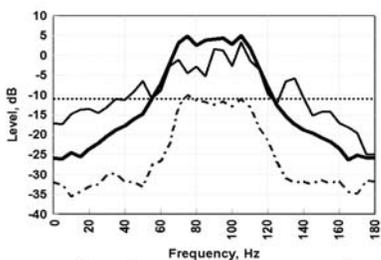
## Absorption

The graph illustrates how the BAD™ Panel offers a modest increase in bass absorption over a standard upholstered 1" panel below 1000 Hz, and a significantly decreased absorption above this frequency. The binary template allows the sound above 1000 Hz to be uniformly diffused providing reflection control without destroying the room's ambiance or speech intelligibility.



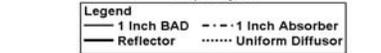
## Diffusion

The performance of a scattering surface is characterized by the diffusion coefficient, which is the standard deviation of the 1/3 octave **Angular Scattering Response**, shown below at 12.5 kHz. The **Diffusion** graph (to the left) illustrates how uniformly the BAD™ Panel (upper curve) scatters sound across the frequency spectrum, compared to a reflective panel (lower curve), for normal incidence.



## Angular Scattering Response

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



# Installation

Installation of the BAD™ Panel is quick and easy. Simply use construction adhesive, hook and loop fasteners, or supplied impaling clips to mount to walls. The BAD™ Panel can also be suspended or used in any T-bar or similar mounting system.

## APPLICATIONS

Worship Spaces, Conference rooms, Classrooms, Teleconference and Distance Learning Centers, Recording and Broadcast Studios, A/V rooms, Cinemas and Home Theaters, Financial Exchanges, Music Rehearsal Rooms, and Auditoriums.

## SPECIFICATIONS

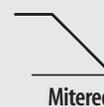
- Panel dimensions may be multiples of 2', e.g. 2' x 2', 2' x 4', etc. or custom sizes
- Weight: 2' x 2' x 1" is 2.5 lbs
- Thickness: 1", 2", and custom
- Standard fabric: Guilford of Maine FR701 #298
- Custom fabrics available
- Edge conditions:



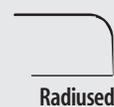
Squared



Beveled



Mitered



Radiused