

category

diffuser

description

DFR72 Diffractal® diffuser

part code

GRG290-GRG320**GRG290-GRG320 DIFFRACTAL®**

DIFFUSER is the acoustic industry's first fractal sound diffuser.

In order to provide full spectrum sound diffusion in a single integrated diffuser, the self-similarity property of fractals was combined with the uniform scattering property of the number theoretic reflection phase grating to produce the Diffractal®, a patented sound diffusing fractal that expands the bandwidth offered by the traditional QRD® diffuser.

Use the Diffractal® in:

- recording studios
- post production studios
- practice rooms
- home theatres
- mastering studios.

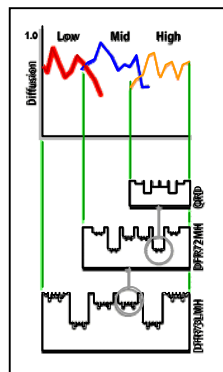
Advantages

- Amplitude modulated QRD
- Can be surface or flush mounted
- 230mm deep
- Attractive finish
- Wide area coverage
- Fractal surface consisting of nested self-similar low, mid and high frequency QRD®s offers extended bandwidth
- Lobing effects due to periodicity are minimised by amplitude modulating the QRD® number theory sequence
- Amplitude modulation also permits wide area coverage without loss of performance due to periodicity effects
- Furniture grade quality coupled with the wide variety of wood species and finishes make the Diffractal® an aesthetically pleasing addition to any space

Applications

The bandwidth of a QRD® is limited at high frequencies by the well width and at low frequencies by the maximum depth. Additionally, wide area coverage with periodic arrays focuses energy into certain diffraction directions. A full spectrum sound diffuser offering wide area coverage was needed – enter the Diffractal®.

The Diffractal® is the first sound diffusing fractal. It consists of nested self-similar scaled diffusers, each of which covers a specific frequency range and offers wide area coverage without lobing effects. A second generation Diffractal® (DFR72) contains two nested QRD®, thus forming a diffuser within a diffuser. Each diffuser provides uniform scattering over a specific range of frequencies so that the effective bandwidth is extended.



The DFR72 can be nested within a larger low frequency diffuser to provide wide area coverage, extended low frequency diffusivity, and also minimum lobing associated with periodic arrays. This third generation Diffractal® (DFR73) offers low, mid, and high frequency diffusion over an extended bandwidth, limited only by the depth available.

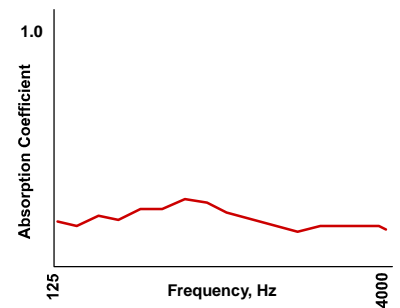
Installation

The modular construction allows fast and easy installation.

The Diffractal® can be individually mounted or grouped into an array on a wall or ceiling.

Absorption

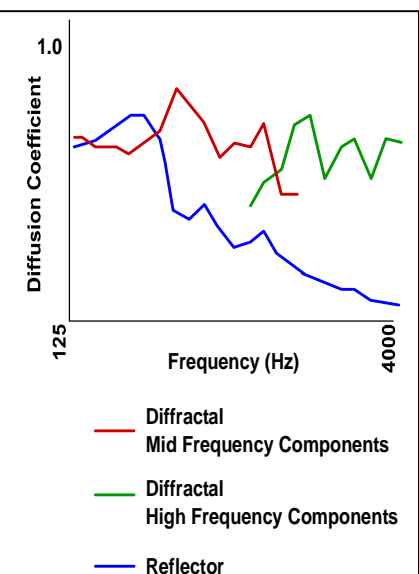
Diffusers essentially scatter sound, but absorption may occur from wave resonances within the wells when they are narrow and deep and viscous losses due to pressure gradient induce air particle flows between adjacent wells. The Diffractal® provides high frequency diffusion without adding additional absorption by replacing the mid frequency QRD® wells with nested reduced scale high frequency QRD®s.

**Diffusion**

The nested diffusers comprising the Diffractal® extend the high frequency diffusive performance beyond that of the QRD®734.

The graph illustrates how the Diffractal® mid frequency and high frequency nested components essentially bootstrap the uniform diffusion from 500 Hz to 20 kHz.

The diffusion coefficient is also compared to a flat reflective panel which exhibits decreasing diffusivity with increasing frequency.



Guidance for Diffractal Diffusor from Custom Audio Designs Ltd

More about Diffractal Diffusor:

As standard Features:

- Fabricated with a 12mm MDF or 13mm veneer and solid hard wood inserts.
- The Wood One Dimensional Diffractal works on the one dimensional diffusing fractal reflection phase grating principle, using an array of wells of equal widths separated by thin dividers containing self similar inserts which conform to the number theoretic reflection phase grating principle. The depths of the wells for each nested Wood One Dimensional Diffractal shall be based on the prime 7 quadratic residue theory sequence, modulated by the quadratic depth sequences of the other self-similar Wood One Dimensional Diffractal.
- Sound diffusion in the horizontal plane is provided by wells in the vertical position while diffusion in the vertical plane is provided by wells in the horizontal position. The Diffractal may be rotated to achieve a variety of patterns that will provide a highly effective scattering surface.
- Absorption Coefficients and Noise Reduction Coefficient for the product are measured by an independent, accredited NVLAP facility according to the test methods as defined by ASTM C 423 and ASTM E 795.
- Diffusion Coefficients for the product are measured in accordance with AES-4id-2001.
- Flame Spread and Smoke Developed are tested by an independent, accredited NVLAP facility according to the test methods as defined by ASTM E 84 and NFPA 255.
- Composite Flame Spread Rating of less than 25 and a Smoke Development of less than 450.
- Supplied with a lacquered finish as standard, other finishes are available on request.

NBS

- Manufacturer: Custom Audio Designs Ltd
- Web: www.customaudiodesigns.co.uk
- Tel: +44 (0) 1730 269572
- Product reference: DFR-72 Diffractal Diffuser.
- Size: [600 x 600 x 230 mm].
[1200 x 600 x 230 mm].
[As schedule]. Custom units are available on request.
- Unit types: [E/E].
[E/H].
[E/J].
[H/H].
[H/J].
[J/J].
- Well terminations: [E].
[H].
[J].
- Finish: [Clear lacquer].
[Painted RAL ???].
[MDF].
[Ash veneer].
[Beech veneer].
[Oak veneer].
[Cherry veneer].
[Maple veneer].