

# Prime7™

## Quadratic Residue Ceiling & Wall Diffuser



### AVL Systems' Prime7™ Ceiling and Wall

**Diffusers** are an optimized 1D diffuser design utilizing quadratic residue number theory and periodic reflection phase grating principles in a highly finished acoustical product. Lightweight advanced "green" FRP construction insures weight is equal to commercial high-performance ceiling tile and ideal for installation in existing T-Bar grid systems without change to ceiling weight loads. Products provide uniform, broadband, one-dimensional diffusion with wide-range scattering of acoustical sound energy. Two-dimensional diffusion and sound scattering can be achieved by grouping installed products in an altering pattern array.

AVL Systems' Prime7™ Ceiling Diffuser's precise tolerances and mono-block construction insures no resonances, rattles or sympathetic vibration will be caused or heard, and high STC ratings are achieved. Additionally, with AVL Systems' use of advanced "green" composites, a dimensionally stable product is produced that insures against possible warping, unsightly distortion and/or discoloration often seen with thermo-molded plastics from exposure to light, heat and other environmental factors. The standard matte white finish provides excellent light reflectivity, but custom color finishes are also available, as well as standard or customer specified fabric coverings. Field painting is easily accomplished with standard paint products. Prime7™

diffusers are supplied to standard sizes, as specified, for both ceilings and walls, all with the same periodic repeats, patterns and sequences.

### Applications

AVL Systems Prime7™ diffusers are ideal for rooms and spaces where sound and noise control are a consideration. The design of these products allows the specifier to provide diffusion to scatter and blend sounds in the room for listening enjoyment of both music and speech. These functions also help performers hear themselves with others and improves clarity and tonal separation for voice, music, and performance.

### Technical Features & Information

- Quadratic Residue Prime7 Sequence, Same for All Diffuser Sizes
- Designed for Ceiling & Wall Installations
- Matte White Painted Finish, Optional Colors & Fabric Facings Available
- Thickness: 4" (Nominal)
- Sizes (Nominal): 24" x 24", 24" x 48", 48" x 48"
- Special Sizes: Available Upon Request
- Weight: 1.1 Lb. per Sq. Ft. (Same as Commercial Ceiling Tile)
- Fire Performance Rating: Class A
- Installation: Tilt & Place in Standard T-Bar Grid Systems

Acoustical Performance - Sound Absorption							
Frequency (Hz)	125	250	500	1K	2K	4K	NRC
Absorption Coefficients Type E-400 Mounting	0.48	0.4	0.38	0.33	0.19	0.19	0.3

### Acoustical Performance - Diffusion & Scattering

Unlike sound absorption testing (ASTM C423) and sound transmission testing (ASTM E90), a standardized test for sound diffusion does not exist in the American Society for Testing of Materials (ASTM) standards. The Audio Engineering Society has suggested a test for diffusion characteristics (often performed using scale-models) that was largely developed by a manufacturer for their own products. This informational document AES-4id2001 has not been adopted by a standards organization for use and therefor does not present a verifiable reference for the comparison of products. There is no standard for the actual test or methods, or the results which are the product of each manufacturer's individual interpretations and application of the test procedures. The science of diffuser design and its standardized mathematical computations yield performance predictions and those are shown here for this product.

Frequency Range ±0° Angle	500 Hz to 2177 Hz
Frequency Range ±30° Angle	500 Hz to 1885 Hz
Frequency Range ±60° Angle	500 Hz to 1088 Hz
Diffusion	1001 Hz to 2177 Hz
Scattering	500 Hz to 2177 Hz
Usable Frequency Range	500 Hz to 2177 Hz
Design Frequency	1001 Hz
f-period	585 Hz

### Warranty

AVL Systems' *Limited Warranty* extends for TWO FULL YEARS from the original date of shipment. AVL Systems' literature, presentations and published data are correct to the best of our knowledge at time of publication. AVL Systems, Inc. reserves the right to change or amend any of the products or the information presented or published without liability or notice.



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