Lumenwerx

EchoCore™

PRECISION ACOUSTIC TECHNOLOGY

Acoustic Challenges

Although wide open spaces and clean lines define many modern environments, certain design elements that enhance this aesthetic—such as glass usage, open offices, unfinished ceilings, and hard, reflective surfaces—unfortunately reveal a critical downside: excess noise.

GLASS

The amount of glass in a space is increasing due to daylight requirements and the modern design of natural light in our built environment. Glass is a very hard smooth surface with a poor absorption rate that creates issues as it bounces sound around.

OPEN OFFICE

Traditionally office space was largely divided between private office space and cubicles. This has been replaced by today's open office concept. In open office space, noise increases and the need for acoustic strategies is a must.

UNFINISHED CEILINGS

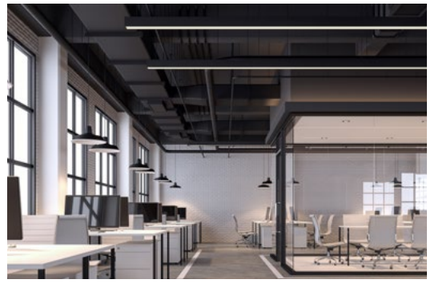
Pose a separate set of challenges; often having visible duct work exposed along with ambient noise caused by their systems. Water, conduits and data raceways are exposed as well resulting in increased clamor.

HARD REFLECTING SURFACES

Metals, concretes, glass, brick, stone and tile all contribute to poor acoustic comfort of a space. Hard surfaces are usually clean but they tend to act poorly when it comes to sound absorption.

Increase use of Glass

Open Office Concept



Unfinished Ceilings

Hard Reflecting Surfaces

Our Acoustic Solutions

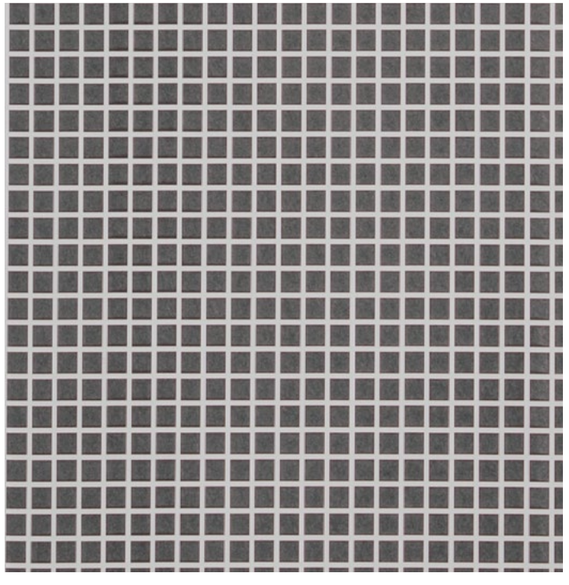
The Acoustix lineup uses one of two sound-dampening technologies: Acoustic Felt (polyester), and EchoCore™, a technology based on Helmholtz resonance principles.

Explore the architectural possibilities of the Acoustix Collection in the dedicated brochure.

Acoustix
Brochure PDF

TWO SOLUTIONS

Acoustic Felt



EchoCore™ Technology

EchoCore™ Technology

This patent pending technology uses a die-cut aluminum wrap and multiple layers of sound-absorbing material to trap acoustic waves. Sound travels through the aluminum exterior into a sound absorbing core, resulting in a 30% increase in sound reduction compared to competing luminaires.

Lumenwerx EchoCore™ technology empowers luminaires to absorb significantly more sound than traditional felt-fitted acoustic fixtures are capable of absorbing.

Acoustic fixtures equipped with EchoCore™ (Audia, Pop, and Aera) deliver exceptional illumination with a variety of circadian, tunable white, and RGB+W solutions, and help to define spaces with a choice of standard, premium, and custom options, as well as with a selection of patterns, shapes, and mounting possibilities.

Available in Audia, Pop, and Aera

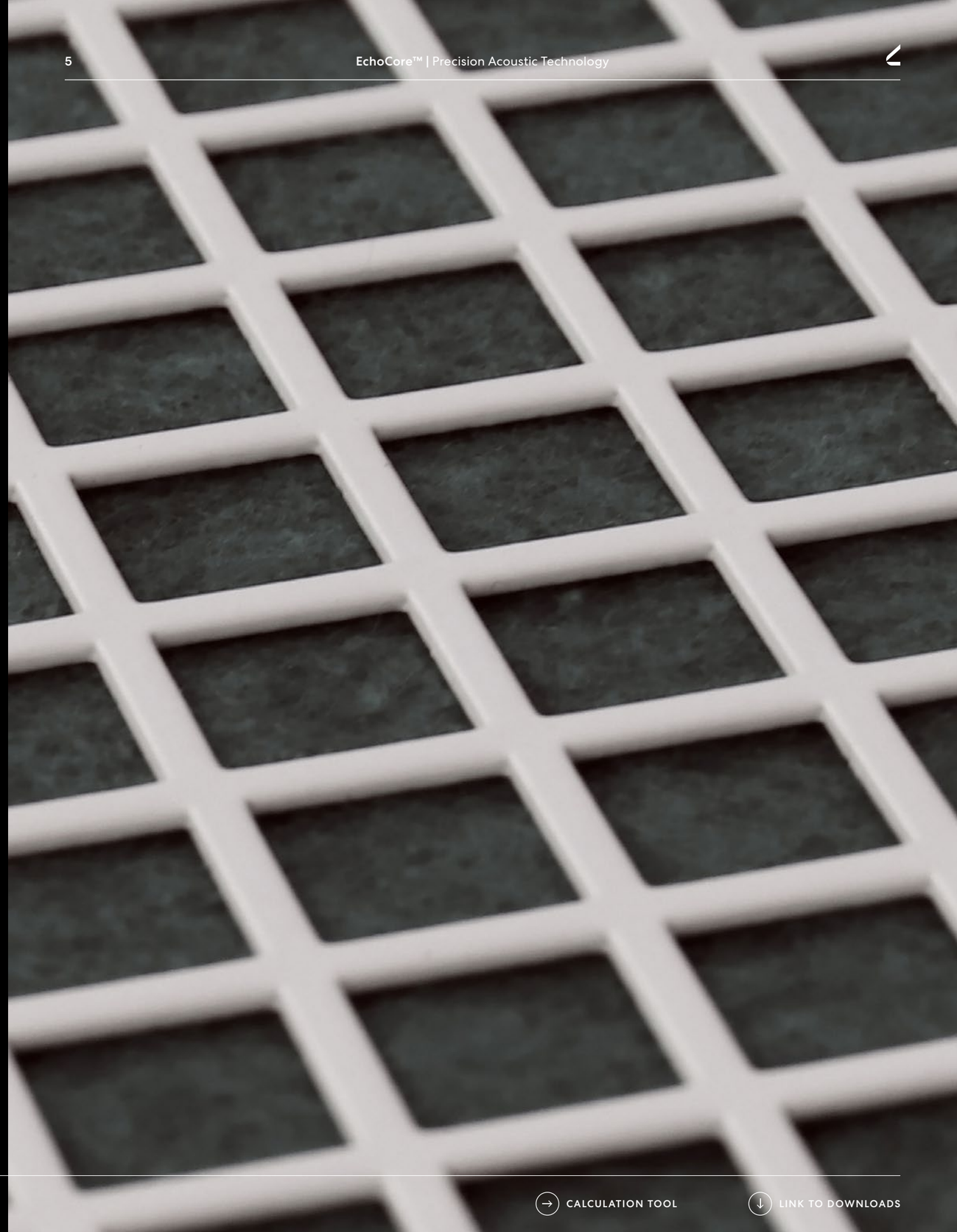
Pendant, Surface, and Recessed

Linear, Round, and Square

5 Patterns + Custom

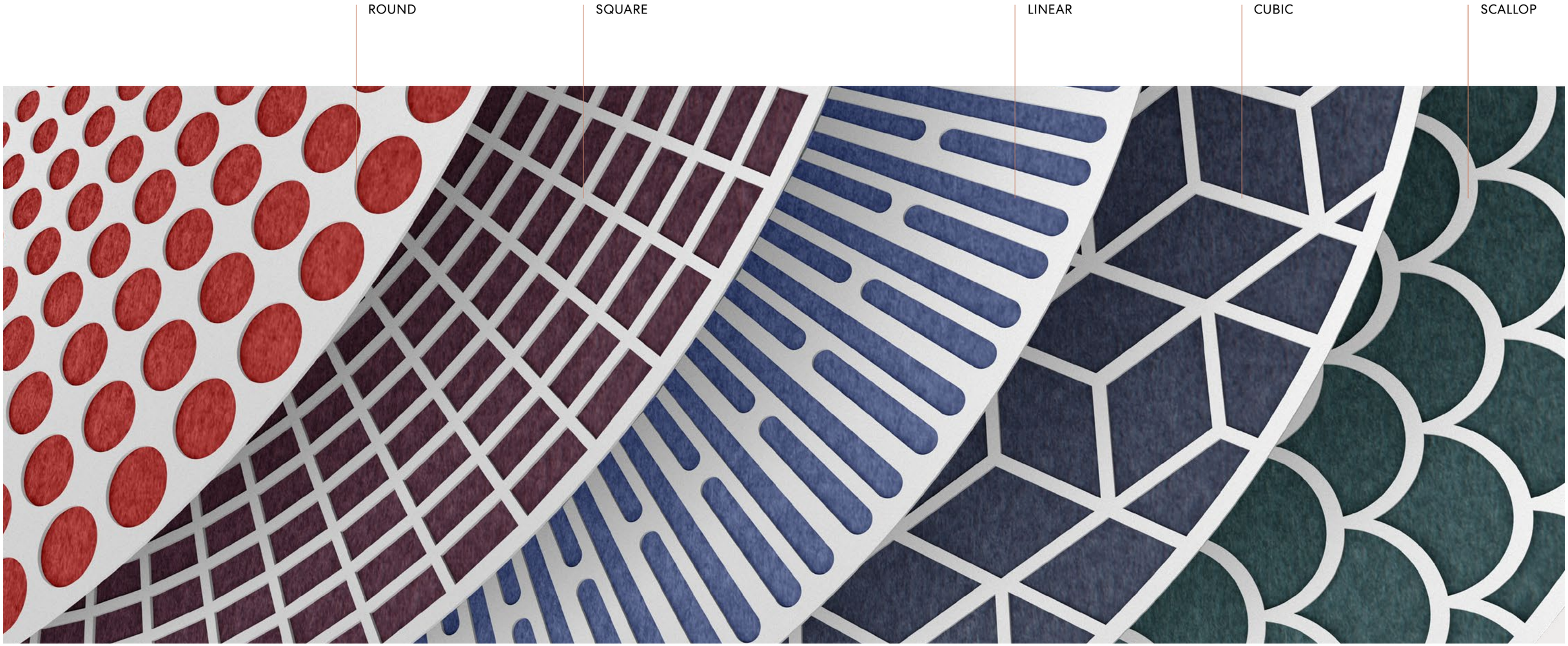
UP TO

4 ft in diameter and 12 ft in length



Pattern Your Design

Enhance a theme, add dimension, create a focal point, or make the lighting fixture the focal point. With five patterns (round, square, linear, cubic, and scallop) and the option to customize, there are plenty of possibilities to provide the best acoustic lighting solutions for your interior spaces.



Acoustic Felt

Created from recycled PET polyester (polyethylene terephthalate), acoustic felt is a sound-absorbing panel. Acoustic felt is available in our Standard, Premium, and Madera color palettes. With over 30 options, you'll find a range of colorways perfectly suited to ensures a seamless blend of aesthetics and functionality.

60%
Recycled Material

Zero VOC Emissions

Flame Retardant

Mold Resistant & Breathable

Felt Color Options

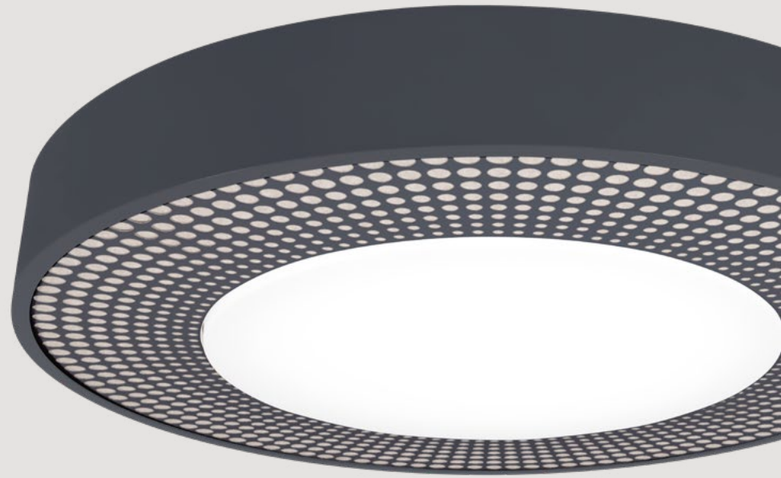
STANDARD FELT COLOR OPTIONS

- Frost white
- Fog
- Iron
- Lavender
- Cherry
- Plum
- Forest Green
- Midnight Blue
- True Black
- Latte

PREMIUM FELT COLOR OPTIONS

- Ivory
- Cloudy
- Greige
- Graphite
- Steel
- Café
- Blush
- Mocha
- Espresso
- Carbon
- Charcoal
- Lichen
- Evergreen
- Blueberry
- Sky
- Navy
- Lime
- Lemon
- Orange
- Paprika

Fixtures Finishes



Die-cut Aluminum Wrap

Fixture Finish Color Options

STANDARD

- Matte White
- Matte Black
- Aluminum

NEUTRAL

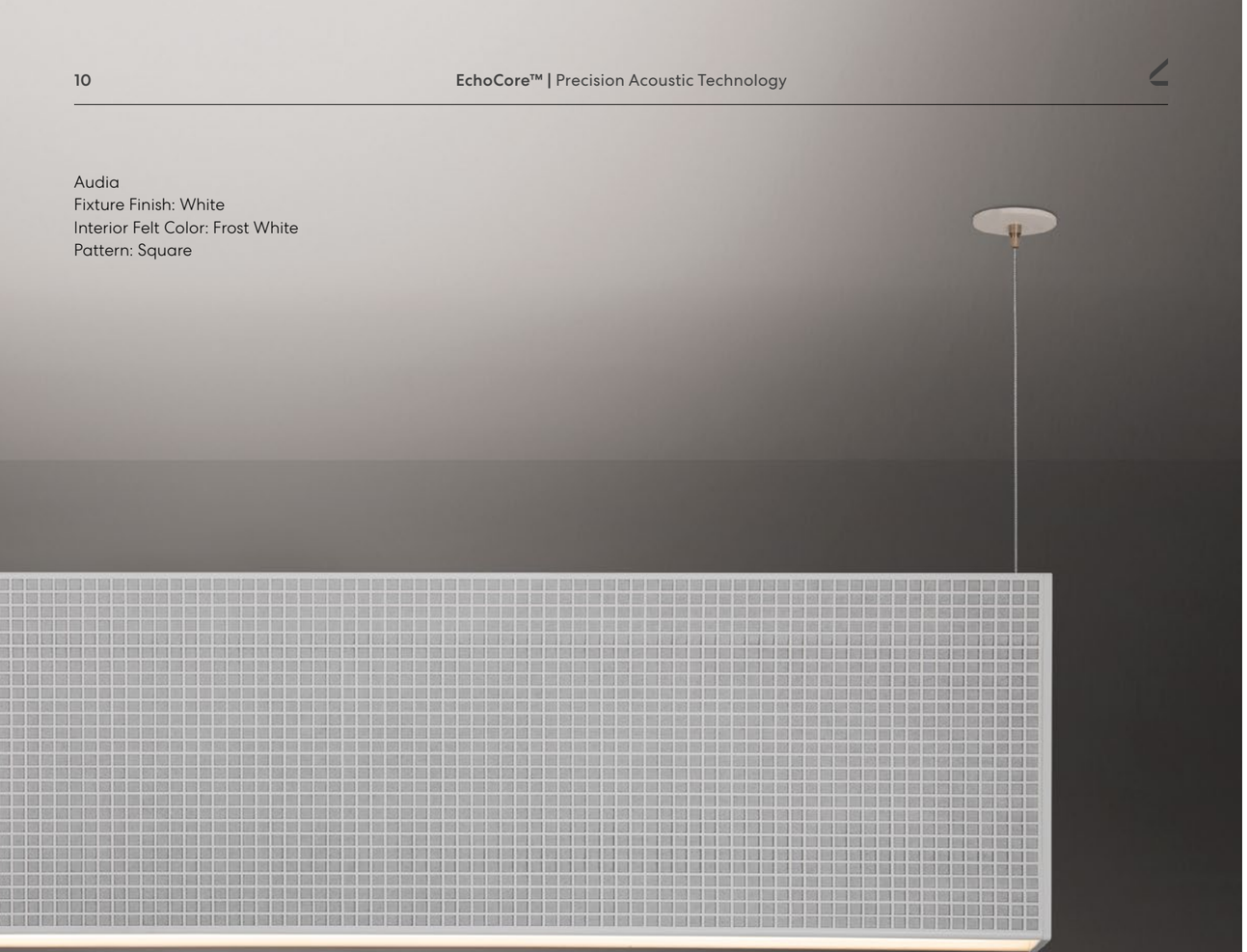
- Cream
- Gray
- Steel Gray
- Sage Gray
- Moss Gray
- Black Blue

DESIGNER

- Almond
- Quartzite Texture
- Rust Fine Texture
- Green Beige
- Yellow
- Salmon Pink
- Pastel Violet
- Red
- Purple Red
- Storm Blue
- Deep Blue
- Ocean Blue
- Blue Green
- Green Smoke
- Mint Green
- Lime Green

METALLICS

- Sand
- Gold
- Dark Gold
- Iron Ore
- Canyon
- Sandblast Copper
- Sandalwood



Audia
Fixture Finish: White
Interior Felt Color: Frost White
Pattern: Square

Declare.

Audia

A Breakthrough in Acoustic Lighting

Our flagship offering, Audia uses the science of Helmholtz resonance principles to pass acoustic waves through aluminum lattice, it is then trapped by our proprietary sound-absorbing material called EchoCore™ technology. With its slim core, narrow body and multiple color options, Audia was designed from the ground up with sound and light excellence in mind.

reddot winner 2020

30%
Improvement in Sound Reduction Over Traditional Acoustic Luminaires

One of the Slimmest Acoustic Profiles on the Market (1.77 in)

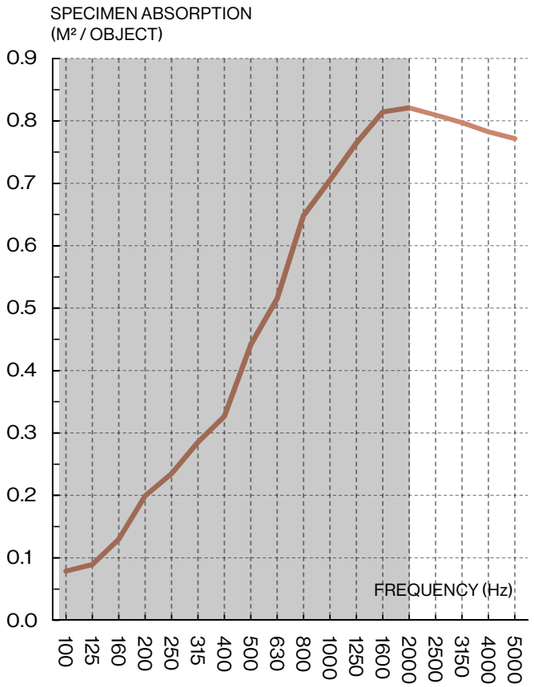
Stylish, Easy-to-clean Die-cut Aluminum

No Compromise on Illumination and Performance

Audia Technology and Design

Audia comes with a thin and sleek profile at 1.77” in width, making it one of the slimmest acoustic luminaire profiles on the market while maintaining maximum sound absorption. The sound absorption technology used in EchoCore™ (patent pending) is based on the Helmholtz principle of sound. We have specifically sized lattice openings which allow sound to pass through but not escape. Once the sound has passed through the lattice, it is then trapped by a proprietary amount of eco-conscious sound confining material that is strategically layered.

As demonstrated by the graph above Audia performs well at many frequencies. On average it outperforms traditional acoustic felt luminaires by thirty percent.



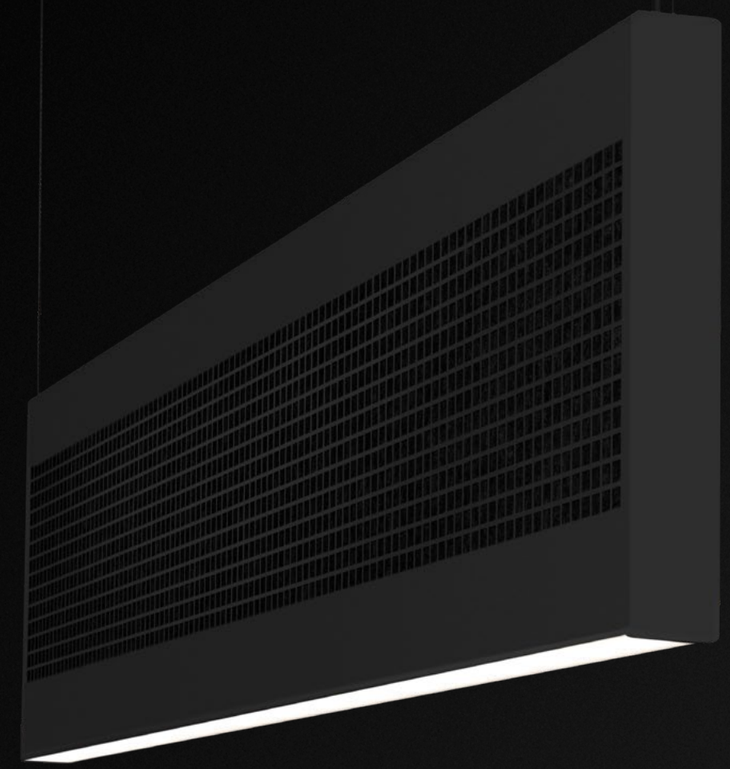
Sound Absorption Results – Lumenwerx Audia rows of 7 units spaced 28” o.c, bottom edge of unit 39.125” from the floor.

Human hearing frequencies range: 20Hz-2000Hz

OPTION

Blank with acoustic only

Audia Half Perforation
Fixture Finish: Black
Interior Felt Color: True Black
Pattern: Square



Featuring a combination of Audia EchoCore™ lit and unlit luminaires with scallop pattern

Audia EchoCore™

Rhythm and repetition add a quiet balance to the space.

Overview

Audia EchoCore™

SIZES (HEIGHTS)

12 in, 16 in
*Available in lit and unlit

COLOR RENDERING OPTIONS

80+, 90+ (R9>50), 95 CRI

DISTRIBUTIONS

Direct/Indirect
Direct
Indirect

COLOR TEMPERATURES

- 2700K
- 3000K
- 3500K
- 4000K

- Sola
- Duo
- Quadro
- Full Spectrum
- Bios

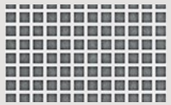
DIRECT OPTIC

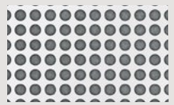
HLO - High-Efficiency Lambertian Optic

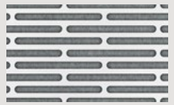
INDIRECT OPTICS

WIO2 - Widespread Indirect Optic

FIXTURE PATTERN


Square


Round


Linear


Cubic


Scallop

Audia EchoCore™ lit and unlit
Fixture Finish: Rust Fine Texture
Interior Felt Color: Mocha
Pattern: Square

Enbridge Gas, Ontario, Canada
Photo: Brandon Marsh

CALCULATION TOOL

LINK TO DOWNLOADS

Shown in the foreground is Pop EchoCore™ pendant square with 1 inch drop square lens and Audia EchoCore™ in the background both with cubic pattern.

Pop EchoCore™ sheds light on the task of decision making.

Pop EchoCore™

Pop goes the echo

As if our Pop luminaires were not fun enough, those equipped with EchoCore™ technology not only offer lens brightness uniformity enabled by our Unity Pointed (UP) technology, but they also reduce echo and reverberation in their immediate environment.

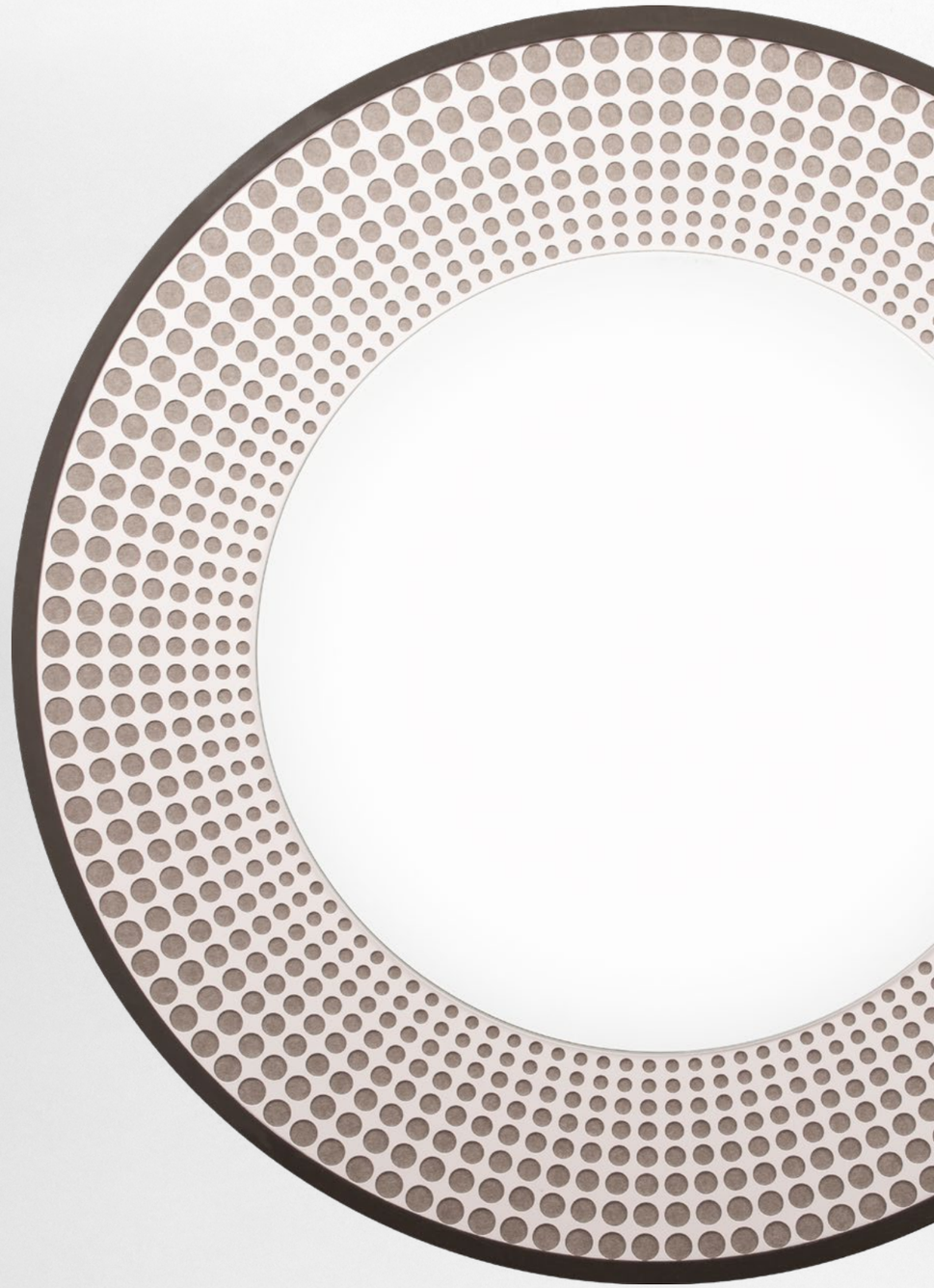
Round and Square

Pendant, Surface, and Recessed

Unity Pointed (UP) technology ensures uniform lens brightness

Static White, Bios LED, Full Spectrum LED and Chromawerx (SOLA, DUO, and QUADRO)

Pop EchoCore™
Fixture Finish: Iron Ore
Interior Felt Color: Latté
Pattern: Round



Pop Round Recessed
Fixture Finish: Sandalwood
Interior Felt Color: Lichen
Pattern: Scallop

Pop EchoCore™

The lattice pattern of the luminaire inspires the interior design.

Overview

Pop EchoCore™

SHAPES

- Round
- Square

SIZES

ROUND
24", 36" and 48"

SQUARE
2x2"
3x3" (Pendant and Surface only)

*Available in lit and unlit

COLOR RENDERING OPTIONS

80+, 90+ (R9>50), 95 CRI

COLOR TEMPERATURES

- 2700K
- 3000K
- 3500K
- 4000K
- Bios
- Sola
- Duo
- Quadro
- Full Spectrum

DISTRIBUTIONS

Direct/Indirect
Direct

DIRECT OPTIC

ULO - Uniform Lambertian Optic

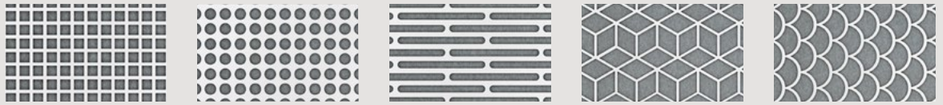
MOUNTING

Pendant
Recessed
Surface

LENS POSITION

Flush
1/2" drop
1" drop

FIXTURE PATTERN



Square Round Linear Cubic Scallop

Pop EchoCore™ Square Recessed
Fixture Finish: Matte White
Interior Felt Color: Sky
Pattern: Scallop

Pop Echocore™, Round
Diameter: 48"
Fixture Finish: Matte White
Interior Felt Color: Plum
Pattern: Round

Pop EchoCore™ adds pops of visual interest and advanced acoustic control.

Aera 4" EchoCore™ Square Recessed
Fixture Finish: Matte White
Interior Felt Color: Forest Green
Pattern: Cubic

Aera 4" EchoCore™

A new era in sound-dampening

In addition to offering the same outstanding optical performance and maximal eye comfort provided by their non-acoustic Aera counterparts, Aera EchoCore™ fixtures reduce echo and reverberation in their immediate environment.

4"
Round and Square aperture

Recessed

No spill light on bevel

Industry-leading UGR

4
Beam Angles

XPoint™ Refraction Technology for precise beam angles

Sola, Duo,
Full Spectrum LED

Aera 4" EchoCore™ Round Recessed
Fixture Finish: Matte White
Interior Felt Color: Latté
Pattern: Linear

Aera EchoCore™

A constellation of limitless arrangement possibilities.

Overview

Aera EchoCore™

SHAPES

- Round
- Square

APERTURE SIZE

ROUND	SQUARE
4"	4"

2 x 2 body available in lit and unlit

COLOR RENDERING OPTIONS

80+, 90+, 95+

COLOR TEMPERATURES

- 2700K
- 3000K
- 3500K
- 4000K
- Sola
- Duo
- Full Spectrum

BEVEL

Beveled Trimless

Pinhole Trimless

BEAM ANGLES

25°

25°

35°

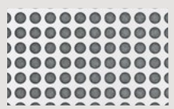
50°

BEVEL FINISHES

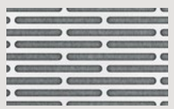
- Textured Matte Black
- Textured Matte White
- Champagne
- Custom RAL
- Specular
- Semi-specular

FIXTURE PATTERN

Square



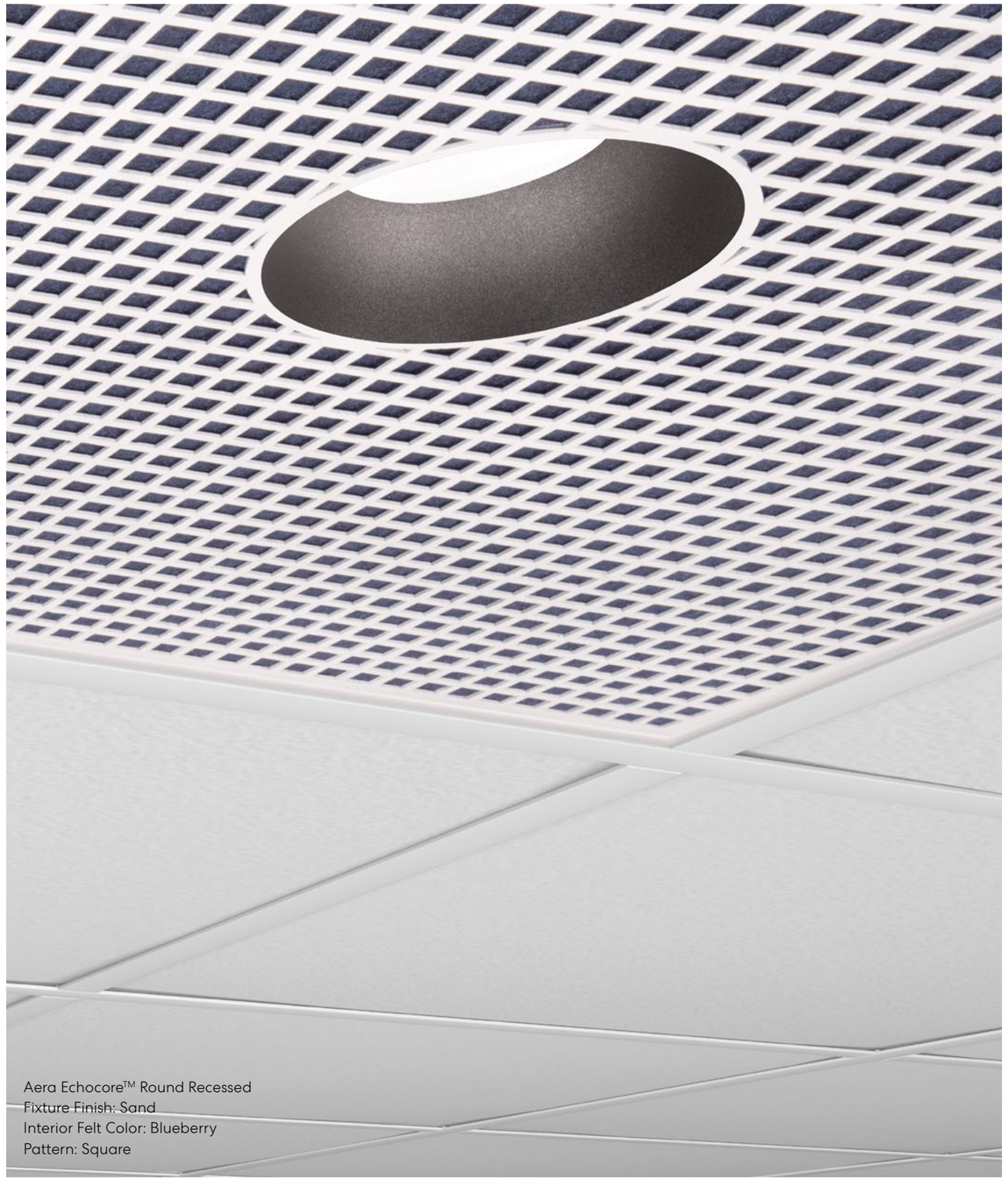
Round



Linear

Cubic

Scallop



Aera Echocore™ Round Recessed
Fixture Finish: Sand
Interior Felt Color: Blueberry
Pattern: Square

Calculation Tool Guide

How do acoustics work?

Audia EchoCore™
Fixture Finish: Matte Black
Interior Felt Color: True Black
Pattern: Square
Optics: HLO and Blank

CALCULATION TOOL

LINK TO DOWNLOADS

Crafting the ideal solution

While in the past, sound was absorbed with carpet, wall hangings and ceiling grids, today's minimalist spaces need an architecturally integrated solution.

USEFUL GLOSSARY OF TERMS

Sabin - a unit of sound absorption, equal to one square foot of a perfectly absorptive surface

Hertz- (abbreviated: Hz) is the standard unit of measurement used for measuring frequency. Since frequency is measured in cycles per second, one hertz equals one cycle per second. Hertz is commonly used to measure wave frequencies, such as sound waves, light waves, and radio waves.

NRC - The Noise Reduction Coefficient (NRC) is a scalar representation of the amount of sound energy absorbed after that energy strikes a particular surface. An NRC of zero indicates a

perfect reflection of the sound energy, and an NRC of one indicates a perfect absorption of it.

Frequency - the number of cycles or completed alternations per unit time of a wave or oscillations.

Decibel - a unit used to measure the intensity of a sound or the power level of an electrical signal by comparing it with a given level on a logarithmic scale.

Reverb - is a shaking or echoing effect that is added to a sound

Reverberation Time - is a measure of the time required for the sound to "fade away" in an enclosed area after the source of the sound has stopped.

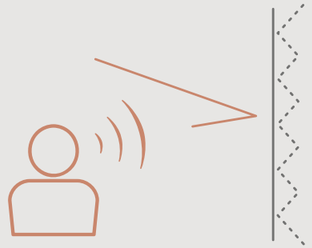
CHALLENGE: SOUND

In unobstructed open space, sound travels at 1000 ft/second. In a 50" x 20" room, that sound might bounce off hard surfaces up to 60 times before dying out.

SOLUTION: REDIRECTING SOUND

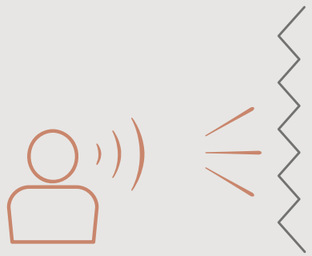
By redirecting sound we can reduce the speed that sound travels. When sound hits a barrier and bounces, reverberation time, or echo, is reduced.

CHALLENGE: ECHO (REVERBERATION TIME)



"Reverberation" is delayed sound caused by prolonged refraction. Excess reverberation creates noise issues in the built environment, and can reduce the comprehension of speech.

SOLUTION: SOUND ABSORPTION



By using acoustic absorbing materials and sound trapping strategies such as the Helmholtz resonance principle, we can create areas to trap the sound. This can be done using wall coverings and carpets but given the desire for clean sleek minimal spaces it makes sense to deploy an acoustic system incorporating the lit environment of the space.

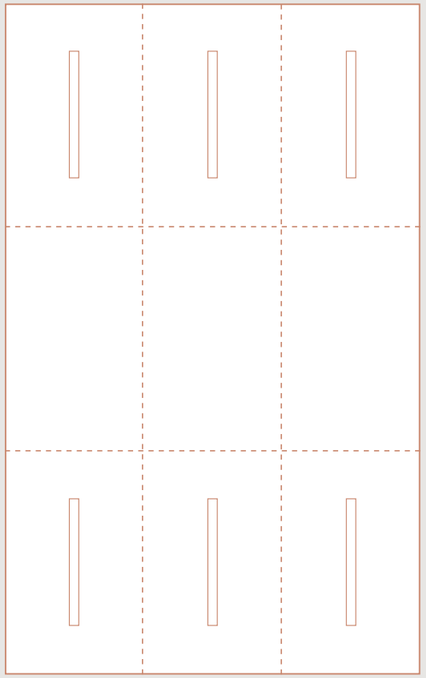
How to improve acoustics in a room?

Similar to lighting design, we approach acoustic design using the same principles. We want to create layers of sound absorption - one system offers an improvement but two or even three acoustic systems will show a decrease in reverberation time and reduction in unwanted noise. Humans can notice acoustic improvement of 0.2 seconds of reverberation time. We have incorporated this in our Good, Better and Best acoustic values calculations.

☺ General lighting

☹ No acoustic

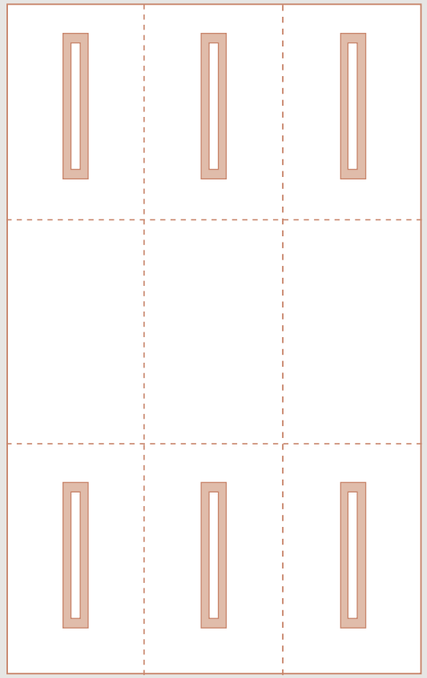
0%	1.3 s	Reverberation time



☺ General lighting

☹ GOOD Acoustic

-25%	0.98 s	Reverberation time



☺ Good: Reverberation time is reduced by 25%

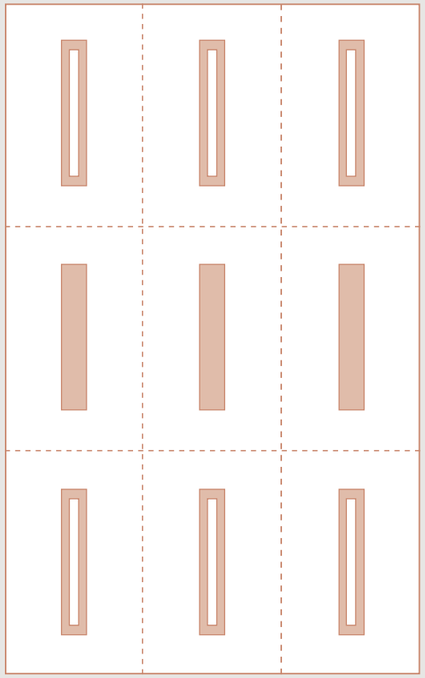
☺ ☺ Better: Reverberation time is reduced by 40%

☺ ☺ ☺ Best: Reverberation time is reduced by 50%

☺ General lighting

☹ ☹ BETTER Acoustic

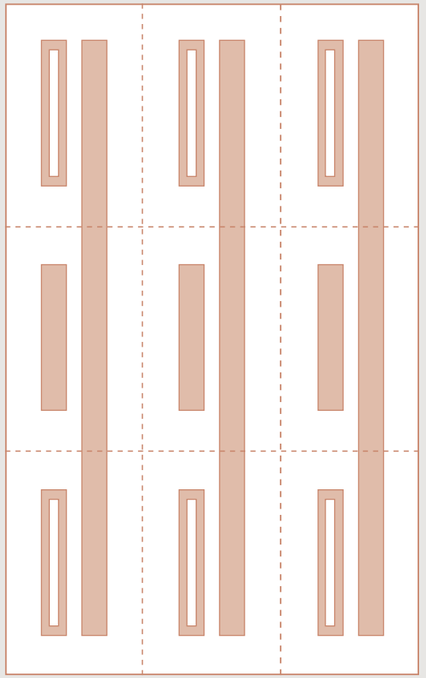
-40%	0.78 s	Reverberation time



☺ General lighting

☹ ☹ ☹ BEST Acoustic

-50%	0.65 s	Reverberation time



Easy acoustic calculations?

Developed in conjunction with acousticians, the Lumenwerx Acoustix Value Formula (LAVF) is a simple math equation that uses a ratio to determine acoustic needs. In the LAVF we took assumptions that one wall would be glass, three walls and the ceiling are gypsum board and the flooring is concrete. The basis of the equation mimics a poorly performing acoustic space. By applying the ratios, we can determine how many luminaires are required for “Good”, “Better” or “Best” acoustic performance, using the standard ceiling height of 9 feet and 4 foot luminaires.

For advanced calculations please contact your regional sales manager. We have a team of trained experts that will be happy to assist you.

Good: Reverberation time is reduced by 25%
Better: Reverberation time is reduced by 40%
Best: Reverberation time is reduced by 50%

Lumenwerx
Acoustix Value Formula

1. Calculate the square feet of your room (length x width)
2. Select your luminaire
3. Choose the level of acoustic improvement you are looking for and select the associated Acoustix Value:
   ☺ Good ☺ ☺ Better ☺ ☺ ☺ Best
4. Use the Lumenwerx Acoustix Value Formula

Square Feet ÷ Value = Number of luminaires needed in the room

* Lumenwerx acoustic calculators were developed to act as a guide.

For precise acoustic performance in a space, please consult an acoustician.

Using the formula

AUDIA (16IN X48IN)	GOOD ☺	BETTER ☺ ☺	BEST ☺ ☺ ☺
Acoustix value	51	25	17

In the above photo we are showing 3 lit and 3 blank Audia Luminaires

*The complete Acoustix offering value table can be found at the end of the brochure, see page 86.

Lumenwerx

Acoustix Value Formula

1. Calculate the square feet of your room: (L:10ft x W:15ft) 150 sq ft
2. Select your luminaire: Audia (16in x 48in)
3. Choose the level of acoustic improvement you are looking for and select the associated Acoustix Value: ☺ ☺ Better : 25
4. Use the Lumenwerx Acoustix Value Formula

150 ÷ 25 = 6 fixtures

(sq ft) (Acoustix value) (3 luminaires + 3 blanks)

The Acoustix Value Formula is a simple calculator used to establish the recommended number of acoustic luminaires required in a space. For more complex spaces, or specific materials please contact your regional sales manager. We have a team of trained experts that will be happy to assist you with your calculations.

* Lumenwerx acoustic calculators were developed to act as a guide.

For precise acoustic performance in a space, please consult an acoustician.

Lumenwerx Acoustix Value Tables

Using the Lumenwerx Acoustix Value Calculator table; you can determine the number of acoustic lit and blank luminaires, required in a space by fixture type. We have three levels of recommended sound reduction good, better and best. Choosing one of these option will reduce the sound accordingly: the best option indicates the best acoustic improvement. The ratios are based on a standard ceiling height of 9 feet.

Room dimensions **under 300 sq/ft**

PRODUCT			GOOD ☺	BETTER ☺ ☺	BEST ☺ ☺ ☺
Aera EchoCore™	Round	2x2	33	18	14
	Square	2x2	33	18	14
Audia EchoCore™	Height: 12"	48"	38	19	22
		96"	76	38	24
		144"	114	57	36
	Height: 16"	48"	51	25	17
		96"	102	50	34
		144"	153	75	51
Pop EchoCore™ Pendant, Surface	Round	24" ⌀	19	11	8
		36" ⌀	31	18	14
		48" ⌀	44	25	19
	Square	2x2	24	14	11
		3x3	41	23	18
Pop EchoCore™ Recessed	Round	2x2	24	14	11
	Square	2x2	24	14	11

Room dimensions **over 300 sq/ft**

PRODUCT			GOOD ☺	BETTER ☺ ☺	BEST ☺ ☺ ☺
Aera EchoCore™	Round	2x2	50	28	22
	Square	2x2	50	28	22
Audia EchoCore™	Height: 12"	48"	60	29	19
		96"	120	58	38
		144"	180	87	57
	Height: 16"	48"	84	39	26
		96"	168	78	52
		144"	252	117	78
Pop EchoCore™ Pendant, Surface	Round	24" ⌀	29	16	13
		36" ⌀	48	27	21
		48" ⌀	68	38	30
	Square	2x2	38	21	17
		3x3	63	35	28
Pop EchoCore™ Recessed	Round	2x2	38	21	17
	Square	2x2	38	21	17

ECHOCORE™ COLLECTION
BROCHURE

ACOUSTIX COLLECTION
BROCHURE

Lumenwerx

ALWAYS LIGHT
RIGHT

lumenwerx.com
R.05.2026