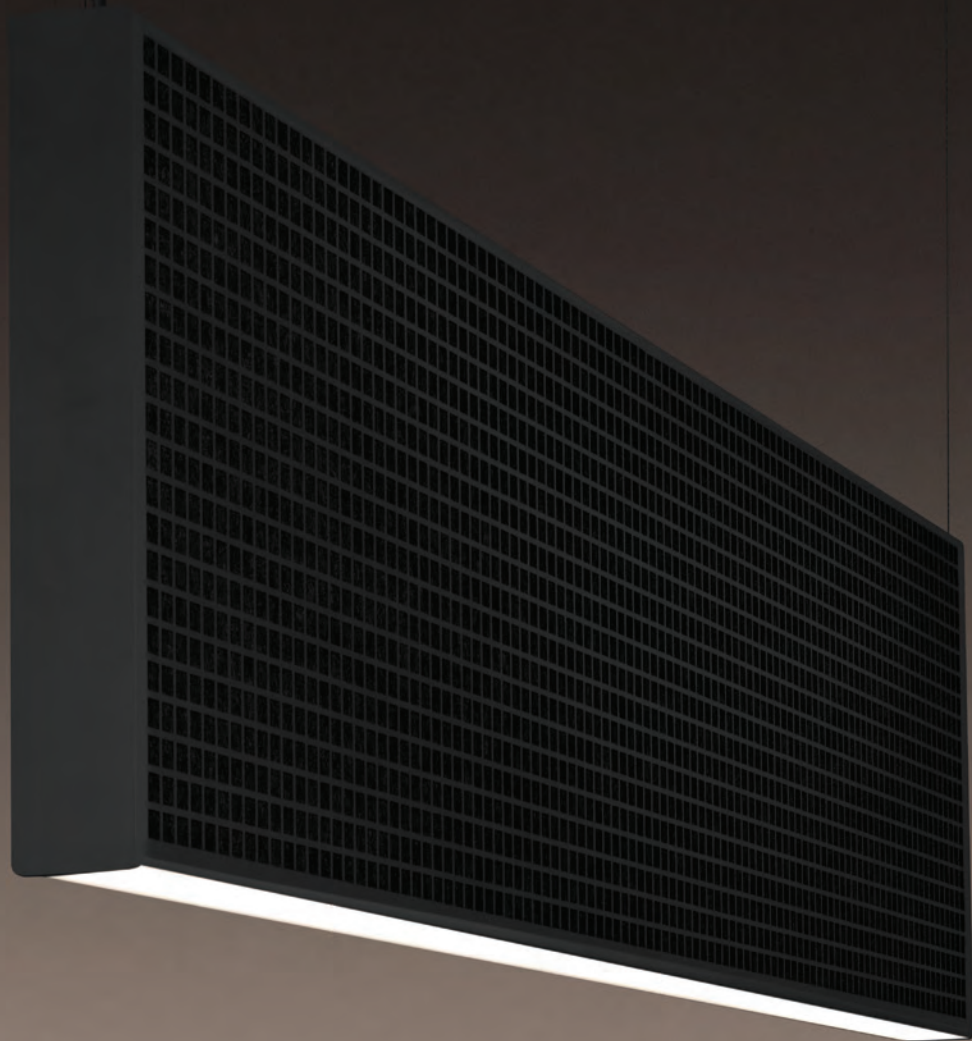


acoustix

Innovation for
acoustic lighting



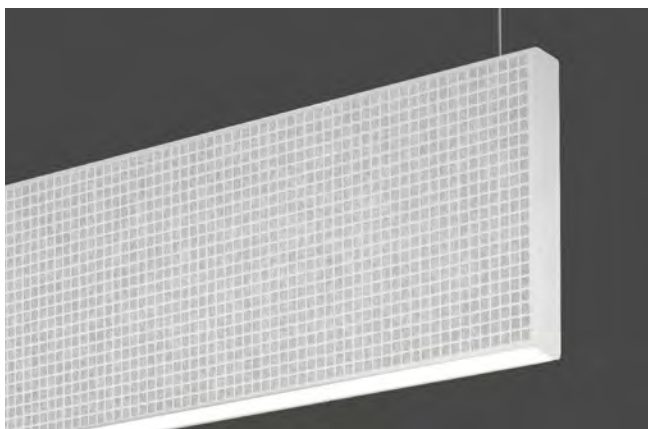
LUMENWERX

Introducing Acoustix

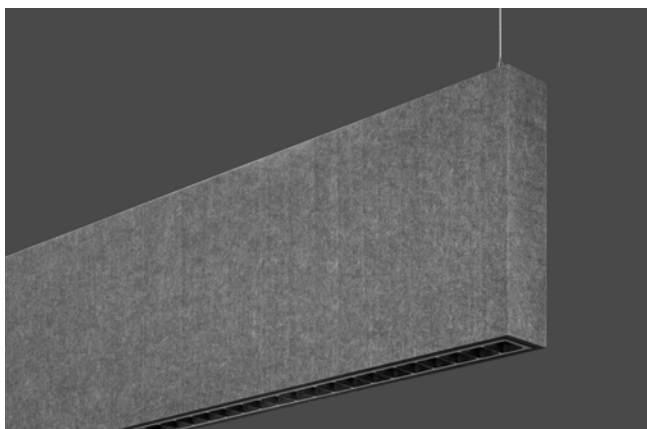
Thanks to open concept architecture and multi-use design, today's indoor spaces are much noisier than those of previous generations. To cut down on rising levels of clamour, Lumenwerx proudly introduces the ACOUSTIX family, luminaires with integrated sound absorbing technology.

Uncompromised illumination with excellent sound absorption

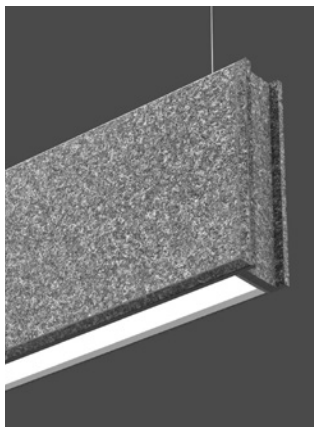
- Two sound absorption technologies
- Easy to use acoustic performance calculator
- White, Tunable White, RGB+W and Biologically optimized spectrum with Bios LED
- Multiple Control Solutions



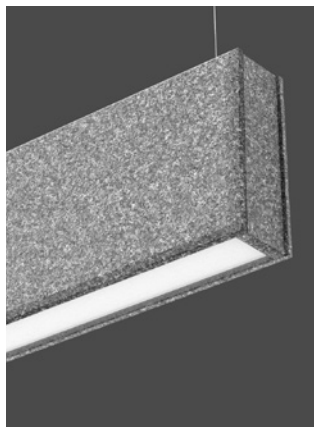
AUDIA



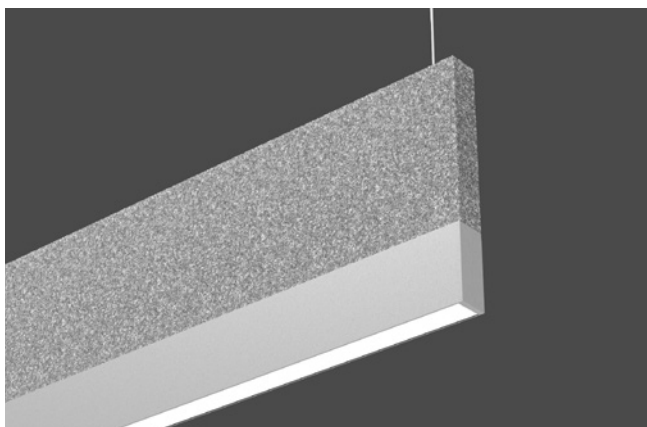
SQUERO ACOUSTIX



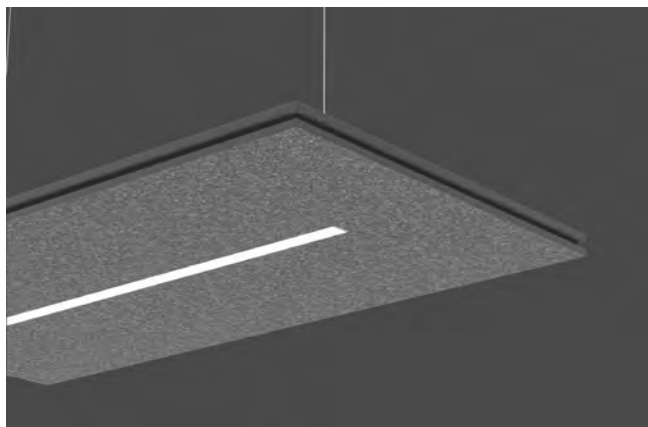
VIA 1.5 ACOUSTIX



VIA 2 ACOUSTIX



VIA STIL



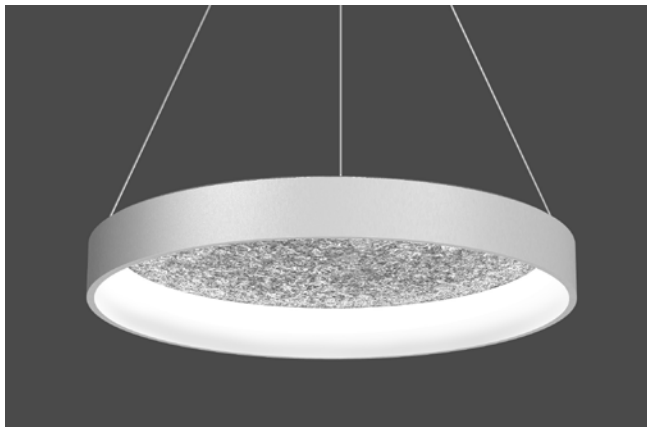
MIKRO WAFER



CLUSTER ACOUSTIX



RIM VERSO ACOUSTIX



TOGO ACOUSTIX

Acoustic challenges

Wide open spaces and spare lines are the defining elements of many architecturally advanced environments. Features like polished concrete floors, vaulted ceilings and open ductwork all contribute to spaces that are aesthetically inviting, but come with a critical unintended consequence – excess noise.

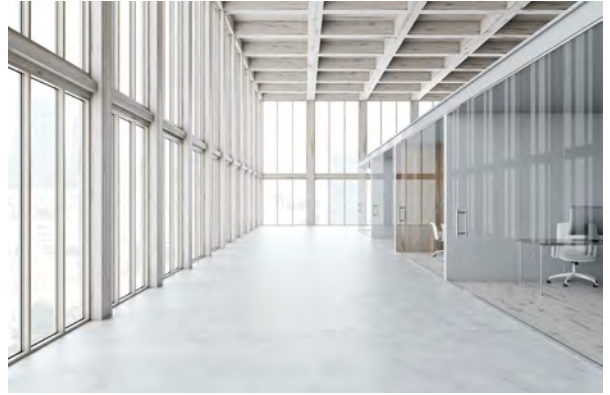
Glass - The amount of glass in a space is increasing due to daylight requirements and the modern design of natural light in our built environment. Glass is a very hard smooth surface with a poor absorption rate that creates issues as it bounces sound around.

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 clamour.

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

Visual language of the open office.



Increase use of Glass



Open Office Concept



Unfinished Ceilings

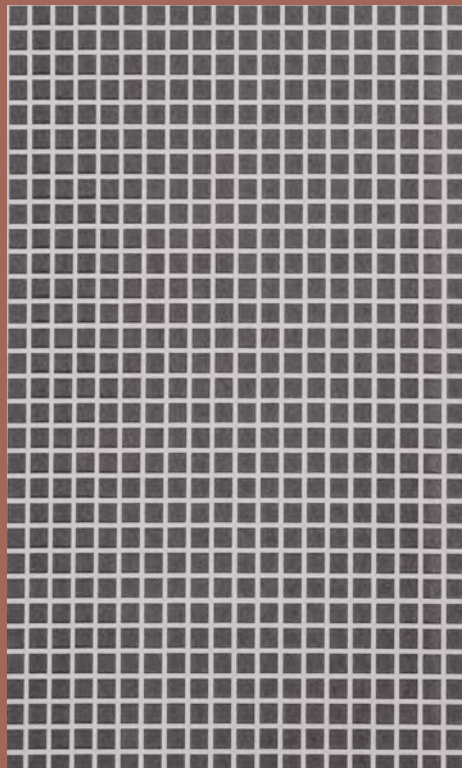


Hard Reflecting Surfaces

Our acoustic solutions

The ACOUSTIX lineup uses one of two sound dampening technologies, Acoustic Felt (polyester), and EchoCore™, a technology based on Helmholtz Resonance principals.

Two Solutions



1—EchoCore™ Technology



2—Acoustical Felt



Acoustical Felt

Acoustical Felt

Created from recycled PET polyester (polyethylene terephthalate), acoustic felt is a sound-absorbing panel made from PET resin. Panels feature an unwoven facing comprised of air pockets to trap sound.

- Flame retardant
- Breathable
- Mold resistant
- Zero VOC emissions
- 60% recycled material

Related products:

Squero Acoustix, Mikro Wafer, Cluster Acoustix, Via 1.5 Acoustix, Via 2 Acoustix, Via Stil, Togo Acoustix, Rim Verso Acoustix.





Via 1.5 Via 2 Acoustix

Precision designed for an appealing aesthetic, Via 1.5 Acoustix luminaires combine the sound absorption of felt with a warm embedded luminaire, in a single unit. Made with precision mitered seams and regressed end cap, this cost-efficient fixture integrates seamlessly with open architectural spaces.

1. Continuous run available
2. <19 UGR (Unified Glare Rating)
3. Up to 74 lm/W illumination
4. 3000 maximum lumen output (4ft)



Via 1.5

Via 2

Acoustix

Distribution

Asymmetric
Direct
Indirect
Direct/Indirect

CRI

80+ CRI
90+ CRI (R9>50)

Direct Optics

Asymmetric Reflector Optic
High efficiency Lambertian Optic
Wall Wash Reflector Optic

Indirect Optics

Widespread Indirect Optic
Clear Lambertian Optic

Color Temperature

2700K
3000K
3500K
4000K
SOLA
DUO
QUADRO
BIOS

Luminaire Height

8 in
12 in
16 in

Option (Blank with acoustic only)





Via 2 Acoustix
Height: 12 inch
Color: Lemon & Iron



Color options for Acoustix*




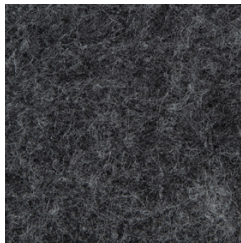


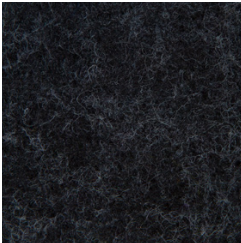









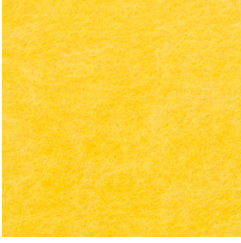


*Please consult factory for more color options, these colors are not applicable for Audia please see p. 15 for Audia color options.

Lead time may vary, minimum quantity may apply

Standard Felt Color Options

				
FROST WHITE	FOG	IRON	TRUE BLACK	MIDNIGHT BLUE
				
LAVENDER	LATTE	CHERRY	PLUM	FOREST GREEN

Premium Felt Color Options

				
IVORY	CLOUDY	GREIGE	GRAPHITE	STEEL
				
CARBON	CHARCOAL	BLUEBERRY	SKY	NAVY
				
LICHEN	LIME	EVERGREEN	CAFÉ	MOCHA
				
ESPRESSO	LEMON	ORANGE	PAPRIKA	

How do acoustics works?

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.

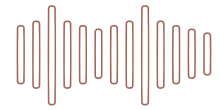
Reverb - is a shaking or echoing effect that is added to a sound

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

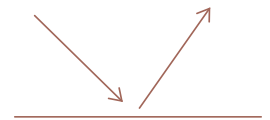
In unobstructed open space, sound travels at 1000 ft/second. In a 50" x 20" room, that sound might bounce off hard surfaces up to 60 times before dying out.



SOLUTION:

REDIRECTING SOUND

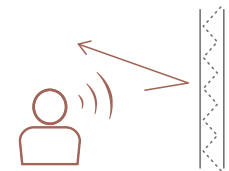
By redirecting sound we can reduce the speed that sound travels. When sound hits a barrier and bounces, reverberation time, or echo, is reduced.



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 acoustical absorbing materials and sound trapping strategies such as the Helmholtz resonance principal, 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 acoustical system incorporating the lit environment of the space.



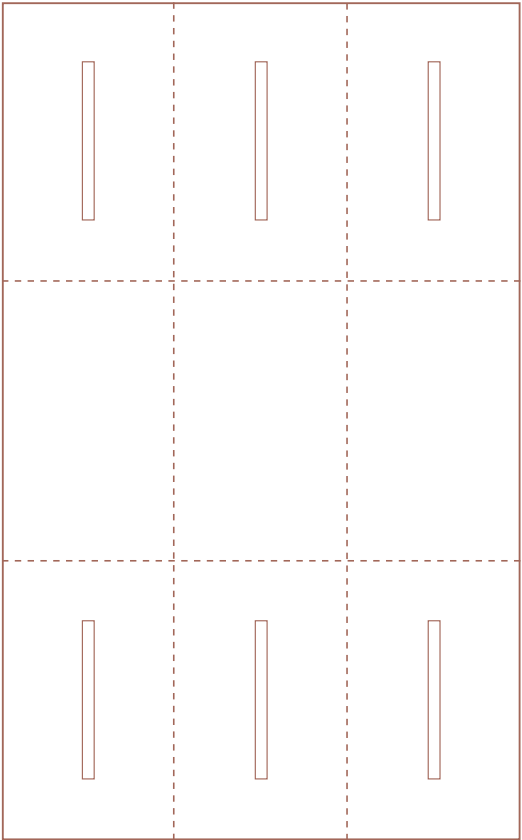
How to improve acoustics in a room?

Similar to lighting design, we approach acoustical 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 acoustical 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

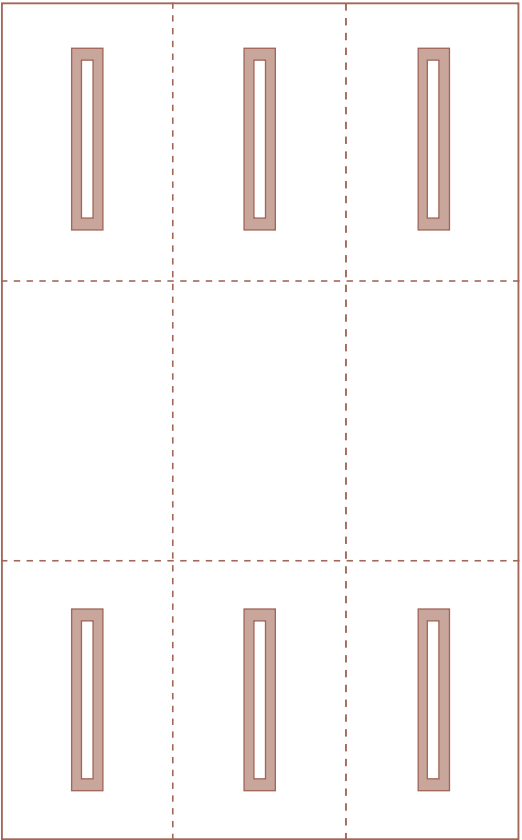
0%	1.3s	Reverberation time
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😊 General lighting

😊 GOOD Acoustic

-25%	0.98s	Reverberation time
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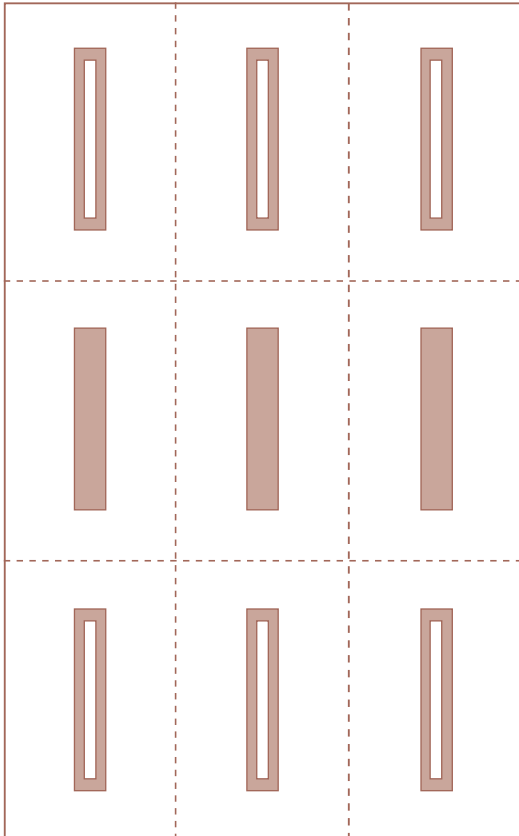


- ☺ Good: Reverberation time is reduced by 25%
- ☺ ☺ Better: Reverberation time is reduced by 40%
- ☺ ☺ ☺ Best: Reverberation time is reduced by 50%

☺ General lighting

☺ ☺ BETTER Acoustic

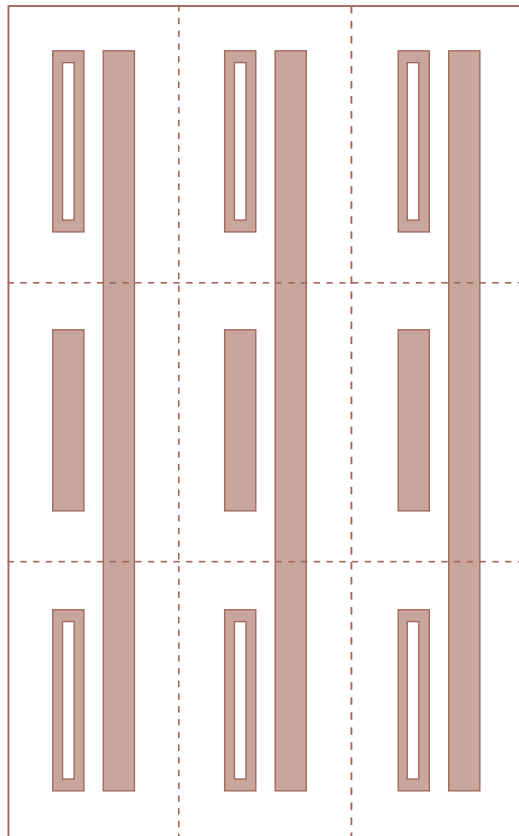
-40%	0.78s	Reverberation time
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☺ General lighting

☺ ☺ ☺ BEST Acoustic

-50%	0.65s	Reverberation time
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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 acoustical improvement you are looking for and select the associated Acoustix Value:
😊 Good 😊 😊 Better 😊 😊 😊 Best
- ④ Use the Lumenwerx Acoustix Value Formula

$$\text{Square Feet} \div \text{Value} = \text{Number of luminaires needed in the room}$$

See next page for illustrated example

* 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 77.

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 acoustical improvement you are looking for and select the associated Acoustix Value:
😊 😊 **Better : 25**
- ④ Use the Lumenwerx Acoustix Value Formula

$$\begin{array}{ccccc} \mathbf{150 \div 25} & = & \mathbf{6 \text{ fixtures}} \\ \text{(sq ft)} & \text{(Acoustix value)} & \text{(3 luminaires + 3 blanks)} \end{array}$$

The Acoustix Value Formula is a simple calculator used to establish the recommended number of acoustical 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 and 4 foot luminaires.

ROOM DIMENSIONS UNDER 300 SQ/FT

PRODUCT	GOOD 😊	BETTER 😊😊	BEST 😊😊😊
Audia 12"x48"	38	19	12
Audia 16"x48"	51	25	17
Cluster Circle Acoustix 22"	30	15	10
Cluster Square Acoustix 22"	38	19	13
Mikro Wafer 20"x24"	38	19	13
Mikro Wafer 20"x36"	55	29	19
Mikro Wafer 20"x48"	78	40	25
Rim Verso Acoustix 24"	18	9	6
Rim Verso Acoustix 36"	42	20	14
Rim Verso Acoustix 48"	75	38	25
Squero Acoustix 8"x48"	19	9	6
Squero Acoustix 12"x48"	29	14	8
Squero Acoustix 16"x48"	38	19	12
Togo Acoustix 24"	18	9	6
Togo Acoustix 36"	42	20	14
Togo Acoustix 48"	75	38	25
Via 1.5 & 2 Acoustix 8"x48"	19	9	6
Via 1.5 & 2 Acoustix 12"x48"	29	14	8
Via 1.5 & 2 Acoustix 16"x48"	38	19	12
Via Stil 12"x48"	19	9	6
Via Stil 16"x48"	29	14	8
Via Stil 20"x48"	38	19	12

ROOM DIMENSIONS **OVER 300 SQ/FT**

PRODUCT	GOOD 😊	BETTER 😊😊	BEST 😊😊😊
Audia 12"x48"	60	29	19
Audia 16"x48"	84	39	26
Cluster Circle Acoustix 22"	48	24	16
Cluster Square Acoustix 22"	61	30	20
Mikro Wafer 20"x24"	61	30	20
Mikro Wafer 20"x36"	92	45	30
Mikro Wafer 20"x48"	128	60	40
Rim Verso Acoustix 24"	28	14	9
Rim Verso Acoustix 36"	65	32	22
Rim Verso Acoustix 48"	120	59	41
Squero Acoustix 8"x48"	29	15	10
Squero Acoustix 12"x48"	45	22	14
Squero Acoustix 16"x48"	58	29	19
Togo Acoustix 24"	28	14	9
Togo Acoustix 36"	65	32	22
Togo Acoustix 48"	120	59	41
Via 1.5 & 2 Acoustix 8"x48"	29	15	10
Via 1.5 & 2 Acoustix 12"x48"	45	22	14
Via 1.5 & 2 Acoustix 16"x48"	58	29	19
Via Stil 12"x48"	29	15	10
Via Stil 16"x48"	45	22	14
Via Stil 20"x48"	58	29	19

Making light work for you

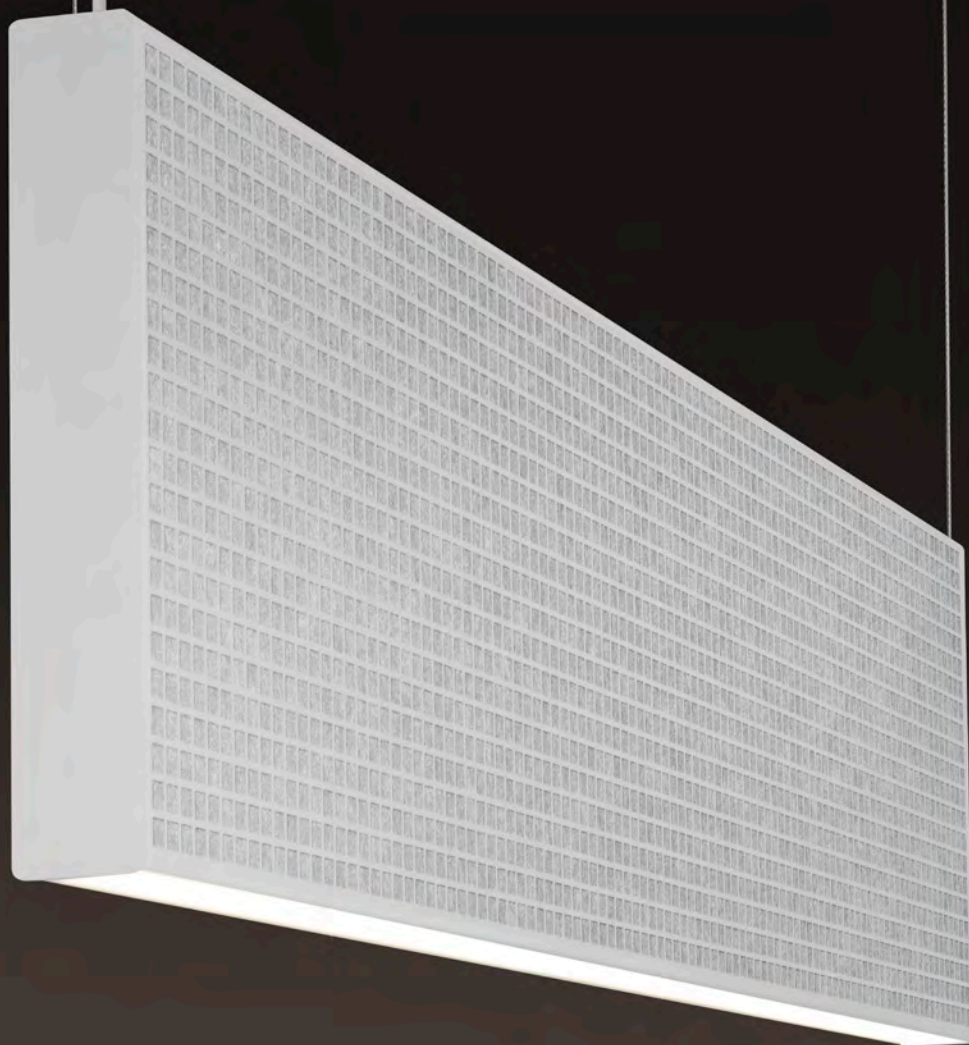
Designed with human performance and technical optimization in mind, Lumenwerx offers an ever expanding portfolio of acoustic lighting solutions for many applications:

- Offices
- Conference rooms
- Libraries
- Education
- Foyer/ Lobby
- High ceiling application
- Fitness Centers
- Cafeterias
- Multi-Use room
- Retail
- Hospitality

For additional information please visit our website at www.lumenwerx.com



acoustix



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