Acoustical Masonry | Proudfoot

BY SOUND SEAL

SOUNDCELL®

SOUNDBLOX®

ARCHITECTURAL ACOUSTICS | INDUSTRIAL NOISE CONTROL

SOUNDBLOX®

SOUNDBLOX & SOUNDCELL ARCHITECTURAL CONCRETE MASONRY UNITS (ACMUs) ARE STRUCTURAL/ABSORPTIVE/BARRIERS. They positively improve sound quality of interior rooms and outdoor environments and provide structure for walls and buildings with inherent performance advantages. Their three-fold performance of structure/absorption/barrier is provided within a single component acoustical wall system.

Improve Sound Quality

SOUNDBLOX and SOUNDCELL ACMUs are practical solutions to effectively suppress problem noise and thus improve the acoustical atmosphere for safe, affable, human occupation. ACMUs provide healthier acoustical environments via two means of treating unwanted noise:

1. **Reduce noise within an enclosed space** through absorption and diffusion of sound energy within its core matrix
2. **Suppress noise transmission to an adjacent room or space** by structuring a robust sound barrier

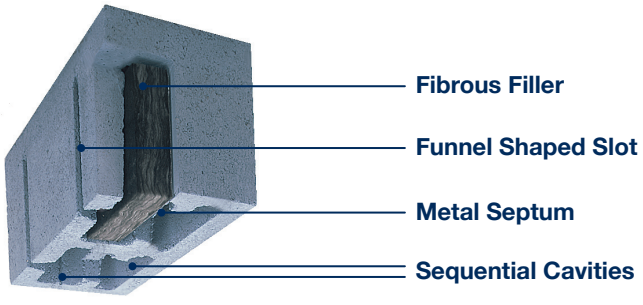
Provide Structure

SOUNDBLOX and SOUNDCELL ACMUs are utilized to construct versatile structures. ACMUs provide permanent walls comprising system performance characteristics and benefits not found with other wall systems and acoustical improvement products:

- Strong, load-bearing (ACMU walls can support tons of structural loads)
- Structural stability (ACMU walls can provide rigid shear strength to withstand wind loads)
- Fire resistant (fire-resistive-ratings from 1 to 3 hours may be attained)
- Tough, hard-wearing (wear & tear, abuse, and vandal resistant)
- Minimal maintenance (only an occasional cleaning)
- Durable (last for the life of the structure or building)

SOUNDBLOX Masonry Units are Structural & Load-Bearing

SOUNDBLOX have the same compressive strength as standard hollow concrete masonry units of similar composition. Installed conventionally, the in-place cost of SOUNDBLOX is low by comparison to most other acoustical materials. Rugged and durable in construction, SOUNDBLOX masonry units are an excellent choice for industrial settings, gymnasiums, mechanical equipment rooms, and comparable installations.

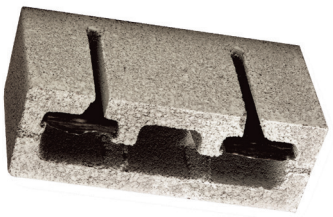


A Close Up Look at SOUNDBLOX

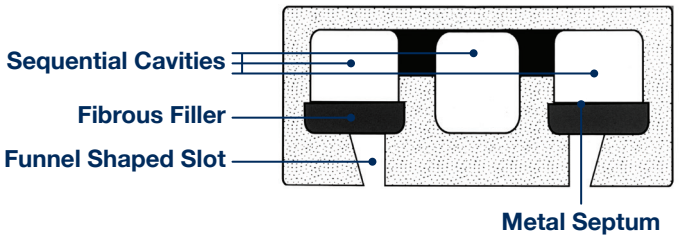
SOUNDBLOX derive their excellent sound absorption from a unique cavity-slot resonator construction. The cavities are closed at the top and the slots allow the cavities to function as damped (Helmholtz) resonators — an excellent sound absorption tool at low frequencies. The slots of the RSR, RSC and Q Type units are funnel-shaped for superior acoustical performance.

The amount of sound absorbed by properly installed SOUNDBLOX is increased dramatically when units incorporating a metal septum (membrane or divider) and fibrous filler in the cavity are specified. Together with funnel-shaped slots, these units provide higher levels of sound absorption across a wider range of frequencies. In addition to sound absorption, SOUNDBLOX walls have a superior sound transmission loss (STL) performance rating when compared to walls of ordinary hollow concrete blocks of similar composition.

Type RSC (6” Shown)

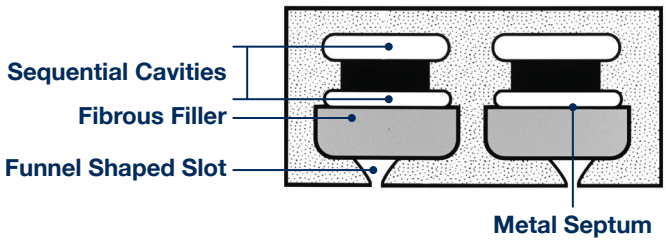


Type RSC 4” & 6” have three (3) sequential cavities, two (2) flared slots, metal foil septa and fibrous fillers, and an NRC rating of .80 and .85 respectively.



Type RSC (12” Shown)

Type RSC 8” & 12” have four (4) sequential cavities, two (2) flared slots, metal foil septa and fibrous fillers, and an NRC rating of .80 and .85 respectively.



Sound Transmission Loss Characteristics								
		Frequency (Hertz)						
Size	Type	125	250	500	1000	2000	4000	**STC**
6”	A-1	38	38	44	51	58	58	**49**
8”	RSC	36	44	50	54	58	56	**53**
12”	RSC/RF	45	46	52	58	62	61	**56**
12”	RSC/RF*	44	48	57	65	67	67	**60**

*The sound transmission loss values shown above were determined in accordance with ASTM methods by ETL Laboratories in Cortland, NY, and Riverbank Laboratories in Geneva, IL. The SOUND-BLOX® walls were sealed on the unslotted side using two coats of Thoroseal® before testing. *This wall was tested with the two rear cores filled with sand. See pages 3, 4 & 5 for NRC test results.*

Sound Absorption Coefficients — Type RSC (All Surfaces Painted)																				
		Frequency (Hertz)																		
Size	Exposed Slots/ Cavities	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	**NRC**	**SAA**
4” RSC	2/3	.18	.22	.36	.64	1.12	1.16	1.02	.89	.76	.72	.76	.77	.80	.73	.68	.58	.65	**.80**	**.81**
6” RSC	2/3	.48	.70	.93	1.14	1.05	.97	.91	.84	.75	.76	.77	.70	.67	.68	.56	.51	.59	**.85**	**.85**
8” RSC	2/4	.48	.85	1.17	.99	.90	.88	.98	.79	.62	.58	.60	.61	.70	.69	.70	.64	.51	**.80**	**.79**
12” RSC	2/4	.57	*	*	.76	*	*	1.09	*	*	.94	*	*	.54	*	*	.59	*	**.85**	*

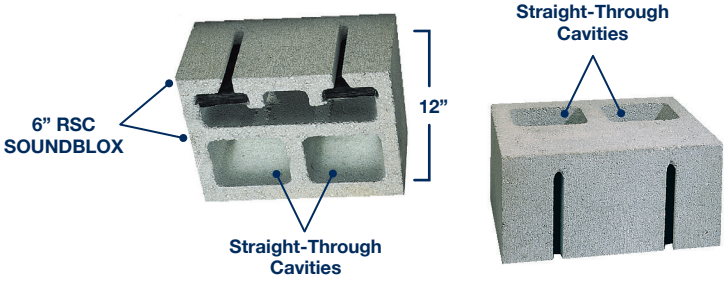
*The above sound absorption data was determined by tests conducted at Geiger and Hamme Acoustical Laboratory in strict compliance with ASTM C423 specifications. Actual installed performance may vary. *Measurements at these frequencies were not taken.*

SOUNDBLOX®

REINFORCED MASONRY

Type RSC/RF

Special SOUNDBLOX unit providing the sound absorption of Type RSC units. Incorporates a metal septum and filler, and two additional large, straight-through cavities, allowing specification of this unit in applications requiring vertical reinforcing, thermal insulation or accommodations for vertical conduits and/or pipes. Available in 8”, 10” and 12” thicknesses. For specific dimensions and structural property details of RSC/RF units, contact Sound Seal.

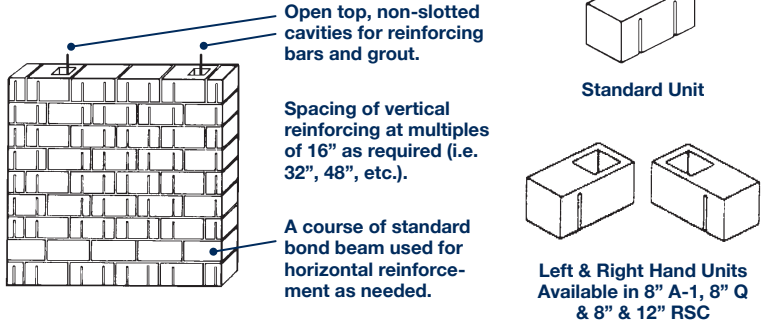


Type 12” RSC/RF4 (Additional Groutable Area)

The 12” RSC/RF4 uses a 4” sound absorbing chamber combined with a nominal 8” groutable area. The 12” RSC/RF4 is used in states like CA and FL that require seismic and hurricane specifications — they require an 8” nominal groutable area. The overall NRC is .80. Split face on exterior for single wythe construction is available in 10” RSC/RF, 12” RSC/RF & 12” RSC/RF4.

Left-Hand & Right-Hand Units

For situations requiring a full core for vertical reinforcement, SOUNDBLOX units with open cavities on either the left- or right-hand side are available. When used in conjunction with standard SOUNDBLOX units, reinforcing bars and grout can be incorporated easily and efficiently. SOUNDBLOX left-hand and right-hand units have been approved for use in reinforced masonry construction and are allowed 90% of the shear value of ordinary hollow concrete block.



Sound Absorption Coefficients — Type RSC/RF (All Painted Surfaces)

		Frequency (Hertz)																		
Size	Exposed Slots/ Cavities	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	**NRC**	**SAA**
8” RSC/RF*	2/5	.18	.22	.36	.64	1.12	1.16	1.02	.89	.76	.72	.76	.77	.80	.73	.68	.58	.65	**.80**	**.81**
10” RSC/RF*	2/5	.18	.22	.36	.64	1.12	1.16	1.02	.89	.76	.72	.76	.77	.80	.73	.68	.58	.65	**.80**	**.81**
12” RSC/RF	2/5	.48	.70	.93	1.14	1.05	.97	.91	.84	.75	.76	.77	.70	.67	.68	.56	.51	.59	**.85**	**.85**
12” RSC/RF4”	2/5	.18	.22	.36	.64	1.12	1.16	1.02	.89	.76	.72	.76	.77	.80	.73	.68	.58	.65	**.80**	**.81**

*The above sound absorption data was determined by tests conducted at Geiger and Hamme Acoustical Laboratory in strict compliance with ASTM C423 specifications. Actual installed performance may vary. *Test results are identical due to common front cavity configuration.*

SPECIAL APPLICATIONS

Type A-1

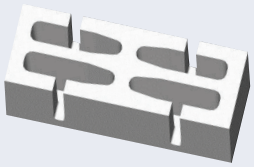
Narrow slots, unfilled cavities. SOUNDBLOX Type A-1 units have been specifically designed for low frequency absorption. Optimum sound absorption is achieved at 125 Hz.

Type A-1-RF

Outstanding low frequency absorption combined with straight through cavities for vertical reinforcement.

6” A-1 Double Sided

Has the unique ability to absorb noise from both the front and rear face shells. With an NRC of .65 - .75, the 6” A-1 Double Sided can be the right choice for interior partitions where space is at a premium.

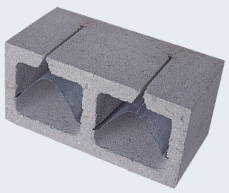


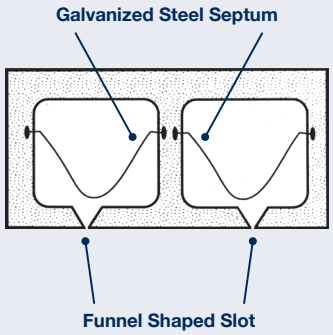
Type RSR

Split rib units; wider slots flaring inward, incombustible fibrous fillers with metal septa in cavities. Graffiti resistant and attractive, these units also offer sound diffusion properties. Available in 8” thickness only. Limited availability.

Type Q

Flared slots in the same width as Type A-1 units on the outer face. Galvanized steel septa placed in unfilled cavities. Available in 8” thickness only. SOUNDBLOX Type Q units have been specifically designed for low frequency absorption. Optimum sound absorption is achieved at 125 Hz.





Sound Absorption Coefficients — Types A-1, A-1-RF, Q and RSR										
				Frequency (Hertz)						
Size	Type	Surface	Exposed Slots/ Cavities	125	250	500	1000	2000	4000	**NRC**
4”	A-1	Painted	2/2	.12	.85	.36	.36	.42	.45	**.50**
6”	A-1	Painted	2/2	.62	.84	.36	.43	.27	.50	**.50**
8”	A-1	Painted	2/2	.97	.44	.38	.39	.50	.60	**.45**
8”	Q	Painted	2/2	1.07	.57	.61	.37	.56	.55	**.55**
8”	RSR	Unpainted	2/2	.61	.81	.57	.55	.66	.64	**.65**
8”	A-1/RF	Painted	2/4	.12	.85	.36	.36	.42	.45	**.50**
10”	A-1/RF	Painted	2/4	.12	.85	.36	.36	.42	.45	**.50**
12”	A-1/RF	Painted	2/4	.62	.84	.36	.43	.27	.50	**.50**
6”	A-1/DBL	Painted	4/4	.20	.95	.85	.49	.53	.50	**.65 – .75**

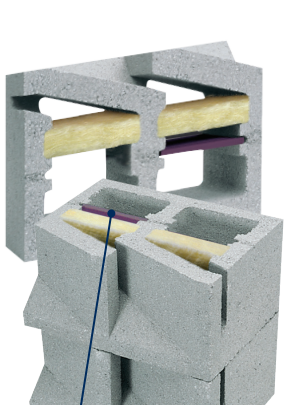
The above sound absorption data was determined by tests conducted at Geiger and Hamme Acoustical Laboratory in strict compliance with ASTM C423 specifications. Actual installed performance may vary.

SOUNDCELL®

SOUNDCELL & ACOUSTADE

SOUNDCELL acoustical masonry units offer architects and contractors even more noise control options with the added touch of grace and elegance.

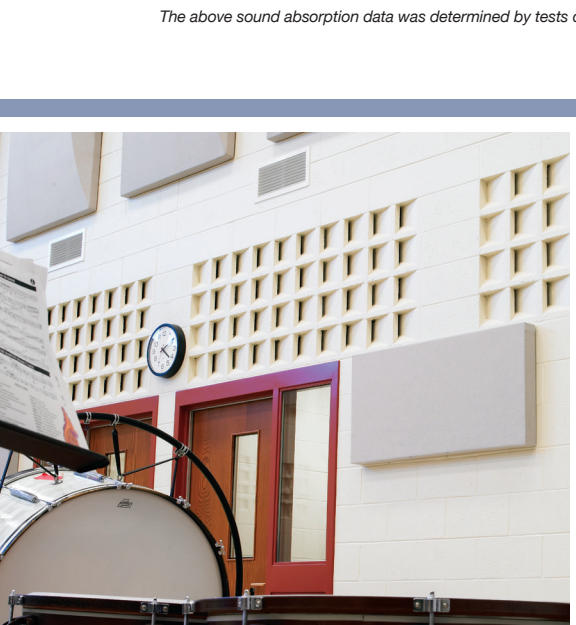
The SOUNDCELL unit's design innovation is your practical solution to effectively absorb problem noise, diffuse sound energy, and more thoroughly capture flutter echo, standing waves and sound intensity annoyances — with style.

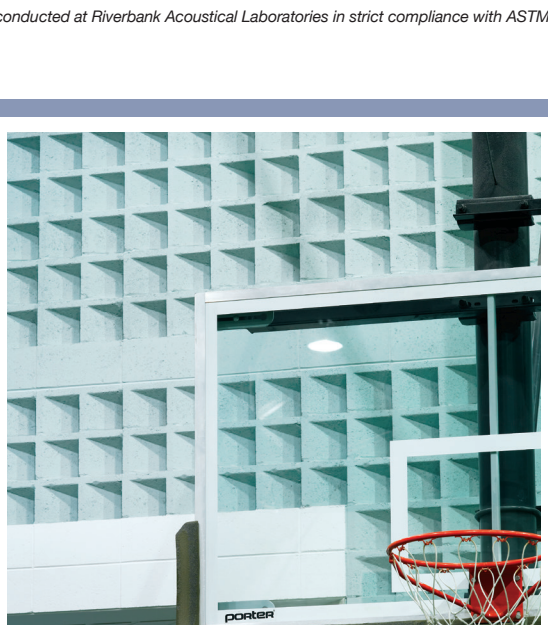


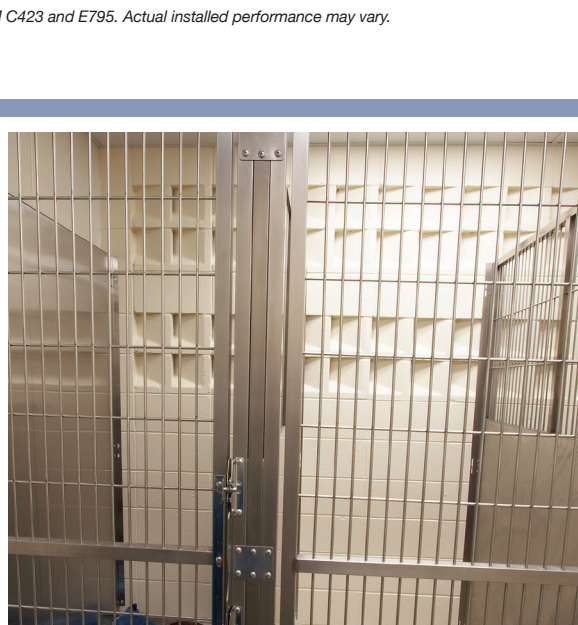
Optional Grout Shields (only available with 12" units as shown)

Sound Absorption Coefficients																				
Frequency (Hertz)																				
Size	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	**NRC**	**SAA**
8"	.50	.67	.94	1.16	.89	.68	.59	.51	.55	.66	.75	.78	.79	.77	.71	.68	.69	.69	**.75**	**.74**
12"	1.20	.95	.96	.89	.64	.55	.54	.55	.60	.72	.74	.76	.79	.81	.75	.73	.72	.73	**.70**	**.70**

The above sound absorption data was determined by tests conducted at Riverbank Acoustical Laboratories in strict compliance with ASTM C423 and E795. Actual installed performance may vary.

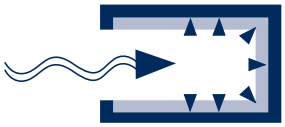






Absorption / Helmholtz Resonator
(Capture & Eliminate Noise)

SOUNDCELL utilizes a stacking, slot-type, Helmholtz volume resonator to achieve sound absorption at all frequencies. The 12½ unit offers an unmatched 100% average absorption efficiency at the 100-125-160-200 Hz frequency bandwidth. This low frequency absorption is invaluable in supplying sound control that cannot be captured by carpets, drapes, acoustical tiles and similar items.



Flutter Echo
(Arrest Sound Annoyance)

Often heard as a high frequency ‘ringing’ or ‘buzzing’, flutter echo can be an annoyance to speech intelligibility as well as confusing to the ear. Flutter can be reduced by skewing walls as little as one inch to one foot (1:12). SOUNDCELL has 77% of its surface area skewed to a (3:12) ratio in order to arrest this flutter echo annoyance.

Standing Wave / Resonate Frequencies
(Control Room Resonance)

A typical square room design with parallel surfaces supports standing waves at frequencies which are determined by the size of the room. The fundamental resonant frequencies associated with room dimensions fall primarily in the bass (low frequency) range and give the building space a “boomy” quality. SOUNDCELL does not produce opposite parallel surface planes and has an effective 1.2 absorption coefficient at the difficult-to-treat 125 Hz octave band to control the standing wave - resonant frequency effect.

Diffusion
(Improve Sound Quality)

Many rooms utilizing flat, exposed masonry promote sound ‘bounce’ and problematic reflections. SOUNDCELL improves the quality and nature of sound by providing desirable diffusion with its innovative grid and impressed form.

SOUNDCELL®

SOUNDCELL ACOUSTADE™ Masonry Units

Now even more design options are available. SOUNDCELL ACOUSTADE masonry units offer the same noise control capabilities as regular SOUNDCELL units without the horizontal baseline.

This feature allows for continuous vertical lines and offers a reversible skew, enabling the architect to specify in which direction the slanted surface faces. For example, a left-hand skew may be specified for a north wall with a right-hand skew specified for a south wall.

Available in 8” & 12” widths. Optional grout shields only available with 12” units, as shown.

SOUND SEAL®

CONTROLLING NOISE IN EVERY ENVIRONMENT

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