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phoenix-E

"Creating the Better Workplace"

second edition



SONOCONTM

SOUND

CONTROL

Sound Absorptive Panels

**Softwall Noise Barriers
and Enclosures**

Acoustical Equipment

Jackets and Duct Insulation

SONOCON™

Noise Control

SOUND

Sound is the product of a series of vibrations which are transmitted through an elastic medium. While we typically think of air as the sound path, it travels efficiently through most building components and materials.

Sound pressure levels are measured in decibels (dB) and relate this acoustical energy to the response of the human ear. The decibel used as a descriptor of a room's acoustic environment is similar to the use of the footcandle which is used in the measurement of a room's illumination levels.

While some can detect low frequency rumbles as low as 20 Hz and high pitched sounds as high as 20,000 Hz, most adults are able to hear sounds at frequencies from 30 Hz to 15,000 Hz. Also, the human ear is not equally sensitive to all frequencies but is best at distinguishing mid to high frequency sounds.

The common standard single number rating used to indicate the sound levels as perceived by the human ear is dBA. As the ear is less sensitive to sound energy in the lower frequencies, sound measurement equipment incorporate A-weighting filters to simulate the responsiveness of the human ear and give less emphasis to energy at the lower frequencies.

Energy at the lower frequencies with its longer wave lengths is typically pervasive and often more difficult to control. The behavior of noise at the mid-to-high frequencies is more predictable and the extent of noise attenuation methods and materials required is usually less.

Since acoustical energy behaves differently at different frequencies, sound level measurements which reflect noise intensity as a function of frequency are essential. As most noise control products and materials are laboratory tested and rated in full-octave or third-octave bands, these measurements guide the selection of noise control methods and materials.

NOISE

Noise is broadly defined as unwanted sound. Noise reduction can be accomplished using one or a combination of common sound control techniques: **Sound Absorption, Sound Barriers, Sound Damping.**

Absorption: Sound absorbing panels and baffles are typically constructed of porous or fibrous materials. As sound waves create vibrations within these materials, the sound energy is converted into mechanical energy (motion) which is then

dissipated as heat. Sound absorption techniques are effective in reducing the reverberant buildup of sound within buildings, rooms, and machinery enclosures.

Sound Barriers: Barriers with high transmission loss characteristics interrupt the sound path to reflect and absorb acoustical energy. Barriers with significant mass and density perform best. Effective noise control barrier and enclosure systems often incorporate sound absorption properties.

Damping: Energy from vibrating metal surfaces can radiate as airborne noise. Adding vibration damping materials constrain this movement and convert the vibrating energy into heat. Impact noise, duct or casing noise, and material handling applications tools such as conveyors structural borne energy are examples of noise control applications where damping has proven cost effective.

SOUND ABSORPTION

In general, hard and impermeable surfaces reflect acoustic energy while the as-built building configuration such as intersection of walls and floors, room volume, and penetrations alter the behavior of this energy. Sound absorptive panels and baffles reduce the reflective efficiency of such surfaces and provide a place for the energy to decay.

An increase of 10 decibels in measured sound pressure levels is not uncommon when locating equipment within acoustically hard boundaries. Adding acoustical absorption to the reflective walls of an enclosure is analogous to painting white walls black. The light fixture produces the same amount of energy but the room illumination has decreased due to less efficient reflective surfaces.

This absorption eliminates the reverberant build up of sound-levels within otherwise acoustically hard rooms and equipment or machinery enclosures and reduces the overall sound pressure levels.

Acoustical absorbers convert the sound energy of molecular vibrations into small amounts of heat. All materials absorb energy to a greater or lesser extent. This material performance is evaluated by laboratory tests as a function of frequency and published as sound absorption coefficients. A perfect absorber has a value of 1.0 while a perfect reflector has a value of 0.0.

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Noise Control



Acoustical enclosures and barriers are typically constructed of materials with the sound absorption and transmission loss properties appropriate to the application.

These acoustical barrier properties are obtained under controlled laboratory tests. Interior sound absorptive surfaces prevent the build-up of noise levels within the enclosure or between the barrier and the noise source. The sound transmission loss provided by the barrier reduces or contains the noise radiation from within the barrier or enclosure to spaces outside.

Sound control structures need to be carefully detailed to reduce flanking paths (openings and cracks) which reduce the

overall efficiency of the completed enclosure. Thus, a 30 dB enclosure design based upon laboratory test data may result in but a 15 to 20 dB noise reduction in the actual sound pressure levels immediately outside the structure.

The effectiveness of most acoustical enclosures is limited by required openings for personnel access, materials access, ventilation, and requirements for machinery operation and observation. The integrity of acoustical enclosures can be maintained by protecting the openings with properly selected and configured baffles, silencers, removable panels, acoustical doors, and sound tunnels.

Acoustical barriers and soundwalls attenuate noise by creating an acoustical shadow. Since sound diffracts, is influenced by meteorological conditions, and is reflected, their performance improves with proximity to the noise source, for applications involving noise at the higher frequencies, and the barrier's incremental height and width beyond that of the source.

The single number rating of a materials acoustic absorption performance is the noise reduction coefficient (NRC). The NRC is the average of the absorption coefficients in the 250 Hz, 500 Hz, 1000 Hz, and 2000 Hz octave bands. These reflect the absorptive characteristics in the frequencies most common to communications but ignores the energy occurring in both the lower and higher frequencies.

In real world applications, an absorption coefficient of 0.5 is a practical requirement to minimize the amount of materials used in many noise control applications.

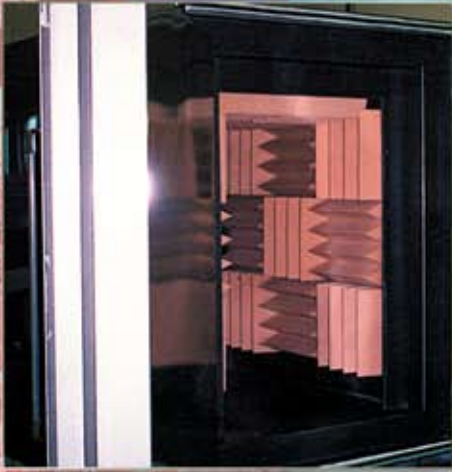
In occupied spaces, the enclosed space should produce an acoustic environment which does not adversely effect speed articulation and intelligibility. In large spaces as auditoriums, churches and concert halls, much concern is given to the distribution, quality and broadcast of acoustical energy.

SOUND BARRIERS

The noise reduction performance of acoustical enclosure and soundwall systems is dependent upon the barrier physical properties, the integrity of the acoustical enclosure or barrier, and the limitations placed by requirements for ventilation and personnel or equipment accessibility.

SONOCON™

Sound Absorptive Panels



Acoustical absorption can be added to existing rooms or enclosures to reduce the overall sound levels.

By reducing reflections in an acoustically hard or reflective environment, noise levels can be reduced by 6 to 9 decibels. However, as more absorption is added to the enclosed space the incremental amount of sound attenuation is increasingly less. Most acoustical panel constructions are optimized to perform best at a specific range of frequencies; similarly, the proper selection, placement and attachment methods will improve panel performance.

Acoustical absorption can be successful in improving speech privacy as well as speech intelligibility by reducing reverberant room conditions. **Recording and broadcast studios** as well as **restaurant and office environments** are improved with the addition of absorptive panel systems. Both the **SonoCon™ architectural and industrial acoustical panels** meet the rigid esthetic, acoustic and fire ratings needed for many of these applications.

Acoustical materials are essential in many product and physiological **testing facilities**. **Anechoic wedges** and

acoustical panels incorporated into test environments eliminate reflected noise from biasing measurement. **Anechoic chambers** provide echo-free environments commonly used to test assemblies as small as a bearing sleeve and large as a passenger car while **audiometric test booths** are routinely employed in the evaluation of hearing and perception.

Manufacturing and assembly plant noise can be localized by the installation of sound absorbing panels. Generally, facing the noise source, these eliminate reflective energy, provide a medium for the sound energy to decay and reduce the sound levels at operator positions further away. **Industrial acoustical panels** are constructed to withstand most demanding and rigorous industrial environments.

Sound absorptive panels and ceiling baffles are fabricated in a variety of materials and constructions to match an application's specific, and often critical, acoustical and physical requirements. All have been tested and rated in terms of their acoustical performance. Combustibility, fire ratings and recommended service applications are provided in the following product specifications.



SONOCON™

Acoustical Foam Baffles & Panels

SonoCon™ acoustical foam panels and baffles are engineered to eliminate reflected energy and reduce ambient noise levels. A variety of product thickness, panel design, and physical characteristics enable selections which will closely meet specific sound absorption requirements.

The open cell acoustical panels are uniquely shaped to maximize the surface area exposed to acoustical energy; as the surface area increases, panel sound absorption efficiency also increases. Increasing the thickness of the panel increases the sound absorption performance at the low frequencies. Special panel configurations locate sound absorption at wall and ceiling intersections which otherwise act to amplify and direct sound into the room environment.

Color schemes and configuration choices blend acoustic performance with esthetic considerations.

SonoCon™ foam performance options include:

- Panels which are heat resistant to 480°F and withstand continuous exposure to 300°F temperatures.
- Panels rated Class I to comply with Code requirements for specific room occupancies requiring non-combustible construction for flame spread, smoke density and fuel contribution.
- Panels with a permeable membrane to withstand damp environments and permit ready cleaning.
- Panels which can be painted to match room design and decor.
- Hanging baffles highly effective in reducing reverberant noise in large rooms with hard surfaces such as firing ranges, auditoriums, swimming pools, and athletic courts.
- Standard anechoic wedges for broad band and low frequency sound absorption and requirements.



SonoCon™ FOAM ACOUSTICAL PANEL AND HANGING BAFFLE APPLICATIONS INCLUDE:

- Theaters, auditoriums, recreational facilities.
- Multi-media production including recording studios, editing facilities, sound stages.
- Conference and meeting rooms, offices, and restaurants.
- Test chambers, research laboratories, fabrication, production and processing facilities.

SONOCON™

Tek Acoustical Foam Baffles

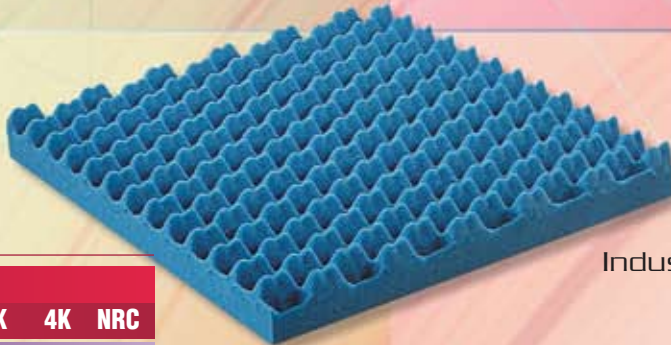
Wave Profile

Sizes: 24" x 48" & 48" x 48"

Thicknesses: 1", 1-1/2", 2", 3", 4"

Density: 2 lb/Cubic foot

Colors: Charcoal, **Blue**, Brown,
Beige, Burgundy, Hunter Green.



APPLICATIONS:

Industrial Noise Control.
Firing Ranges.
In-plant Noise.
Metalworking Operations.
Audio Market.
Commercial and Residential.

Sound Absorption Coefficient

Frequency (Hz)	125	250	500	1K	2K	4K	NRC
WAVE 2	.15	.31	.73	1.04	1.08	1.12	.80
WAVE 3	.24	.46	1.08	1.05	.98	.90	.90
WAVE 4	.32	.93	1.43	1.33	1.29	1.21	1.25

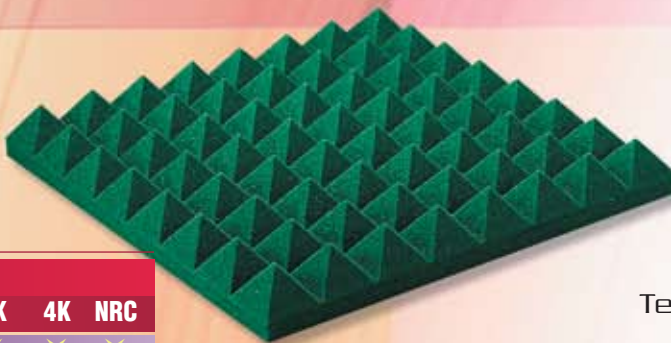
Pyramid Profile

Sizes: 24" x 24"

Thicknesses: 2", 3", 4"

Density: 2 lb/Cubic foot

Colors: Charcoal, Blue, Brown,
Beige, Burgundy, **Hunter Green**.



APPLICATIONS:

Telemarketing Areas.
Recording Studios.
Distance Learning Facilities.
Churches, Homes
and more...

Sound Absorption Coefficient

Frequency (Hz)	125	250	500	1K	2K	4K	NRC
PYRAMID 2	.14	.32	.72	1.01	1.05	1.08	.80
PYRAMID 3	.44	.48	1.19	1.12	1.16	1.16	1.00
PYRAMID 4	.39	.60	1.21	1.14	1.16	1.13	1.05

Hanging Baffles

Size: 24" x 48" hanging baffles

Thickness: 3"

Density: 2 lb/Cubic foot

Flammability: UL94HF-1

Colors: Charcoal, Blue, **Brown**,
Beige, Burgundy, Hunter Green.



APPLICATIONS:

Gymnasiums.
Pools.
Industrial Facilities.
Fellowship Halls.
Churches.
Entertainment Facilities.

Sound Absorption - SABINS

Frequency (Hz)	125	250	500	1K	2K	4K
CONTOUR	4.44	6.00	10.00	15.50	17.90	19.20

SONOCON™

Tek Acoustical Foam Baffles

Column Profile

Size:	10" Round
Heights:	24", 48"
Thickness:	10"
Density:	2 lb/Cubic foot
Flammability:	UL94HF-1
Colors:	Charcoal, Blue, Brown, Beige, Burgundy , Hunter Green.



Sound Absorption - SABINS							
Frequency (Hz)	125	250	500	1K	2K	4K	
COLUMN 48	4.25	8.35	8.95	7.30	6.15	4.65	

APPLICATIONS:

Room Corners.
Audio Market.
Home and Office.

Anechoic Wedge

Sizes:	12" x 12" panels
Thicknesses:	6" & 8", custom sizes available.
Density:	2 lb/Cubic foot
Colors:	Charcoal , Blue, Brown, Beige, Burgundy, Hunter Green.



Sound Absorption Coefficient							
Frequency (Hz)	125	250	500	1K	2K	4K	NRC
AW 6"	.27	1.05	1.34	1.28	1.26	1.17	1.25
AW 8"	.41	1.05	1.42	1.36	1.37	1.51	1.30

APPLICATIONS:

Test Chambers.
Low Frequency Applications.
Anechoic Chamber Environments.

Stepped Corner Profile

Size:	12" x 12" outer edges
Face:	17"
Heights:	24", 48"
Thickness:	12"
Density:	2 lb/Cubic foot
Flammability:	UL94HF-1
Colors:	Charcoal, Blue, Brown, Beige , Burgundy, Hunter Green.



Sound Absorption - SABINS						
Frequency (Hz)	125	250	500	1K	2K	4K
CORNER 48	3.60	9.70	9.50	8.25	6.80	5.15

APPLICATIONS:

Room Corners.
Audio Market.
Home and Office.

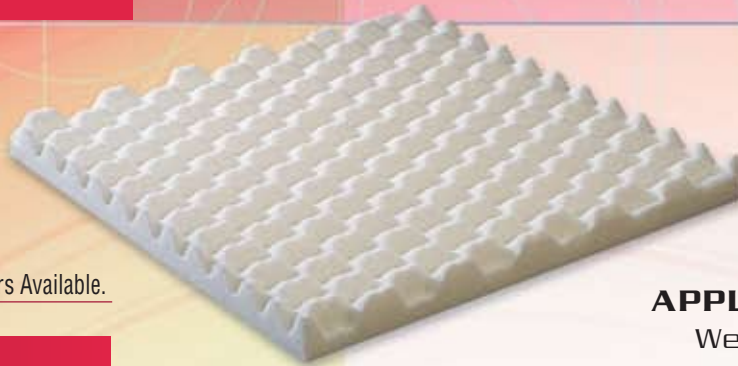
SONOCON™

Fire-Tek Flame Resistant Foam Baffles

Wave Profile

Size:	24" x 48" & 48" x 48"
Thickness:	1", 1-1/2", 2", 3", 4"
Density:	0.7 lb/cubic foot
Flammability:	Class One*
Flame Spread:	10*
Smoke Density:	50*
Color:	Natural White, Painted & Hypalon Colors Available.

*In Natural White only. Also available in Polyurethane.



APPLICATIONS:

Welding Areas.
Power Generator Plants.
Churches and Schools.
High Temperatures.

Frequency (Hz)	Sound Absorption Coefficient						
	125	250	500	1K	2K	4K	NRC
WAVE 2F	.03	.31	.81	1.02	1.01	.96	.80
WAVE 3F	.13	.74	1.26	1.18	1.12	1.03	1.10
WAVE 4F	.33	1.12	1.32	1.39	1.19	1.12	1.26



Pyramid Profile

Size:	24" x 44"
Thickness:	2", 3", 4"
Density:	0.7 lb/cubic foot
Flammability:	Class One
Flame Spread:	10
Smoke Density:	50
Color:	Natural White

Also available in Polyurethane.

Frequency (Hz)	Sound Absorption Coefficient						
	125	250	500	1K	2K	4K	NRC
PYRAMID 2F	.09	.28	.79	.94	1.00	1.04	.75
PYRAMID 3F	.10	.48	.91	1.11	1.11	1.14	.90
PYRAMID 4F	.16	.56	1.11	1.13	1.13	1.21	1.00

APPLICATIONS:

Telemarketing areas.
Recording Studios.
Distance Learning Facilities.
Churches.

Anechoic Wedge

Size:	12" x 12" panels
Thickness:	6" & 8", Custom sizes available
Density:	2 lb/Cubic foot
Flammability:	Class One
Flame Spread:	10
Smoke Density:	50
Color:	Natural White

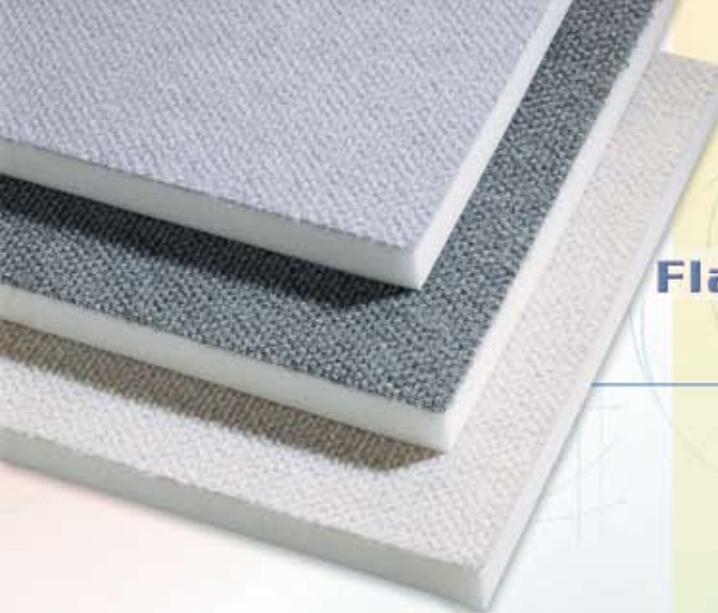
Also Available in Polyurethane.

Frequency (Hz)	Sound Absorption Coefficient						
	125	250	500	1K	2K	4K	NRC
AW-6F	.22	1.07	1.27	1.34	1.27	1.15	1.26
AW-8F	.39	1.05	1.44	1.38	1.33	1.19	1.33



APPLICATIONS:

Anechoic Chamber
Environments.
Test Chambers.
Low Frequency Applications.



SONOCON™

Flame Resistant Foam Baffles

APPLICATIONS:

- Offices.
- Restaurants.
- Conference Rooms.
- Studios.
- Churches and Schools.

Fabric Covered Composite

Size:	24" & 48"
Thickness:	1", 2", 3"
Density:	0.7 lb/cubic foot
Flammability:	Class One
Flame Spread:	10
Smoke Density:	50
Color:	6 Stock Colors + Custom Colors Available.

Sound Absorption Coefficient

Frequency (Hz)	125	250	500	1K	2K	4K	NRC
FCC 1F	.19	.32	.85	.88	.58	.50	.65
FCC 2F	.32	.75	1.20	1.10	.90	.63	.99
FCC 3F	.49	1.03	1.27	1.18	1.03	.72	1.13

Hanging Baffle

Size:	24" x 48" hanging baffles
Thickness:	3"
Density:	0.7 lb/cubic foot
Flammability:	Class One
Flame Spread:	10
Smoke Density:	50
Color:	Natural White

Also Available in Polyurethane.

Sound Absorption - SABINS

Frequency (Hz)	125	250	500	1K	2K	4K
CONTOUR BAFFLE - F	4.17	6.50	10.00	15.60	17.90	19.50

APPLICATIONS:

- Gymnasiums.
- Pools.
- Industrial Facilities.
- Fellowship Halls.
- Churches.
- Entertainment Facilities.



SONOCON™

SoftWall Acoustic Glass Fiber Panels & Baffles

Sound Absorbing Panels & Baffles

Light weight and non-combustible **SonoCon™ acoustical wall panels** and **ceiling panels** are unaffected by moisture and dirt. These high performance sound absorbing assemblies are effective in reducing overall reverberant noise levels in architectural and industrial settings. Noise reductions up to 8 to 10 decibels have been achieved even in some of the most challenging environments. They are resistant to oils and grease as well as many industrial grade chemicals.

SonoCon™ glass fiber panel and baffle facings can be matched to most architectural and industrial requirements. In addition to the standard vinyl colored facings, the acoustical panels can be finished with optional decorative acoustical fabrics, high-temperature silicone cloths, and FDA-approved sealed acoustically permeable membranes. For protected and overhead applications, polyethylene faced panels and baffles provide high noise reduction coefficients at low cost.

SonoCon™ sound absorbing components can be easily reconfigured as needs change. Little or no maintenance is required; most panels and baffles can be water-washed or steam cleaned when necessary.



Acoustical Baffles



Acoustical Wall Panels

Size: Custom sizes available.

Thickness: 1", 2", 4" (standard nominal panel thickness).

Density: 2 lb./cubic foot.

Flammability: Class A Fire Rated (ASTM E84).

Flame Spread: 17.66

Smoke Density: 22.75

Color: Variety of optional decorative high performance panel facings.

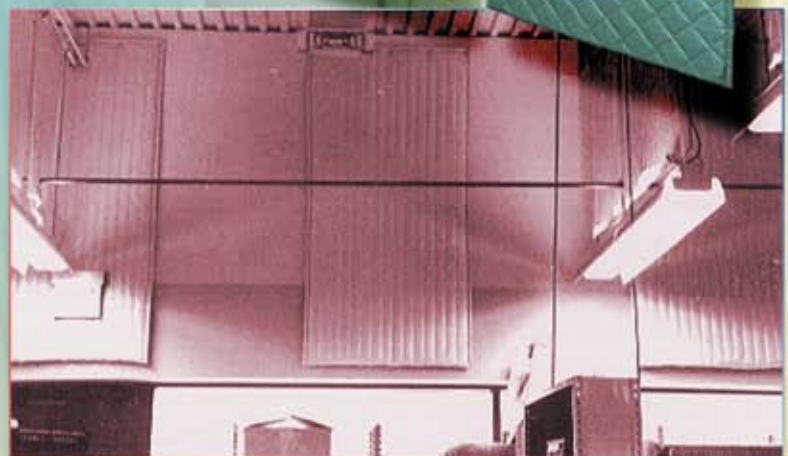
Sound Absorption Coefficients

Frequency (Hz)	125	250	500	1K	2K	4K	NRC
1" Thick Panels	.17	.30	.83	.82	.59	.37	.65
2" Thick Panels	.19	.99	.96	.80	.57	.33	.85
4" Thick Panels	.21	.89	1.09	1.17	1.13	1.07	1.05

ASTM C423-81

Flammability Ratings - Class A (ASTM E84)

	Flame Spread	Smoke Density
Vinyl Coated - Fiberglass - Cloth Faced	17.66	22.75
Silicone Coated - Fiberglass - Cloth Faced	4.95	11.43
Non-Woven Porous Scrim Faced	5.07	.45



SONOCON™

SoftWall Acoustic Glass Fiber Panels & Baffles

Overhead Acoustical Baffle Systems



- Suitable Temperatures: -20°F to 180°F

- FDA Approved
- USDA Listed
- Washable
- Suitable Temperatures: -40°F to 200°F
- Water Tight, Stain Resistant Facing



- Light Weight
- Heat Sealed Polyethylene Bag
- Efficiency at Low Cost



Fabric Faced

Size:	48" x 24" (standard), custom sizes available.
Thickness:	1", 2" (nominal thickness).
Density:	2 lb./cubic foot.
Flammability:	Class A Fire Rated (ASTM E84).
Flame Spread:	17.66
Smoke Density:	22.75
Color:	Variety of optional decorative high performance panel facings.

Sound Absorption - SABINS

Frequency (Hz)	125	250	500	1K	2K	4K
1" Thick	.59	2.43	7.17	8.66	8.82	6.71
2" Thick	.91	6.07	8.25	8.88	6.65	5.58

ASTM C423-81

FDA Approved Facing

Size:	48" x 24" (standard), custom sizes available.
Thickness:	1-1/2", 2" (nominal thickness).
Density:	1.6 lb./cubic foot.
Temperature:	-40°F to 200°F range.
Color:	Gray, Tan and White.

Sound Absorption - SABINS

Frequency (Hz)	125	250	500	1K	2K	4K
1-1/2" Thick	1.15	5.26	8.00	10.90	9.34	5.50
2" Thick	1.00	8.09	14.65	15.72	12.68	4.93

ASTM C423-81

Polyethylene Faced

Size:	48" x 24" (standard), custom sizes available.
Thickness:	1-1/2" (nominal thickness).
Density:	1.6 lb./cubic foot.
Flammability:	Class A Fire Rated (ASTM E84).
Flame Spread:	8
Smoke Density:	0
Color:	White (light reflective), or Black poly.

Sound Absorption - SABINS

Frequency (Hz)	125	250	500	1K	2K	4K
1-1/2" Thick	2.60	5.60	9.10	11.90	9.50	6.30

ASTM C423-81

SONOCON™

SoftWall Noise Control

Enclosures & Barriers

Sound absorbing materials are fibrous or open-cell structures that reflect very little acoustical energy. Instead, sound waves passing through the materials cause the internal strands or membrane material to vibrate. This resulting mechanical movement dissipates the acoustical energy in the form of heat. Sound absorbing materials reduce the reverberant noise build-up from inside buildings, rooms, and enclosures and provide a means for the energy to decay.

Sound barrier materials block noise. Instead of absorbing energy, the materials block the noise path and reflect the sound away from the barrier. The efficiency of any material as a noise barrier is directly related to its mass and density. As mass increases, so does the sound transmission loss characteristics.

To optimize noise reduction performance, **SonoCon™** Softwall Composite acoustical barriers and enclosures incorporate both material properties into relatively thin, light weight panels. Cost effective, durable and easy to install, **SonoCon™** Softwall Composite structures are impervious to moisture, oils and many industrial chemicals.

SonoCon™ Softwall Composite enclosures and soundwalls offer an economical alternative to rigid acoustical panel systems. Panels can be supported from existing structures, angle or pipe. Sliding and accordion panel systems can be installed to permit quick access to equipment and processes. For many applications, these acoustical enclosures are furnished with an open top to allow natural ventilation and use of existing lighting and fire suppression systems. Actual noise reduction is related to the height of the barriers and proximity to the noise source and the adjacent work area.

Several panel systems are available to match both acoustical and physical requirements. Options include viewing ports, sliding acoustical access panels, barrier panels absorptive both sides, acoustical roof panels, overhead suspended acoustical baffles, silenced ventilation openings, heavy-duty long-span steel support systems, standard and rolling acoustical screens, ASTM E84 Class A fire rated assemblies.



SONOCON™

SoftWall Noise Barriers

SoftWall Composite Barrier Panels



TYPE I

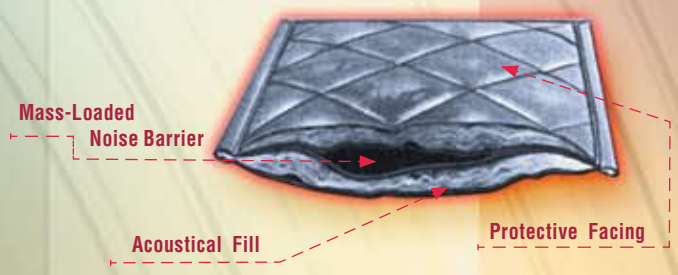
- Sound absorptive quilted faced fiberglass on one side of reinforced noise barrier material.
- Modular acoustical curtain panels feature grommets at top, hook & loop fasteners along each edge.
- Reinforced barrier back offers excellent durability and abuse resistance.
- Utilized as sliding doors and acoustical curtain enclosures.
- Suitable for outdoor applications.
- Custom fabricated for “acoustical jackets” on blowers, fans or compressor housings.
- Also available in bound or unbound rolls.
- STC ratings up to 32 dB, NRC ratings up to .85
- Class 1 flammability rating (per ASTM E84).



TYPE II

- Sound absorptive quilted faced fiberglass (gray, white, tan or black) on both sides of noise barrier material.
- Modular acoustical curtain panels feature grommets at top, hook & loop fasteners along each edge.
- Utilized as perimeter walls, separator walls or divider partitions between noise sources.
- Utilized as absorber/barrier composite liner in enclosures, rooms or buildings.
- Adds additional sound absorption to environment.
- Also available in bound or unbound rolls.
- STC ratings up to 33 dB, NRC ratings up to .85
- Class 1 flammability rating (per ASTM E84).

SoftWall Panel Construction



ACOUSTICAL DATA							
Sound Transmission Loss (db)							
Frequency (Hz)	Octave Band						STC
	125	250	500	1K	2K	4K	
2" Thick - w/o barrier	6	11	15	20	25	32	19
TYPE I 1" Thick	11	16	24	30	35	35	27
TYPE I 2" - Absorption 1 face	13	20	29	40	50	55	32
TYPE II 2" - Absorption 2 faces	12	16	27	40	44	43	29

ASTM E90

ACOUSTICAL DATA							
Sound Transmission Loss							
Sound Absorption Data-Absorber Component							
Octave Band Frequency (Hz)	Octave Band						NRC
	125	250	500	1K	2K	4K	
TYPE I - 1" Thick	.12	.47	.85	.84	.64	.62	.70
TYPE I - 2" Thick	.07	.27	.96	1.13	1.08	.99	.85
TYPE II - 2" Thick	.19	.99	.96	.80	.57	.33	.85

ASTM C-423

Flammability Ratings		
	Flame Spread	Smoke Density
TYPE I - 1" Vinyl Faced Panel - quilt on 1 side	23	30
TYPE I - 1" Silicone Faced Panel - quilt on 1 side	4	19
TYPE I - 2" Vinyl Faced Panel - quilt on 1 side	23	12
TYPE II - 1" Vinyl Faced Panel - quilt on 2 sides	23	30
TYPE II - 1" Silicone Faced Panel - quilt on 2 sides	4	19
TYPE II - 1" Scrim Faced Panel - quilt on 2 sides	5	1
TYPE II - 1" Silicone Faced Panel - quilt on 1 side	14	16

ASTM E84

SONOCON™

SoftWall Noise Control

Acoustical Screens

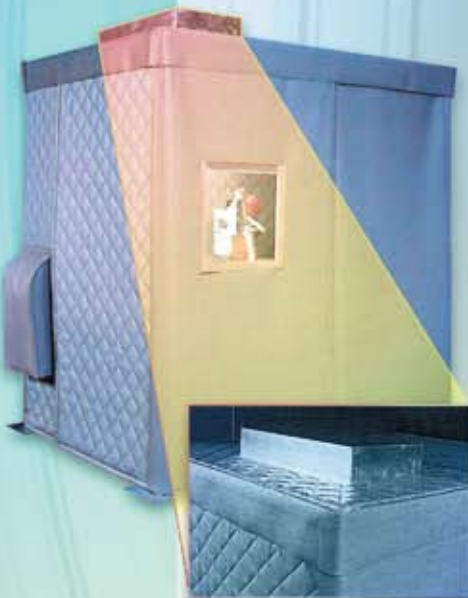


- Maximum noise reduction by combining sound absorber and noise barrier.
- Transmission loss rating to STC-32
- Sound absorption rating to NRC-1.05
- Fire safe and low smoke emissions per ASTM E84, Class A



SonoCon™ special silencers and softwall panels quiet process noise.

Acoustical Enclosure Systems



- Quick access to machinery and equipment.
- View window
- Transmission loss rating to STC-32
- Sound absorption rating to NRC-1.05
- Fire safe and low smoke emissions per ASTM E84, Class A.
- **Rigid Roof Panels**



Automated manufacturing equipment is acoustically isolated from adjacent work area.

SonoCon™

SoftWall Noise Control

Acoustical Enclosures



This three sided Portable Acoustical Enclosure with roof utilizing **SonoCon™ Acoustical Curtain Panels** was designed for approximately 20 dBA noise reduction. The entire enclosure is mounted on casters to allow complete accessibility to equipment. Clear vinyl view windows permit routine monitoring.

Rooftop view windows and a notch in the roof, as well as closure panels along the open sides allow this Portable **SonoCon™ Acoustical Enclosure** to fit snug to the machinery for maximum noise reduction while maintaining visibility and quick access.

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SoftWall Noise Control

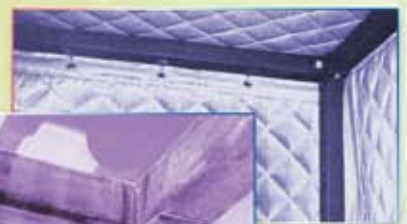
Acoustical Curtain Systems



SonoCon™ Acoustical Screens join together to form a sound absorption and noise barrier treatment in any needed configuration which can be easily moved or relocated.

Softwall Support Framework

- Standard curtain track and hardware systems are manufactured with heavy gauge galvanized steel components.
- Floor mounted, beam mounted, suspended, wall mounted and ceiling mounted styles available.
- Double track configurations allow for slide-by access at any point.
- Curved corner options allow for even greater access.
- Heavy Duty Frame (optional) features structural steel tubing for maximum strength to accommodate larger enclosures.
- Curved corner options allow for even greater access.
- Shipped knock down with CAD drawing provided for easy installation.



SONOCON™

Acoustical Jackets & Lagging

Acoustical Jackets



SonoCon™ series of **Acoustical Jackets, Pipe Lagging** and **Duct Insulation** are fabricated from flexible composite systems. **SonoCon™ Acoustical Equipment Jackets** can be engineered and fabricated ready for installation. **SonoCon™** acoustical composite materials are also available in rolls for field fitting and installation by others.

Each incorporate laboratory tested and rated mass-loaded barriers and acoustically decoupling sound absorptive cores. Used to silence blower casings, valves, compressor housings, ductwork and piping systems, **SonoCon™ Jacketing** systems are available to provide:

- High Sound Transmission Loss (STC) rating 20 dB to 34 dB.
- High Noise Reduction Coefficients (NRC): 0.65 to 1.05.
- Non-combustible per ASTM E84.
- Class A Rated
- USDA Acceptable Acoustical Composites.
- Weather Resistant Composites.
- Corrosion Resistant.
- High Strength - Reinforced.
- Engineered Prefabricated Jackets.
- Composites available in roll form or cut-to-size.

Acoustical Pipe Lagging



SonoCon™ Foil Faced Barriers are used to acoustically wrap metal and plastic duct and piping for both interior and exterior applications. Foil Faced Barriers combine high tensile strength (400 PSI) and tear resistance with excellent sound transmission loss and flammability ratings. The reinforced foil faced tape facilitates quick field installation.

Decoupling sound absorptive layers in 1" and 2" thickness are available as standard sandwich constructions. These **SonoCon™** composites increase acoustical and thermal insulation values and reduce installation costs.

ACOUSTICAL DATA

Sound Transmission Loss (dB)

Frequency (Hz)	125	250	500	1K	2K	4K	STC
FFB	15	16	21	26	33	38	25
FFB 1"	18	18	23	30	39	46	29
FFB 2"	19	20	23	33	44	53	30

ASTM E90 and E413

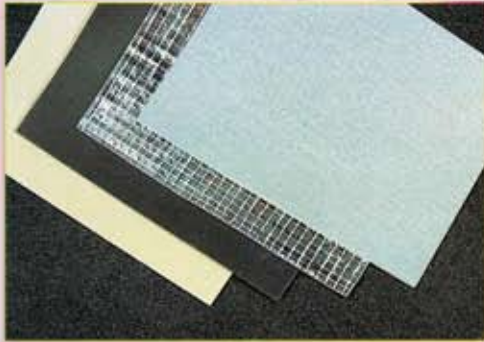
PHYSICAL PROPERTIES

DESCRIPTION	WEIGHT PSF	NOMINAL THICKNESS (IN)	FLAMMABILITY
FFB BARRIER	1.0	.090	UL 94V-VO FMVSS-32
FFB 1" COMPOSITE	1.2	1	ASTM E84; CLASS 1 CLASS A
FFB 2" COMPOSITE	1.4	2	ASTM E84; CLASS 1

SONOCON™

Mass-Loaded Vinyl Barriers

Flexible Noise Barriers



Sono-Con™ flexible noise barriers are available in a variety of styles to meet a multitude of applications.

ACOUSTICAL DATA

Sound Transmission Loss (dB)

Octave Band Frequency (Hz)	125	250	500	1K	2K	4K	STC
BARRIER WEIGHT - PSF	▼	▼	▼	▼	▼	▼	▼
N-50 0.50 lb.	12	13	16	21	27	32	21
N-75 0.75 lb.	13	15	18	23	30	34	23
N-100 1.00 lb.	15	19	21	28	33	37	27
M-75 0.75 lb.	12	14	19	24	30	36	24
<small>M-75 Marine Barrier Bureau of Ships Mil-M-14G Weight 0.75 OSF</small>							

PHYSICAL PROPERTIES

BARRIER CONSTRUCTION	NOMINAL WEIGHT LB/SQ FT	NOMINAL THICKNESS (IN)
NON-REINFORCED	1.00	.084
	0.50	.042
	2.00	.186
REINFORCED	1.00	.090
	0.50	.050
FOIL FACED	1.00	.090
TRANSPARENT	1.00	.160
	0.75	.120
	0.50	.080
CLASS A	1.00	.109
LEAD SHEET	1.00	.020
MARINE BARRIER	.75	.039

SonoCon™ mass-loaded flexible noise barrier materials are an effective tool to increase the sound transmission loss properties of wall and roof constructions, machinery enclosures, pipe and equipment insulation, sound barriers and acoustical enclosures.

Easy to fabricate and install, these rugged products are non-corrosive and resist high temperatures. Mass-loaded acoustical barriers are often used in rigorous or damp environments. For applications requiring high-strength, glass-fiber reinforced products are available which combine high tensile strength materials with the acoustically efficient limp mass-loaded barriers. Other optional features include transparent barriers, foil-faced barrier and aluminized tape for pipe and ducts, and Class A fire rated products for special occupancies.

- Lead and asbestos free
- Sound transmission loss ratings (STC): 21 dB to 34 dB
- Weather and temperature resistant
- Non-corrosive
- Fabricated ready to install
- Wide variety of styles

SONOCON™

SoftWall Noise Barriers

Flexible Transparent Barriers

SonoCon™ flexible transparent barriers are extremely versatile and are recommended for use as hanging thermal barriers in openings where environmental control is desired and as hanging acoustical barriers in openings where noise control is the objective. Because of their transparency, they also provide excellent visual monitoring wherever they are used, minimizing the possibility of accidents.

When used for noise control, the tough, smooth-edged panels can significantly reduce noise from one area to another. The flexible transparent barriers have an STC rating up to 26. They are safe, non-toxic, easy to fabricate and install and can be cut with a knife or scissors.

When used as thermal barriers, the flexible transparent barriers retain heat in warm areas or reduce the escape of cold in refrigerated areas to significantly lower energy costs.

Other applications include:

- Conveyor openings
- Exterior entries
- Refrigerated trucks
- Press rooms
- Welding areas
- Car washes
- Production and assembly lines.



ACOUSTICAL DATA

Sound Transmission Loss

Octave Band Frequency (Hz)	125	250	500	1K	2K	4K	STC
BARRIER WEIGHT - PSF	▼	▼	▼	▼	▼	▼	▼
0.50 lb.	8	13	17	22	27	31	20
0.75 lb.	11	16	20	25	30	34	23
1.00 lb.	14	19	23	28	33	37	26

ASTM E-90

PHYSICAL PROPERTIES

DESCRIPTION	ASTM TEST PROCEDURE	STANDARD	USDA APPROVED
Tensile Strength	D 412	2500 PSI	1900 PSI
Tear Resistance (lbs./in.)	D 1004	300	225
SELF-EXTINGUISHING			
Brittleness	D 746	-55°F (-48°C)	-74°F (-59°C)
Luminous Transmittance	D 1003	80-90%	70-80%

Data represents typical values obtained in tests performed in a laboratory environment and should not be considered as a material service specification.

15'-0" high SonoCon™
acoustical enclosures and
equipment ventilation systems
isolate community from
vertical turbine pump noise.



Product testing prior to shipment in SonoCon™
acoustical chamber.



Compressor set is shipped with SonoCon™
acoustical jacket for installation at refinery.



Banks of pumps are enclosed with SonoCon™
self-ventilated acoustical enclosures.



Gas turbine standby generator is fitted with
new SonoCon™ turbine exhaust silencer.



SonoCon™ factory fabricated acoustical enclosure and
silencer systems are assembled on site.


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