



ACOUSTICAL | SURFACES, INC.

Common Noise Problems and Helpful Product Solutions

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Sound is a significant part of life and over time you will realize that it is a double-edged sword. Sound can be beneficial, as when communicating with others or delighting in musical compositions, but it is also potentially detrimental. Unwanted sounds can interfere with daily life—these sounds are commonly referred to as noise.

Noise can affect people negatively in different settings. In homes, noise can add difficulty to sleeping, which can lead to various health issues. In schools, noise can interfere with the respective teaching and learning processes of instructors and students. In music studios, noise can lead to sub-par recordings and loss of revenue.

Noise is more than just an occasional annoyance; it can be dangerous. Working at construction sites or manufacturing plants requires the utmost concentration from employees. Noise can cause non-repairable hearing damage and be a cause of general body fatigue. It can also cause on-site confusion that can result in poor production affecting value of goods, serious injury, or worse.

Noise reduction can help to improve employee mood and increase general productivity. The experts at Acoustical Surfaces, Inc. specialize in noise reduction and acoustical treatment. We are here to help you ease the burdens caused by unwanted sound. This guide will discuss a variety of noise problems and offer solutions depending on your particular scenario.



Outside Noise vs. Inside Noise

In the interest of attempting to keep things simple, we have broken different types of noise problems into a few main categories. The first criteria for simplification of products to fix your noise problem is the location of the problem. Is this a problem happening inside of a building or outside in the elements.

In order to determine the best way to approach a noise problem, one must critically inspect and understand the nature of the problem. Having a clear understanding of the type of noise you are trying to reduce is important. Exterior noise problems are often situations where the noise is coming from one specific location like a loud piece of machinery or equipment.

Outside Noise

Even though all situations are slightly different, most exterior sound problems are treated in similar ways. To further simplify selecting the correct product for an acoustical problem where Mother Nature comes into play, the number of products that are able to withstand the weather (specifically significant amounts of U.V. exposure) are relatively limited. Below you will find a list of products that will either block noise, absorb echo/reflections off of a hard surface or both.

[Acoustical Surfaces](#) products available that are easy-to-use and install:



[Echo Barrier](#) is a lightweight noise absorber that boasts both high durability and acoustic performance. Echo Barrier has a unique roll-up design, can be stacked to improve absorption, and are able to be used temporarily through a rental agreement which is a first in the acoustics industry. Echo Barriers are fire retardant and only require one person to install; you can also add special messages or company branding to them. These panels are in stock and are excellent for jobs that require acoustical treatment as soon as possible.





Quilted Curtains are a custom made and extremely effective means to suppress outside noise. Quilted Curtains are composite products that are made with fiberglass as an absorber, a dense vinyl layer as a noise barrier and quilted with a U.V. Stable vinyl. We also offer a Quilted Fiberglass Absorber where the noise-barrier is not needed. These blankets are used to reduce reflected noise off of hard surfaces like concrete block. Both the sound-barrier as well as the absorber-only option are useful for an array of noise issues pertaining to machines and various work enclosures.



Sound Silencer™ is a unique acoustical panel that can be installed on to walls or ceilings. It is a material made out of a Porous Expanded Polypropylene (P.E.P.P.) and has a Class A fire rating from the American Society for Testing and Materials (ASTM). As per ASTM Standard Test E 48-14, the classification of being Class A means that it has a low flame spread and level of smoke development. It is also resistant to water, moisture, impact, bacteria, and fungi.

Sound Silencer™ panels have both STC and NRC properties. Sound Transmission Class (STC) ratings measure a material's resistance to airborne sound and ability to impede noise transmission through an object, while Noise Reduction Coefficient (NRC) ratings measure how absorptive a particular material is. Better ratings in these categories lead to better noise reduction.

Inside Noise

The first question you need to consider when treating a noise problem inside of a building is to determine whether you are trying to reduce the echo within a room or block the sound entering or leaving the room. Of course there are situations where both are desired, but for simplicity's sake, let's approach these two issues one at a time.

Reducing Echo within a room

If you've even been inside a large gym, swimming pool or racquet ball court you are already an expert on reverberation – you just don't know it yet. Technically speaking, an echo is different than reverberation. Reverberation is something that takes place inside of a room where sound bounces off of surfaces that are relatively close to you. An echo is a reflection of a sound wave from a surface that is much further away than a wall or ceiling in a standard room. By the time your brain hears the sound of an echo, it has “forgotten” about the initial sound. This is why an echo heard outside is not nearly as bothersome as a reverberation issue within a room – an echo doesn't confuse your brain like reverberation can.

When thinking about a noise inside of a room, it is important to understand that sound travels at approximately 1,160 feet per second which is pretty fast. It is also important to think about sound as an “explosion” type of energy pattern rather than that of a laser-like straight line. Imagine standing inside of a racquet ball court and clapping your hands once. In less than one second, the energy of the clap has bounced off of the walls, ceiling and floor ~50 times within one second of your clap. The sound has filled the room and has hit your ears 50 different times from thousands of different directions in less than a second.

Choosing the best type of acoustical treatment for your situation depends on the type of room that you are working with as well as the main use or uses for that room. It is also important to think about the type of noise that is problematic in the space. For instance, the noise found in a busy restaurant is significantly different than that of a high school band practice room. With that in mind, the best panel for a restaurant is not likely to be the best product to install in a band room. It is also important to understand that in rooms that have either amplified sound or a significant amount of low frequency follow their own set of rules and it is best to consult with one of our experts to discuss the details specific to these types of settings.

Residence/Classroom: Whether you're at home or school, noise can be disruptive and cause discomfort or even anxiety. Although these rooms are used for different activities, both places are generally treated with similar products. If you have noise issues inside your home or classroom, consider using the following products:

- Fabric Wrapped Fiberglass panels
- Echo Eliminator panels
- Sound Silencer panels
- WallMate Stretch-wall system an Echo Eliminator
- PolyMax panels



Office/Business Conference Rooms/Church fellowship halls: Clear communication and understanding speech is extremely important in rooms like these. These types of rooms are best suited not only with products that have high absorption coefficients but those that offer decorative, specific and finished aesthetics.

- Fabric Wrapped Fiberglass panels
- WallMate Stretch-wall system an Echo Eliminator
- Ceiling Clouds
- Echo Eliminator panels
- Sound Absorbing Foam
- Sound Silencer panels
- PolyMax panels

Restaurants/Bars/Salons: These types of spaces need to be approached very specifically as the feeling or vibe offered by the environment (as well as the aesthetic) is very important to the business owners. Hundreds of hours and thousands of dollars are spent designing these types of spaces with a very specific goal in mind. Furthermore, acceptable reverberation times and noise levels are VERY different depending on the type of bar or type of restaurant being treated. Owners want a fun, lively vibe in a sports bar, while a fine dining restaurant requires a much softer acoustical signature.

- Fabric Wrapped Fiberglass panels
- Echo Eliminator panels
- Sound Silencer panels
- WallMate Stretch-wall system an Echo Eliminator
- PVC/Sailcloth Baffles
- Echo Eliminator Baffles
- PolyMax panels
- Ceiling Clouds

Gymnasium/Cafeteria/Warehouse/Swimming Pool: The building materials used to construct rooms like this combined with the very large room sizes create spaces with moderate to severe reverberation problems. Generally speaking, use of the following products can help to absorb the sound pressure in rooms like these:

- Echo Eliminator panels
- Sound Silencer™
- Ceiling Clouds
- Fabric Wrapped Fiberglass panels
- PVC/Sailcloth Baffles



Home Studio/Home Theater: Rooms such as home theaters, listening rooms or home studios need to be approached as individual spaces that require treatments that are as individual as the people that are going to be using them. These are spaces where exact placement of proper products is critical to an optimal outcome. Rooms that have such specific needs should be discussed with one of our trained experts, but below are a few products to consider:

- Fabric Wrapped Fiberglass panels
- Echo Eliminator panels
- WallMate Stretch-wall system and Echo Eliminator
- Curve Diffuser panels
- Bass Buster low frequency absorbers
- Sound Absorbing foam

Medical field / food preparation: These types of spaces are unique in the requirements that are needed for acoustical treatment. Products that particulate and products that cannot be easily cleaned should not be considered for environments like this. Because most surfaces that offer absorption are porous and soft, all of the products below are faced with something that encapsulates particles and can be relatively easily cleaned.

- Fabric Wrapped Fiberglass panels with washable fabric or vinyl facing
- PVC baffles or wall panels
- Ultra-San Wall or Ceiling tiles
- Silk Metal panels
- Sound Silencer panels

Blocking sound / reducing sound transmission / soundproofing a room

The term “soundproofing” has quite a few different meanings so in the interest of clarity; let’s temporarily define this phrase as limiting or reducing the transmission of sound from one space to another. Eliminating or reducing sound transmission can be a much more complicated and involved process than reducing the echo within the room and should be approached as such.





Windows: Because windows have less mass than the wall around them and considering they are able to be opened and closed, they are usually the first place to start when you are trying to reduce sound transmission. If you are not able to use your ear to critically listen to detect a problem, you can also use your hand to check for air flow around the window's edges. If you can feel any air, or if your ear tells you that the noise is louder near the edges of the window, the [Climate Seal Window Insert](#) is an ideal product. These windows are made with a quarter-inch thick piece of clear acrylic and framed with a magnetic bellows similar to the seal around a refrigerator or freezer door.

They are lighter than many competing glass products—making installation safer and easier. These inserts are low-cost, easy to install, require simple [maintenance](#), and can reduce a significant amount of noise.

Another product that has been used to reduce the amount of sound coming through a window is the [BSC-25 Quilted Curtain](#). Although the name of the product includes the word curtain, these are not traditional window treatments by any means. They are constructed with two layers of fiberglass on either side of a dense, heavy vinyl that has much of the same properties as lead. They are then wrapped in an industrial grade PVC facing and stitched like a moving blanket. They will have grommets across the top edge and vertical hook and loop on the left and right edges if needed.

Walls: There are two different ways to approach a situation where sound is leaking through the wall – modifying the construction of the wall or adding panels to the existing wall. A construction based approach where you are able to modify the assembly of the wall will ALWAYS out-perform a surface treatment. Here are a few products to consider if you are able to add or modify the wall assembly:

- [RSIC-1 clips](#) (Resilient Sound Isolation Clips) are essentially shock absorbers that float a hat channel/furring channel and the drywall off of the face of a stud. They can be used to dampen sound transferred through walls as well as floor/ceiling assemblies. Because they decouple the wall assembly, they can add a SIGNIFICANT amount of STC points to the assembly of a wall without adding much overall wall thickness.
- [SoundBreak® XP®](#) is gypsum board acoustically enhanced for use in wall or ceiling assemblies. These boards have a high-density core and proprietary outer paper that is highly resistant to abrasion, moisture, and fungi.



- [UltraTouch™ Denim Insulation](#) Is not, by itself a sound barrier but it will improve the overall performance of a wall assembly. It is made from 80 percent post-consumer recycled denim and is friendly to the environment and people alike. This insulation contains natural fibers and no formaldehyde or other harmful chemicals or irritants, making it safe and soft to the touch. UltraTouch™ Denim Insulation meets the highest ASTM and EPA standards.

- [Green Glue](#) is a non-toxic viscoelastic damping compound that is simple and easy to apply. It is intended to be used between two layers of drywall and is ideal for situations where one does not want to do any demolition. Because the product remains viscos, it dampens the vibration of the wall assembly much like the way a bell or drum symbol is silenced when held by someone's fingers. Be aware Green is not odorless, and you should properly ventilate the application area.

If you cannot modify the wall where the sound leakage is occurring, you can add the following products to increase overall STC ratings:

- [Sound Silencers™](#)
- [Melamine Composite Sound Absorbing Foam](#)
- [Fabric Wrapped paneling](#)

Ceilings: Two types of sound problems can afflict ceilings: airborne noise and impact noise.

Airborne noise (people talking, radios, TV's, etc.) occurs when sound waves travel through the air and come in contact with a building element, which then travels through the structure as a vibration. Although this type of energy is not as nearly as violent as impact noise, these vibrations can sometimes transfer to different parts of the building.

Impact noise stems from the impact of an object on any particular building element, such as walking, jumping, or even the impact of falling objects on the ground.

- **Airborne Sound > Drop ceiling tiles:**
 - Noise Barrier ACT tiles
 - Echo Eliminator 8lb Composite behind ceiling tiles
 - SoundBreak XP behind ceiling tiles
 - Barrier Decoupler behind ceiling tiles



- **Airborne sound > Sheetrock ceiling:**

- RSIC-1 Clips
- Green Glue Dampening Compound
- SoundBreak XP

- **Airborne Sound > Exposed joists:**

- If you have exposed joists and you either do not want to or can't cover the ceiling, there is not much that can be done. You need to modify the ceiling in some way to block sound.

- **Impact Sound > Drop ceiling tiles:**

- Neoprene Isolators
- Spring Isolators

- **Impact Sound > Sheetrock ceiling:**

- RSIC-1 Clips
- Green Glue Dampening Compound
- SoundBreak XP

- **Impact Sound > Exposed joists:**

- If you have exposed joists and you either do not want to or can't cover the ceiling, there is not much that can be done. You need to modify the ceiling in some way to block sound.

Floors: Floors are constantly being bombarded with impact energy. The most effective way to reduce impact energy from disturbing people on lower levels is by including an underlayment into the floor/ceiling assembly. Each of the underlaments below have their own respective advantages and disadvantages, but generally speaking, products made out of rubber will offer higher performance than their competitors.

- 3/8" Acoustik
- Quiet Floor NP
- Duracoustic
- Quiet Floor

Acoustical Surfaces will help you fight Noise Problems

Noise problems are unfortunate occurrences in life that can be frustrating, but they are not beyond control. Our knowledgeable at [Acoustical Surfaces, Inc.](#) is willing and eager to help you reduce unwanted sound in your life. Spend less time worrying about noise and focus on what matters most to you.

If you have a specific problem you would like to ask our experts, [tell us about your noise problem through our website](#), or give us a call on our toll free helpline at 1-800-854-2948.