

Why we use foam for controlling studio acoustics?

The goal of acoustical treatment is to eliminate problems from parallel hard surfaces that reflect sound waves. Although architectural solutions such as concave or angled walls can help in reducing acoustical problems, a more practical and cost-effective solution is to treat existing room surfaces with sound absorbing materials, such as Sonex™ acoustical foam.

In what problem areas is Sonex™ foam effective?

Sonex™ foams offer sound absorption, room reinforcement, noise reduction solutions for home theaters, recording studios, listening rooms and more. After properly installing Sonex™ acoustical foam you will experience the following benefits.

1. Reduction of slap echo
2. Lowering of noise levels
3. Suppression of room flexure
4. Elimination of standing waves
5. Reduction of near-field reflections
6. Smoothing of frequency response

Why not use acoustical tile or cork?

The answer lies in frequency selectivity. While all materials absorb at some frequencies better than others do, very few products have controlled selectivity. Most materials have sharply rising and falling absorption patterns that change abruptly. Sonex™ acoustical foam, on the other hand, is almost totally absorptive over a wide range of frequencies. Simply put, there is no other material that offers all of the advantages of acoustical foam. Please see the data sheets for each individual product to view the NRC (Noise Reduction Co-efficient) for each product.

Improvements in sound quality you can count on when using acoustical foam.

A quieting device – The excellent absorbing qualities of Sonex™ acoustical foam makes it perfect for reducing ambient noise levels in your listening room. It will keep obtrusive and unwanted noise problems to a minimum. Low-level musical

passages become more realistic and easier to hear. Benefits to the listener: better clarity and increased dynamic range.

Reduction of slap echo – slap echo is defined as mid to high frequency, long duration reflective information caused by sharp transient signals reflecting off of hard parallel surfaces. Clapping your hands together in a live room environment can easily identify slap echo. The frequency and duration of the effect will vary from place to place within the room, depending on the listener's location to the reflective surface areas. Slap echo problems cause smearing of high frequency information due to reflective delays. Slap echo tends to make a live room sound louder to a listener than the actual sound level of the music. Higher sound pressure levels will become irritating and obtrusive to the listener. Sonex™ acoustical foam can minimize these slap echo problems. Benefits to the listener include – reduction of hardness, louder playing levels and increased clarity.

Reduction of near field reflections – while slap echo effects are caused by parallel surfaces far away from the listener, near field reflection problems are caused by hard surfaces situated close to the listening area. These reflections cause a smearing of the sound and confuse imaging and other location information. Sonex™ acoustical foam can isolate the listener from these reflections by absorbing them completely. Benefits to the listener include – better imaging and elimination of “edginess”.

Suppression of room flexure – most rooms act as resonators or sounding boards. The walls, floor and ceiling act in similar fashion to that of a drumhead, sending resonated frequencies back to the listener. The density, volume and stiffness of a wall will cause every wall to reverberate at a different frequency. The majority of these flexures are at a lower frequencies resulting in the reinforcement of bass fundamentals. This leads to an imbalance in frequency response. Nor are these resonances of a musical nature. Rather, they contribute a boomy, bass-heavy quality to the sound. This is especially true with speakers that have extended low frequency capabilities. When applied to your walls Sonex™ acoustical foam can eliminate a great deal of room flexure problems by both absorbing sound waves before they reach the wall and by acting as a damper to shorten and quiet resonating wall movements. Benefits to the listener – smoother frequency response, crisper, more taut bass fundamentals and reduction of feedback.

Elimination of standing waves – a common problem with any enclosed space is standing waves. Every frequency has its own wavelength. Higher frequencies have wavelengths that are only inches long, while lower frequencies have

wavelengths that can run many, many feet long. In simple terms, standing waves are propagated when a certain wavelength coincides with a room boundary. Rather than reflect, the wave “stands” causing an imbalance in frequency response. A standing wave will reinforce certain frequencies and cancel out others. A spectrum analyzer will show a standing wave as a sharp hump or glitch in frequency response, which will disappear as the analyzer is, moved a foot or two forward or backwards. The installation of Sonex™ acoustical foam can remove many standing waves and when placed properly can help to eliminate standing waves at very low frequencies. Benefits to the listener – smoother frequency response and taming of heavy bass fundamentals.

Acoustical Solutions, Inc.
2852 East Parham Rd., Richmond, VA 23228
Ph: 800-782-5742 fax: 804-346-8808
www.acousticalsolutions.com