

# Acoustic Fields Sound Absorbers & Sound Diffusers

Gene Pitts



**R**IGHT HERE at the top of this review, I need to perform an appropriate amount of public disclosure, that *The Audiophile Voice* is trading advertising space for product samples to be used in the home listening room of the editor, Gene Pitts. This present review would have been done whether the firm had placed ads and regardless of method of payment for ad space.

There is a poorly recognized bit of audio knowledge, i.e. that the biggest single source of audio distortion isn't in any of the gear or media brought into the listening room. In fact, almost all the forms of gear you may buy will not help you deal with this difficulty. That distortion source literally is your listening room. You should work on it. Its irregular frequency response,

which echoes different instruments unevenly, is difficult to tame, harder still to make into a friend of music. It is the essence of the reason why ancient Greek open-air theaters are still used and why the good current acousticians are paid huge sums to design major products and far too often still get it wrong. It is why most all major halls for classical music use amplified public address speakers to “help” the musicians. It is why there is a highly trained person on the house sound board who equalizes the signal going into the hall. I asked one why the knobs couldn’t just be set and left the same from night to night, and he told me that it was because the audience in the hall was different each night.

Consider. What we all are trying to do is a form of time-space transport, of magic, of illusion – to move musicians from the recording venue to our listening room (or vice-versa). Both recording engineers and audiophiles commonly concentrate on the timbre of the instruments, of voices, of gear for reproduction, and too-frequently ignore the characteristic sound of the original recording venue over and against that individual sound in the place of reproduction.

There is an assumption that the “original place” will come along and be there during reproduction. Not so. What this leads to are complaints of “Doesn’t sound right!” about important performance arenas such as Carnegie Hall and Fisher Hall at Lincoln Center in New York City. I remember going to an evening concert by Bob Dylan and The Grateful Dead at Giants Stadium in the Meadowlands, and hating the fact that I couldn’t understand the lyrics at all. Too much echo, too much reverb, and that stuff wasn’t being added by the sound reinforcement guys at the stadium. It was what sound does naturally in that place.

In my own home listening room, which is 33 feet long and seven high while ranging from 12 to 14 feet wide, I had some pieces of two-inch thick egg-crate foam “melt” down from the ceiling the summer of 2010. It had been tacked up there to catch the first reflection from my loudspeakers and thus fool my ear-brain sonic computer into thinking that there was an additional space down there beyond the end wall. It had done a good job for at least a decade. After the foam came down, the “how big?” of my room collapsed toward my usual listening spot at about the middle of the room. There was also an unfortunate shrillness added on many recordings.

Just about that time, as I was wondering where to buy some more foam, I was reunited via e-mails with the principal of Acoustic Fields. Back in the middle of 2008, we’d corresponded about subscription rates and he’d asked what I thought about the commercial viability of sonic treatments for recording studios and other pro sound places. So, given my current need, I asked for more information and one thing led to another, with this review as one of the out-comes.

The foam on my listening room is considered “semi-permanent” as my wife and I are in a long, slow downsizing which is what empty-nesters do. I am certain other audiophiles of the Classic Era will empathize. My notion is that the new foam needed to be easy to stick up on a wood ceiling made of pine wood. That was not my wife’s notion, and when she saw photos like the lead pic for this review, I realized how far the raw foam was from the “good stuff” Acoustic Fields usually sells. As much as a four or five to one difference in Wife

## QDA Diffusers



In Acoustic Fields’ lingo, QDA stands for quadratic diffusor absorber. The bottom of the unit directly below the diffusor incorporates their 30 Hz - 50 Hz, low-frequency absorption technology using activated carbon filters inside. They take 35 pounds of activated carbon and arrange individual filters inside the bottom cavity which is designed like their individual, low-frequency absorber called the ACDA-12. Inside and directly behind the deepest trough in the diffusor section are two more activated carbon filters which cause the diffusor to not only diffuse but absorb a broader band of absorption which is the same as their ACDA-10, 30 Hz - 100 Hz.

Thus, a user can choose to have quadratic diffusion from about 300 Hz on up to 3,500 Hz. This can do wonders for perceived accuracy of midrange (vocals), sound stage presentation and instrumental separation (air), particularly when coupled with low frequency absorption from 30 Hz - 100 Hz. I believe that this arrangement of middle and high frequency diffusion and broadband low frequency absorption has never been done before in a commercially available product.

The photo above is two vertical units with a horizontal unit below the two vertical units. A vertical diffusor diffuses sound in a horizontal, fan-like, energy array. A horizontal diffusor diffuses energy in a vertical, fan like, energy array. Thus, one can create two dimensions of diffusion in a room. It is an extraordinary experience, akin to listening to a concert in, say, the best hall in Boston or Chicago or Vienna. *Gene Pitts*

Acceptance Factor. I had used graphic arts push-pins on the earlier foam; the new foam from Acoustic Fields was rather denser and heavier and, more importantly, too thick for the standard push-pins to work. I wound up using some super-sized push pins, about five times larger, and these worked well.

What I should have done was follow the standard or more-permanent technique which has the foam inside a sort of window frame, with a sonically transparent scrim covering, something like a speaker grille cloth. The

Dickreiter's "Tonmeister Technology" from Temmer Enterprises (you'll probably have to look for a used copy), Jens Blauert's "Spectral Hearing" from MIT Press, "Recording Studio Design" by Philip Newell from Focal, Don Davis' "Sound System Engineering," and Glen Ballou's Handbook for Sound Engineers: The new Audio Cyclopedia" from Howard W. Sams. These can be heavy, heavy reading, and I remember slogging through Blauert at a best-rate of a page per session. It's worth the effort.

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## What you hear when using foam absorbers, such as these from Acoustic Fields, is MUCH less distortion and MUCH more of the original recording venue.

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whole would be attached to wall or ceiling. Both my friend at Acoustic Fields and I thought this would be somewhat too heavy to attach to my listening room ceiling, and since I do not envision a permanent placement of the echo catcher, I chose to go with the large push-pins. At least, the stuff is where it can work.

However, take a look at the photos of the more finished versions from Acoustic Fields. I believe they will achieve the highest "Décor Score" yet recorded, and thus can be placed in all but the toughest rooms in, say, "Architectural Digest." For those locations, one needs to think about having these panels being built into the appropriate part of the walls and ceiling. The panels will be there, but they do not have to be obtrusive.

What I am surprised about, surprised and very pleased, is that the Acoustic Field's foam seems to work over a wider range of relevant frequencies than the older foam did. There seems to be more absorption, too, so that the apparent "hall" being reproduced pushes the listening room wall behind the speakers further away. (Yeah, I know that is strange talk, but that is pretty close to what I hear.) I think, too, that the tones soaked up by the Acoustic Fields foam are taken up pretty evenly, that is all at about the same rate. There does seem to my ears to be some fall-off of this echo-grabbing at the top and bottom of the audible spectrum. Both of these were characteristics of the previous foam.

This seems to make sense according to the guys I regard as the best technically. Dig around in Michael



**The Editor's trial run at putting up the basic foam in his listening room. It failed to achieve a high enough Décor Score.**

One of the things that surprised me most about listening rooms was that the wall and ceiling materials made SO much difference in the resulting room sound. Frequently, the sound at the main listening position is influenced more by whether the walls are of wood or sheet-rock or glass (as from a window) than by the room's dimensions. How strongly the walls are braced plays a big part, and if you think about it, you'll probably be able to quickly understand why walls and ceilings can "pump" when pushed by even a medium kettle drum "thunk."

You don't have to have your whole listening room covered with foam panels. You do need to put it in the right spots, so that it catches the first reflection. There are some room treatments which are intended to be placed in specific locations out in the listening room. The Acoustic Field's panels are made with a different idea in mind, to catch that initial bounce, and I think this method is easier to live with over the long term and are easier get placed properly.

Now, I know you may not initially buy into the idea of your room being the main source of distortion in your listening system, but you may wish to look closely at the notion. Maybe 30-40 years ago, there was a guy named Bob Berkowitz at Acoustic Research who had 10 channels of sound amped into the listening room, using suitable delays. It was something like the current 5.1 systems but had a second level of speakers up at ceiling height. Tom Holman's THX system brought multi-channel theater systems into the home listening room, again using delays for the sides and rear. So did SACD and DVD-A. In the middle 1970's, the quadraphonic systems from Columbia and RCA and Denon all tried to get more sound sources into the listening room. In my not-so-humble opinion, the main idea for each of these systems was to overcome the home listening room's inherent distortions. In addition, the multi-channel systems provide the listener's ear-brain computer with directional clues that are hard to "fake" in any other way. If the listening room is getting in the way, by fooling the ear with false sound bounces and wrong frequency information, there is little or no way such distortion can be overcome.

It is simply best to grab it and stuff it into absorbent foam like that Acoustic Fields uses. Check it out. I think it is extremely cost-effective.