

## StudioPanel™ Acoustics Troubleshooting Guide

Here's the most frequently asked questions and answers on Project Studio Acoustics

**Q:** My mixes don't sound the same when I bring them to other studios. Why?

**A:** You're not hearing reality. The acoustic imprint of your room is distorting your sound. You need to take control of the sound reflecting around your room with the proper balance of absorption, diffusion and bass trapping.

**Q:** Why does the bass in my room sound bloated? I can't rely on it to balance my mix!

**A:** All small to mid sized rooms will have bass standing wave resonance problems. Some are worse than others. Standing waves will lengthen the decay time of some bass notes by as much as two seconds; that's huge! Standing waves can also completely kill the level of those notes to the point that you don't hear them at all at some places in the room. Your solutions include bass traps using the SpringTrap and Bazorber panels. You should also find the best places for your speakers and your seating position. We also suggest using room correction equalization to touch up the remaining issues.

**Q:** Why are the sound images in my room so vague? I can't hear the phantom center between my two speakers

**A:** The total sound reflection level in the room can actually be louder than the direct sound level from your speakers. Also, reflections from walls can cause destructive interference with your speakers' direct sound. You have to take control of those destructive reflected sounds. The right amount of absorption and diffusion should tighten up the soundfield and give you that rock-solid phantom center image you deserve.

**Q:** Why is the front-to-back integration in my 5.1 channel monitoring system very poor?

**A:** Humans have a real hard time with front-to-back images. That's because our ears are glued onto the sides of our head, giving us strong lateral imaging capability and poor front-to-back imaging. Adding the right amount of diffusion in the room, coupled with proper speaker placement and proper calibration will solve your problems

**Q:** How many square feet of absorption should I put in my studio?

**A:** That depends on three variables: The room volume, the target reflection decay time, and the type of absorption material. Given a room volume, recent research shows us that there is a most desirable target decay time:

$T = 0.3 (\text{Room Volume}/3532)^{1/3}$ . Once you know the absorption coefficient of the material you can calculate the square footage needed by using one of the commonly accepted prediction equation. The most accurate one is the Arau-Puchades equation that looks like:

$$RT = \{0.161V/[-S \ln (1-a_x)]\}^{x/s} \times \{0.161V/[-S \ln (1-a_y)]\}^{y/s} \times \{0.161V/[-S \ln (1-a_z)]\}^{z/s}$$

StudioPanel absorbers have an absorption coefficient (a) of 1.5 in the midrange so have fun...

Good news is that we ran the calculations for a whole range of room sizes, and all you have to do is look up the size chart for our results. Phew!

Q: I put up a whole bunch of 1" Polyurethane foam sheets on the wall, but my sound is really not right; why?

A: Two reasons: First, thickness affects the frequency range of effectiveness of the absorbers. 1" foam works well down to 1.5kHz then gradually loses effectiveness. You really need to absorb frequencies down to 250Hz for adequate control of the room reflections. Second, the density of foam sheets is pretty low, so the low frequency behavior is limited at best. Dense mineral wool/fiberglass composites, such as in StudioPanel, are a better way to control the full range of reflection frequencies in your room.

Q: I put up foam-based traps in the corner of my room, but the bass still isn't "tight"; why?

A: The corners of rooms are where bass acoustic pressure is the highest. Foam products are frictional absorber types that are designed to scrub off sound energy where the acoustic particle velocity is the highest, and the pressure is therefore the lowest. So foam traps don't work in corners... You need pressure absorbers such as diaphragm, piston, and Helmholtz resonator based units. The StudioPanel SpringTrap and Bazorber units are based on these methods and are very effective in or near corners of the room.

Q: Will my room smell bad with StudioPanel?

A: Absolutely not. StudioPanel products don't emit any noxious gases, and don't smell at all. Enjoy some fresh air and some clean sound!

Q: Why do you not put absorbers or diffusers behind the main speakers in StudioPanel layouts?

A: Low frequency sounds are mainly what wraps around the speakers and go to the front wall. Regular absorbers and diffusers are ineffective in treating bass sounds. Bazorber and SpringTrap units are designed to control low frequencies and that's why they are placed along the front wall.