

Acoustics in Music Practice Rooms

Application Note 0601

- 1) Introduction: Music lesson and practice rooms have several acoustic requirements:
 - a. They should provide reasonable sound isolation
 - b. They should be free of echoes
 - c. They should be quiet and comfortable spaces

MSR offers several solutions for the three above criteria

- 2) Sound isolation: A lesson or practice room should be isolated from its surroundings so as to provide privacy and reduce distractions. Isolation is achieved through a series of strategies. These are suspension, damping, adding mass, and sealing all gaps. A typical wall made of drywall and studs provides isolation of about 40 decibels in the mid frequencies and only 10 decibels in the low frequencies. This means that a drummer playing at peaks of 100dB in one room would result in snare drum sounds of 60dB in the neighboring room and kick drum hits of 90dB. Clearly, a traditional wall isn't sufficient!

A better wall structure, using visco-elastic polymer damping compound would result in 50dB of sound isolation. This is sufficient for typical acoustic instruments. An even better structure using suspension bushings and damping compound would result in 65dB of isolation. This is adequate for amplified and percussion instruments.

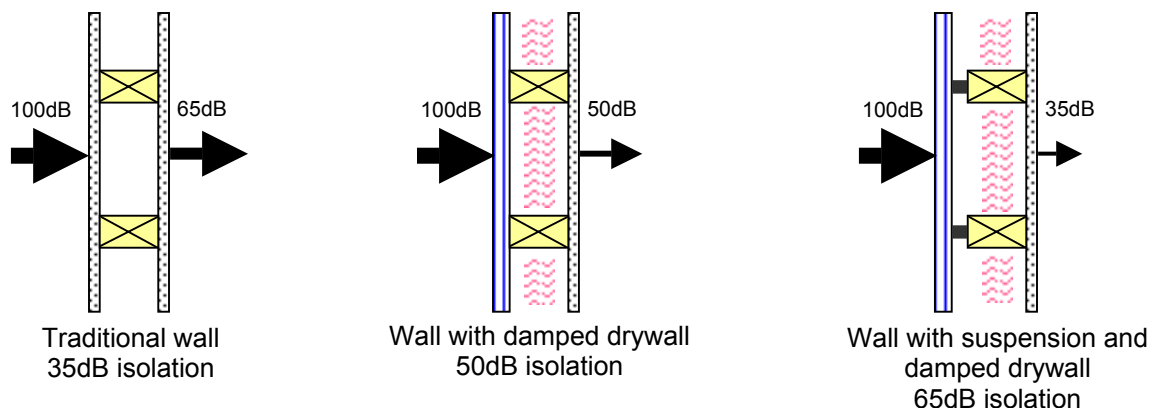


Figure 1: Wall isolation specifications for three types of structures.
Also shown is the isolation effect of wall on a 100dB sound.

MSR can supply the visco-elastic drywall and suspension bushing for your project.

- 3) Echoes and sound reflections: A room with hard surfaces will reflect sound, much like a mirror will reflect light. Some sound reflection is good for a sense of presence but too much is fatiguing and distracting. Sound reflections and echoes should be reduced and controlled. Absorption and scattering are two strategies for reducing echoes and reflections. In either case the solutions consist of surface treatments applied to the walls.

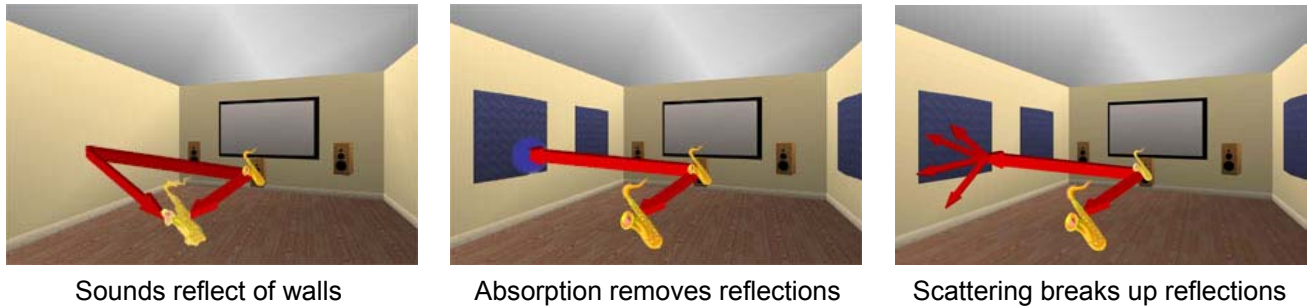


Figure 2: Treatments to reduce sound reflections: Absorption and Scattering.

These treatments are available from MSR in a wide variety of forms, sizes and colors.

- 4) Noise control: There are several sources of noise in a room. The most typical is the heating, cooling, and ventilation system. The noise generated by the fans and the air rushing through ducts can be reduced by the use of duct silencers. Silencers can also reduce the sound bleed-through between rooms on a joined HVAC system.



Figure 3: An inline duct silencer

Silencers can easily be retrofitted to the ducting system. MSR has several models available to fit your needs