

Acoustics in Music Practice Rooms

Application Note 0801

- 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 in order to provide privacy and reduce distractions. Isolation is achieved through a series of strategies, including suspension, damping, adding mass, and sealing all gaps. A typical wall made of drywall and studs provides about 40 decibels (dB) of isolation in the mid frequencies and only 6dB in the low frequencies. This means that a snare drum hit of 100dB in the practice room would still be 65dB in adjoining rooms, while a 100dB kick drum hit would only be attenuated to 94dB! 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 60dB of isolation. This is adequate for amplified and percussion instruments.

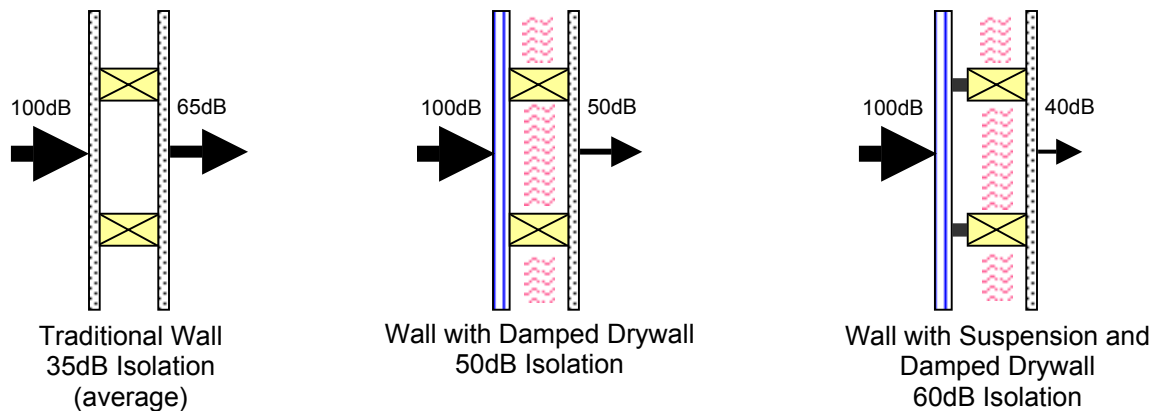
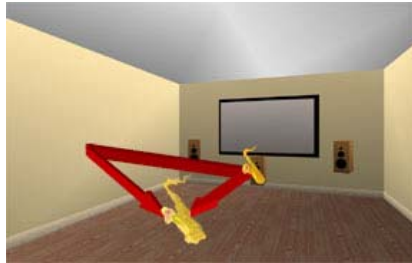


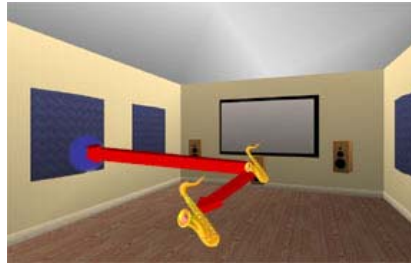
Figure 1: Wall isolation specifications for three types of structures.
Also shown is the isolation effect of each wall on a 100dB sound.

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

- 3) Echoes and Sound Reflections: A room with hard surfaces will reflect sound, much like a mirror reflects 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.



Sounds reflect off walls.



Absorption removes reflections.



Scattering breaks up reflections.

Figure 2: Absorption and scattering treatments to reduce sound reflections

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 common 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 serviced by the same HVAC system.



Figure 3: An inline duct silencer

Silencers can easily be retrofitted into an existing duct system. MSR has several models available to fit your needs.