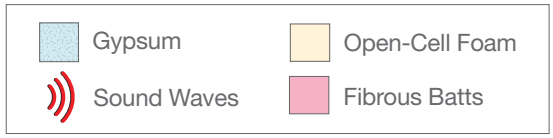
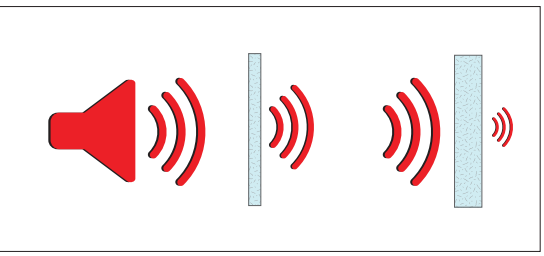
HUNTSMAN
BUILDING SOLUTIONS

BASICS OF ACOUSTICAL CONSTRUCTION

Improving the Sound Control of Walls

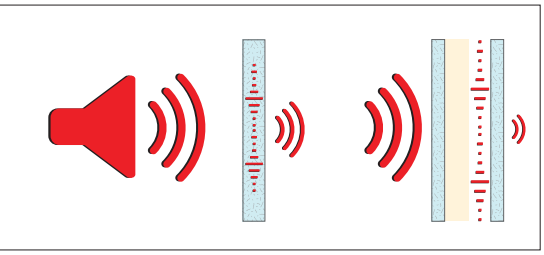
There are four basic elements to improving the comfort of a room by reducing unwanted external noise:





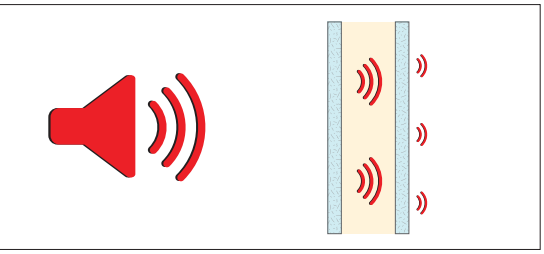
Increasing the Mass

By increasing the mass; or weight, of a wall you can decrease the amount of unwanted noise. It is typical that by doubling the weight of a wall you can attain a sound transmission loss of 5-6 dB. Using 5/8 inch gypsum board instead of 1/2 inch is a good example of this.



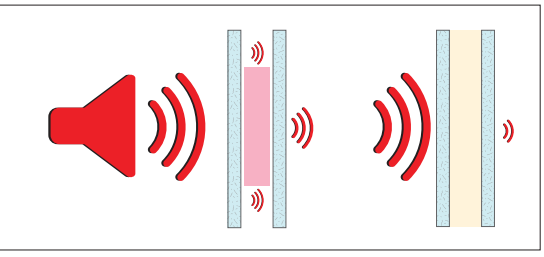
Decouple the System

Sound is energy, when this energy impacts on a wall it sets the wall into vibration, this vibration carries the unwanted sound through to the opposite side. Resilient channels or furring strips placed between the studs and gypsum board greatly assist in reducing the vibration (air spaces are also a good decoupler).



Absorptive Material

Lightweight insulations are good sound absorbing materials, conversely heavier, denser insulations tend to reflect the sound back into the room but do a poor job of absorbing the sound.



Air Sealing the Wall

Much like keeping a room warm in the winter, if you leave a window partially open the room will be cold. Acoustics works in a similar way, if you leave gaps in the stud cavities or around windows, the noise will bypass the absorbent material. A good air barrier is an essential element in sound control.

Designers tend to specify wall assemblies based on tests of "perfect walls"

In the real world, walls are far from perfect. Walls can have numerous acoustic flaws in them - items such as electrical wiring, switch boxes, outlets and piping running through the wall all make sound control more difficult. Beyond providing a sound absorbent material, Huntsman Building Solutions' (HBS) open-cell spray foams fill a wall in ways that fibrous batts cannot - adhering to the substrate (wall framing and sheathing) limiting the ability of sound to bypass the insulation. Noise, like water and temperature, will move through gaps. HBS' open-cell spray foams work as an air sealing element as well as an acoustical insulation limiting the effect of real-world acoustic flaws.

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