

Architectural Acoustics

Highly reflective surfaces (e.g., glass, polished metal) cause sound waves to reflect off the surface, creating a bright, clear sound. This is often used in concert halls to enhance the clarity of the sound.

Highly absorptive surfaces (e.g., heavy curtains, acoustic panels) absorb sound energy, reducing the amount of sound that reflects back into the room. This is used to control the reverberation time and reduce unwanted noise.

Diffusive surfaces (e.g., irregularly shaped panels, perforated metal) scatter sound waves in multiple directions, creating a more uniform sound field. This is used to prevent sound from focusing in specific areas of the room.

Resonant surfaces (e.g., wood paneling, stone walls) can amplify certain frequencies of sound, creating a rich, warm sound. This is often used in recording studios to add character to the sound.

Acoustic treatment (e.g., bass traps, diffusers) is used to control the sound in a room, reducing unwanted noise and improving the overall sound quality. This is often used in recording studios, live performance spaces, and home theaters.

■ **D**iffuse reflection: Sound waves are scattered in all directions by a surface.

■ **A**bsorption: Sound energy is converted into heat by a surface.

■ **B**ass traps: Specialized absorbers designed to reduce low-frequency sound.

■ **R**eflection: Sound waves bounce off a surface.

■ **D**iffusion: Sound waves are scattered in multiple directions.

■ **R**esonance: A surface vibrates in response to sound waves, amplifying certain frequencies.

■ **A**coustic treatment: The use of various materials and techniques to control sound in a room.