Soundproof-sound-insulation-wall-material

Soundproofing

Residential Soundproofing

Residential soundproofing aims to decrease or eliminate the effects of exterior noise. The main focus of residential soundproofing in existing structures is the windows and doors, as well as the exterior wall sound insulation.

Commercial Soundproofing

Restaurants, schools, office businesses, and health care facilities use architectural acoustics to reduce noise for their customers. Noise soundproofing is important in mitigating people from losing their concentration and focus from their work project. It is also important to keep confidential conversations secure to the intended listeners.

Soundproofing is any means of reducing the sound pressure with respect to a specified sound source and receptor. There are several basic approaches to reducing sound: Distance, damping, absorption, porous absorbers.

(I) Distance

The energy density of sound waves decreases as they spread out, so that increasing the distance between the receiver and source results in a progressively lesser intensity of sound at the receiver. In a normal three-dimensional setting, with a point source and point receptor, the intensity of sound waves will be attenuated according to the inverse square of the distance from the source.

(II) Damping

Damping means to reduce resonance in the room, by absorption or redirection (reflection or diffusion). Absorption will reduce the overall sound level, whereas redirection makes unwanted sound harmless or even beneficial by reducing coherence. Damping can reduce the acoustic resonance in the air, or mechanical resonance in the structure of the room itself or things in the room.

(III) Absorption

Absorbing sound spontaneously converts part of the sound energy to a very small amount of heat in the intervening object (the absorbing material), rather than sound being transmitted or reflected. There are several ways in which a material can absorb sound. The choice of sound absorbing material will be determined by the frequency distribution of noise to be absorbed and the acoustic absorption profile required [1]

(IV) Porous absorbers

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Porous absorbers, typically open cell rubber foams, like expanded polystyrene foams, absorb noise by friction within the cell structure. Expanded polystyrene foams are highly effective noise absorbers across a broad range of medium-high frequencies.

Expanded polystyrene foams concrete wall panel is an alternative wall material for those need better sound insulation, as well as fast construction, heat insulation, fireproof and higher strength.

**Thermal Conductivity:**

**U-value (Thermal transmittance):**

**R-value (Insulation):**

**Fire-resistance rating test:**