

BALANCES NOISE

THE PROBLEM



Acoustics are the physical properties of sound which affect us all in everyday life. Textiles that demonstrate poor acoustic

performance can have a negative impact on human health in that exposure to unwanted noise has been shown to be associated with hearing damage, sleep deprivation, impaired concentration and a range of other stress-and physical related symptoms.

HOW DOES WOOL IMPROVE ACOUSTIC ABSORPTION?



Sound absorption is important in both commercial and residential applications because it assists in creating a more pleasant environment in which it is possible to eliminate or reduce unwanted or unpleasant sounds and focus on those which are desired.

Wool carpeting can significantly improve the acoustic performance of rooms as it acts as a sound absorber and also dampens any impact noise in a room.

Compared with most types of hard flooring, wool carpet has two distinct advantages in this respect:

- A reduced propensity to generate sound (eg through footfalls)
- An ability to absorb noise generated elsewhere

THE RESEARCH

The visco-elastic properties of wool assist in the conversion of sound energy to heat, therefore dissipating noise. Carpets (or any other fibrous textile) do this much more efficiently than materials like concrete or brick. Wool carpets may have some advantages over nylon carpets in this respect, particularly for low frequency noise (Figure 1).

Hard flooring surfaces more readily reflect sound than soft floor covering with carpeting generally producing 7-12 times less surface noise than bare tile floors.

Key considerations for noise reduction in carpets is:

- Pile height
- Pile density
- Pile conformation – cut pile carpets have a great noise reduction coefficient
- Presence/absence and construction of underlay
- Composition of backing and latex layers – the greater the mass and permeability the better

By increasing pile height and density, noise reduction can be improved (Figures 2 and 3)

SOUND ATTENUATION PROVIDED BY A RANGE OF INTERIOR MATERIALS

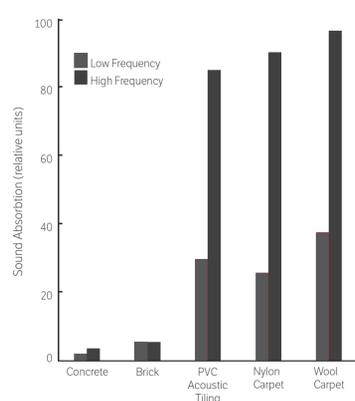


FIGURE 1. (IWTO 2010).

EFFECT OF INCREASING CARPET PILE HEIGHT ON NOISE REDUCTION COEFFICIENT

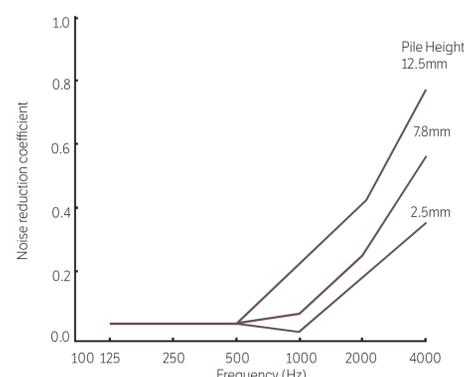


FIGURE 2. (Mencil 1999)

EFFECT OF INCREASING PILE DENSITY ON IMPACT INSULATION

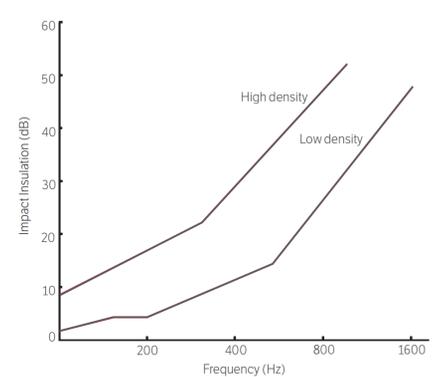


FIGURE 3. (Mencil 1999)

KEY POINTS

- Exposure to unwanted or excessive noise has been shown to result in a range of negative health impacts, including hearing loss, loss of concentration, sleep deprivation, stress, headaches, ulcers and a higher incidence of respiratory complaints
- Wool carpets outperform hard flooring in terms of their capacity to suppress unwanted noise.
- The fibrous nature of wool carpets and upholstery means that, unlike many other materials, wool products can reduce, at the same time, a) airborne sound, b) surface noise, and c) sound transmission



WHY WOOL IS A GOOD CHOICE

Wool carpeting is a healthy and comfortable choice for a flooring system as it aids in sound absorption whilst providing thermal insulation allowing the room in which it is installed to remain a comfortable temperature.