



ACOUSTIC  
FABRICS

# How We Hear

Whether in a restaurant, a hotel guest-room, a reception area or a buzzing office space, noise can be irritating and distracting, particularly amid contemporary architecture. The current emphasis on the use of hard surfaces ensures that noise rebounds around the room, increasing reverberation and creating an acoustic minefield.

Depending upon the venue, noise may significantly impact our experience: whether positively or negatively. Therefore, understanding the room acoustics and finding the right balance of sound absorption material (without compromising on aesthetic) is very important.

Good acoustics ensure that noise is absorbed at the right level to afford a comfortable environment in which to work, relax or listen. A comfortable acoustic environment can improve well-being, productivity and motivation.



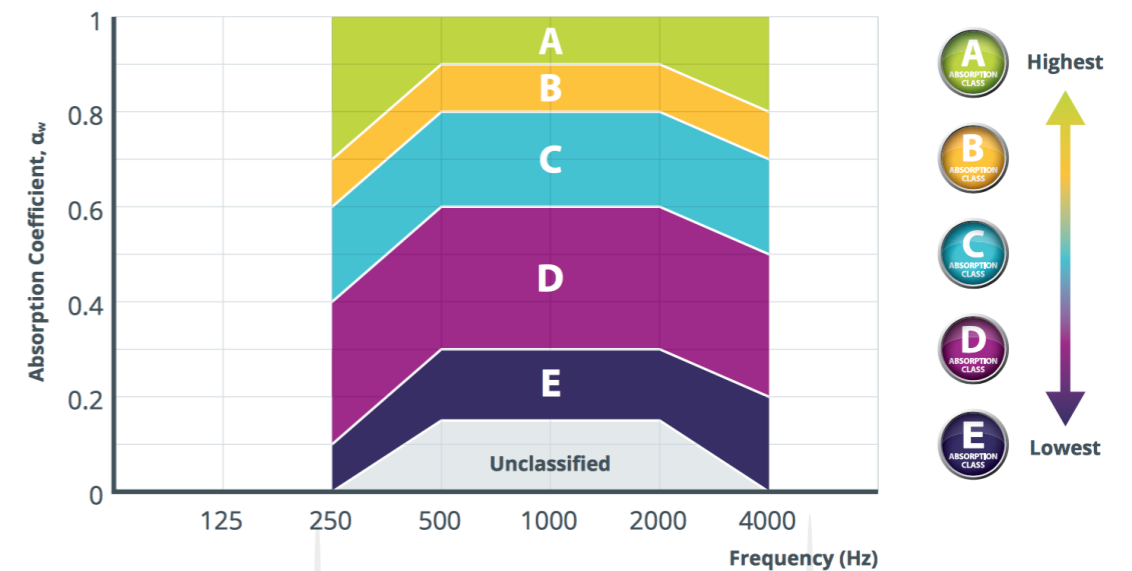
# How Acoustics Works

Sound travels as waves, causing vibrations in the air which we can hear. These waves are measured in frequency, which is represented by the Hertz value, or 'Hz'. We generally hear a range of sound from 20 Hz to 20,000 Hz. The human ear has varying sensitivity to these different sounds: for example, we have lower sensitivity to lower bass frequencies such as diesel engines, around 500Hz, whereas voices have a higher frequency around 1000Hz.

To define the acoustic properties of the fabrics in a room, sound absorption properties have been measured using curtains. In essence the test measures how quickly sound is absorbed and removed from the room. Sound absorption is measured using a value called the 'Sound Absorption Coefficient', which is known as 'alpha' or ' $\alpha$ '. This is translated into a useful value referred to as 'weighted alpha'

or  $\alpha_w$  – because it is weighted for human hearing. The values of  $\alpha_w$  range from 0 to 1, where 0 is no absorption or 'acoustically transparent' (i.e. will not interfere with the sound) and 1 is totally absorbing. These value ranges are also represented by sound absorption classes from A-E, which can be used to simplify fabric properties into categories.

## Sound Absorption Table



# The Testing Method

Panaz partnered with Salford university to test a variety of fabric types, in curtain form. The weighted alpha ( $\alpha_w$ ) for the different types of curtain fabric were assessed using the international standard ISO 354.

The testing was conducted in the 'Reverberation Room'. This is a specially created room to have super low absorbance. The room allows sound to reverberate, or echo, for the maximum amount of time. Adding the curtain decreases the sound absorption time, allowing the curtain  $\alpha_w$  value to be measured. When sound travels into the

building from outside, the main barrier is the solid surfaces such as walls and windows. However, these only provide a single chance to stop the sound as it passes into the solid surface. Panaz fabrics within the room provide an opportunity for the sound waves to be absorbed multiple times as they bounce around the room.



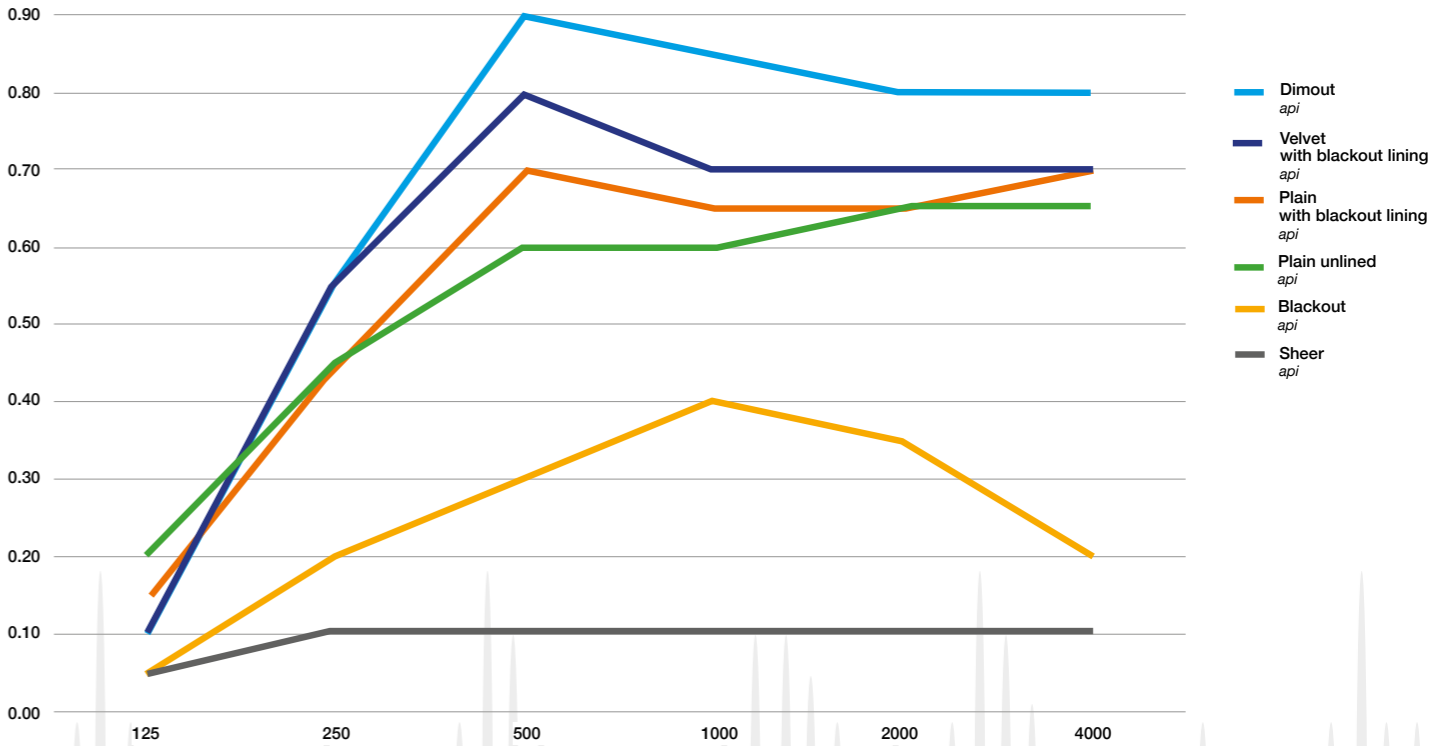
# The Results

Panaz fabrics cover a full range of absorption classes, which can all be applied depending on the acoustic properties required.

Panaz Dimouts such as Twilight and Lusso provide a high level of Class B sound absorption properties. These are yarn-dense, multi-layered fabrics which allow the sound and light to be absorbed rapidly without the need for bulky interlining. Velvets and plain woven fabrics such as Prism, Spectrum and Allure are Class C, providing a balanced level of acoustic properties. Velvets achieve an  $\alpha_w$  of 0.1 point higher than the plain woven fabrics, allowing a boost in noise reduction while maintaining a luxurious look and feel. Blackout curtains such as Solstice and Dusk 'Til Dawn

are 100% light blocking and reflect sound, preventing noise from being transmitted into the room from outdoors. For the highest rating, curtains with both interliner and lining are Class A rated. The multi-layer curtain dampens the noise from a room if there are extremely high noise levels inside or outside the room. Panaz sheers such as Leto provide an almost acoustically transparent curtain, allowing them to be used where partitioning of a space or visual privacy is key, without impacting the overall acoustic properties of the various spaces.

Acoustic Performance By Fabric Type



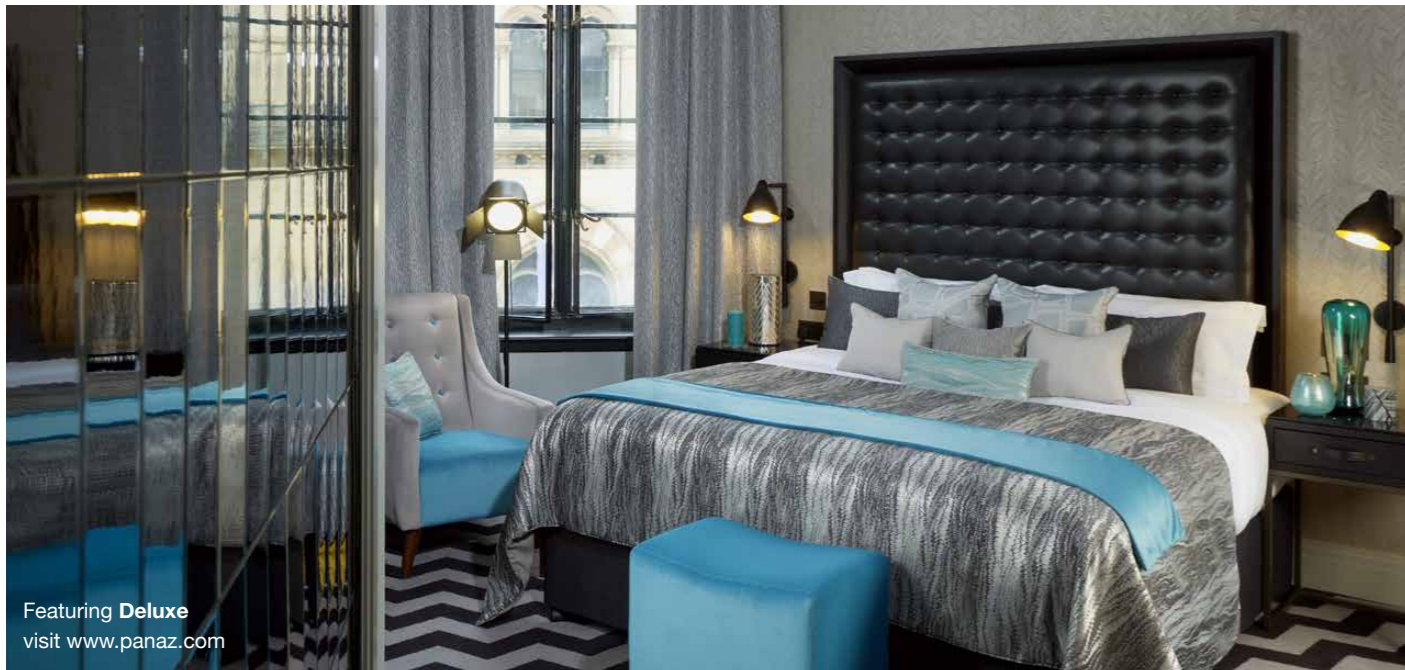
# Acoustic Comfort In Any Environment

Acoustic comfort is created by striking the right balance between quiet and privacy. Total silence can be discomforting and makes private conversation impossible. Conversely, high levels of uncontrolled reverberation creates a confusing and distracting space.

## Hotels and Restaurants

Velvets such as Indulgence or Enchant can balance a noisy restaurant soundscape which has abundant reverberation created by many solid surfaces such as glass, wood and ceramics. These velvet fabrics have a textured pile surface which absorb sound effectively. Other Class B and C fabrics in curtains, soft seating or wall panels will also help guests to hear clearly, while creating an ambient level of noise to ensure privacy between groups.

Hotels benefit from a variety of Panaz fabric types. Panaz Super Soft Printed Dimout provides high level sound absorption and near total light blocking, with elegant drape. Artemis and Deluxe are among the beautiful woven collections able to provide balanced absorption. Using a blackout lining adds a light blocking fabric layer while protecting and enhancing the acoustic properties. Sheers will provide the necessary privacy, with low impact on the acoustic balance of the room.



## Airports

Panaz 4-Pass Blackout fabric such as Equinox or Dusk 'til Dawn could benefit a bedroom in a particularly noisy environment, such as an airport. In particular, a sealed blind configuration using blackout can help to reflect outside noise away from the room interior.



## Care Environment & Hospitals

Printed and plain curtain fabrics such as Delamere and Aviemoore collections can provide care environments with a suitable degree of sound absorption within the room. This can balance out more reflective, easy-to-clean surfaces such as tables and faux leather chairs.



## Workspace

In workspace, and other busy, high tech environments, acoustic panels are a great solution to providing areas of acoustic comfort. Panaz uncoated, inherent products are ideal for this. A fabric such as Altair, or Prism, available in a wide variety of vibrant shades, applied over acoustic panels will provide the look without compromising the technical performance of the panel. Upholstered seating in a textile will provide sound absorption not found in solid seating.



**Panaz**<sup>®</sup>

For further information please visit  
[www.panaz.com](http://www.panaz.com)

Head Office  
Panaz Ltd.  
Bentley Wood Way  
Hapton, Burnley  
Lancashire, BB11 5ST  
England  
Tel: +44 (0)1282 696969  
email: [sales@panaz.co.uk](mailto:sales@panaz.co.uk)

Panaz Europe Ltd.  
Villa Malitah  
Mediterranean Street  
The Village  
St. Juliens  
STJ 1870  
Malta  
Tel: 00356-27780052  
email: [admin@panaz.com](mailto:admin@panaz.com)

Panaz USA Inc  
Access Office Business Center  
8801 Fast Park Drive,  
Suite 301  
Raleigh, NC 27617  
USA  
Tel: +1 919 747 8211  
Fax: +1 919 870 9045  
email: [sales@panaz.com](mailto:sales@panaz.com)