



# SOUNDPROOFING MATERIALS

## For Noisy Sports Halls



Part :1

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Sports halls acoustics can be particularly harsh. Sports halls and gymnasiums spaces are normally oversized, hollow and comprised of durable, yet hard and reflective surfaces. The result is an echo chamber of harsh noise, with reverberation times that can easily reach over 5 seconds. Throw into the mix large crowds, a highly vocal environment and intense sporting activity and you can have a very hostile sound environment. Poor sports hall acoustics can mean that instructors are unable to be heard, personal training sessions can lack privacy, and an unfriendly user environment is created. Additional challenges are posed to school sports halls, which must meet strict BB93 compliance guidelines and should create acoustic comfort for a multitude of uses – assemblies, plays and exams etc.

How Do Wall & Ceiling Panels Work In Sports Halls?

The most simple and cost effective way to reduce noise in a sports hall is through the installation of sports hall acoustic wall panels or ceiling panels. The correct concentration and placement of panels minimises the number of hard, reverberant surfaces in sports halls and can trap up to 90% of background noise. Depending on the size, design and pre-existing noise environment of the sports hall in question, a bespoke acoustic panelling solution should be installed.

Resonics offers a free assessment survey of your space that includes a calculation of the reverberation time in the room. This will help determine the correct materials – and their distribution and quantity – needed in order to deliver the perfect sound environment.

The tailored installation will capture the correct amount of reverberant noise to the acceptable level of below 1.5 seconds for sports halls. Acoustic wall panels and ceiling panels in sports halls muffle noise upon impact, reducing the ability of sound waves to reach other reverberant surfaces and extend reverberation time. The result is restored auditory clarity. The installation may call for wall panels to be installed on opposing walls to eliminate the possibility of slapback echoes travelling through dead space .

Soundproofing is a specialism that revolves around effectively controlling unwanted noise, with various soundproofing materials used to mitigate the effects of noise.

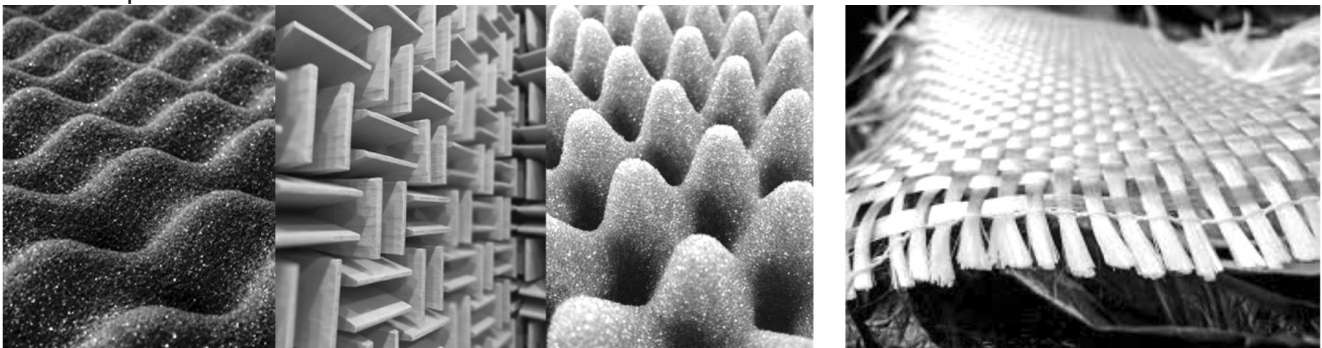
Anything from people who want a quieter home and tranquility from noisy next door neighbours, to businesses who need to reduce the noise impact that they make on surrounding areas, soundproofing comes with a long list of causes and solutions.

In fact, there are a myriad of soundproofing materials that one can choose from to apply to different uses.

Some are more suitable or effective than others, which greatly depends on the type of noise created, the source of the noise, the structure of the building, wall construction, and various other key factors.

To understand soundproofing materials and how they perform, it is important to mention that sound is a form of energy.

Sound travels from a source, and during the distance



that it travels it causes vibrations whenever it hits air and any objects in its path.

These sound waves then reach the recipient's ears and stimulate the brain.

Soundproofing materials work to reduce the sound pressure created from the source to the receptor.

In this in-depth article, we'll explore the 30 best known soundproofing materials in more detail, how they perform and where they are best used.

Table of Contents

Soundproofing vs Sound Absorption

Key Principles of Soundproofing

Deflection

Absorption

Decoupling

Thermal Conversion

Constrained Layer Damping

Key Takeaway

Types of Soundproofing Materials

Acoustic Isolation Membrane

Open Cell Cavity Insulation

Decoupling Products

Acoustic Flooring

Soundproof Windows

Soundproof Doors

Acoustic Panels

Acoustic Fabrics

Acoustic Foam

30 Best Soundproofing Materials

1. Acoustic Membrane

2. Acoustic Mineral Wool Cavity Insulation

3. Fibreglass

4. Resilient Channels

5. Acoustic Hangers (Mounts)

6. Soundproof Drywall (Plasterboard)

7. Dense Board (OSB, Plywood, Particle Board, Fire Board)

8. Soundproof Floor Underlay

9. Anti-Vibration Soundproof Floor Mats

10. Acoustic Sealants

11. Acoustic Caulk

12. Acoustic Putty

13. Acoustic Plaster

14. Soundproof Spray

15. Soundproof Paint

16. Soundproof Wallpaper

17. Acoustic Wall Covering

18. Acoustic Glass (Soundproof Windows & Frames)

19. Soundproof Doors / Frames

20. Door Seals, Sweeps & Gaskets

21. Acoustic Foam

22. Sound Absorber Panels

23. Acoustic Ceiling Systems & Tiles

24. Soundproof Curtains

25. Soundproof Blankets

26. Furniture & Finishings

27. Acoustic Fencing (External)

28. Acoustic Absorber Panels (External)

29. Industrial Acoustic Soundproof Panels

30. Acoustic Louvres

Before exploring soundproofing materials, it is advised to firstly understand the key differences between sound absorption and soundproofing.

It's a common misconception to think that sound absorption is the same as soundproofing.

In reality they are not one and the same. Sound absorption is in actual fact one element of sound proofing and is used in two ways:

Firstly, as part of a soundproofing system, as a material which is invariably added within a structure such as between the voids created in a stud wall, which can reverberate sound, adding sound absorption can prevent this.

Secondly, when sound absorbing materials are added to the surface of a wall or ceiling, it absorbs sound waves and reduces resonance and regeneration of the sound back into the room.

In doing so, improves the acoustics of a room which is called acoustic calibration.

For example, a noisy restaurant with hard surfaces typical of industrial influenced design of today's trendy eateries, can result in a cacophony of sound from clattering cutlery and chattering diners. This noise can be softened with panels of sound absorbing materials which equalize and balance the internal acoustics of a room which is acoustic calibration. Hopefully this explanation is reasonably clear, but in a nutshell, sound 'absorbing' materials reduce the resonance and reverberation of sound waves within a space or room.

Sound 'proofing' materials prevent sound waves from passing in or out of the room.

Key Principles of Soundproofing Soundproofing is acoustic isolation – the prevention of sound waves passing in or out of a room. In order to understand soundproofing or acoustic isolation, it is best to start by highlighting the key principles, namely: Deflection.

**End of the first part**