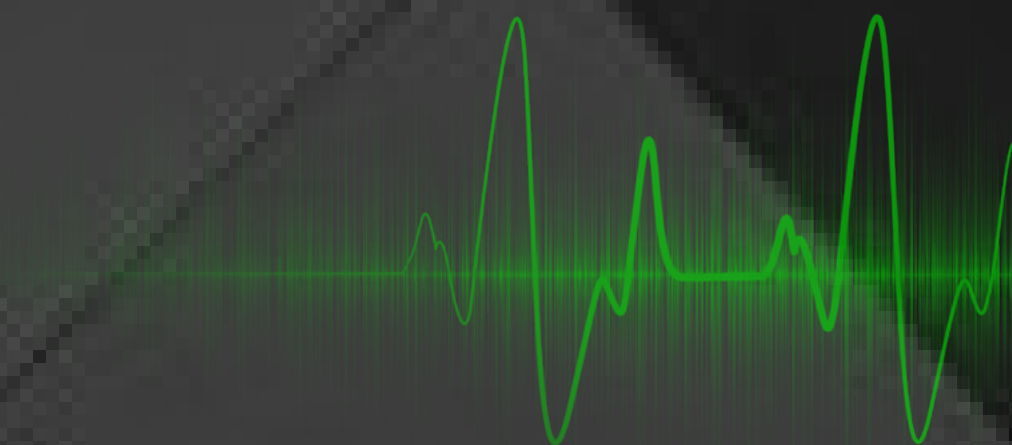


SOUND ATTENUATION MATERIAL

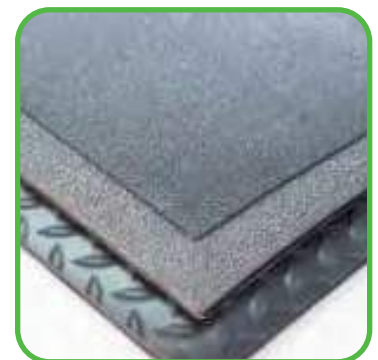
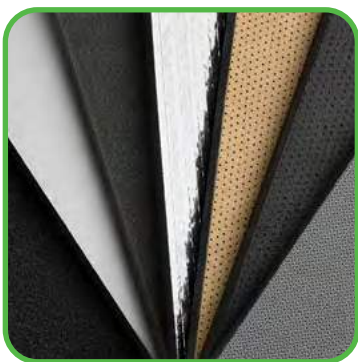
In-Depth Guide





Industrial settings require uniquely powerful solutions for blocking, absorbing, and isolating noise. Power generation equipment, specialty vehicles, and construction equipment are just a few of the many industrial components that generate high noise levels. When uncontrolled, this noise can pose a health risk to workers and even violate noise pollution laws.

To eliminate this problem, products such as acoustic absorbers, barriers, and vibration damping materials serve as high-performance solutions. As the leading producer of acoustic solutions for OEMs throughout North America, Technicon Acoustics offers everything industrial settings need for reliable noise control. In this eBook, we will discuss the basic principles of industrial noise control, including the effects of foam thickness, barrier weight, and more.



Acoustic Absorbers

Acoustic absorbers are made from porous, fiber-based materials or open-cell foam. These materials prevent sound waves from bouncing off harder surfaces, such as heavy equipment enclosures or operator cabs. The design improves acoustic conditions within a designated space, as opposed to preventing noise from entering or leaving an area.

According to mass law, materials with higher densities are less likely to vibrate when they come into contact with sound waves. This means that they will transmit less noise through the substrate. The mass law equation determines how thick or heavy an absorber material should be to effectively block noise for a given application. This equation states that when a single layer wall's mass per unit area doubles, transmission loss will increase by approximately 6 decibels.

At Technicon, we incorporate mass law into our problem-solving and product development procedures. We can add additional products to an existing product structure to increase mass and reduce noise levels. For a more in-depth discussion on mass law and its industrial applications, read our blog post, [Mass Law and Sound Transmission Loss](#).

We offer several types of foam and fiber-based products for acoustic absorption within industrial settings:

- **Polyether foams.** This material provides excellent sound absorption and thermal insulation. It's also a popular choice due to its flexibility and compressibility.
- **Polyester foams.** Polyester foam provides similar benefits to polyether foam but with the addition of superior tensile strength.
- **Fiber-based absorbers.** Fiber-based materials serve as an alternative solution for low-frequency noise. They comply with UL94 HF1 standards and are able to withstand temperatures up to 350 °F (177 °C).



Acoustic Barriers

Acoustic barrier products are designed to protect people in close proximity to a noise source. Also referred to as dampers or sound barriers, these products serve as a different method of reducing industrial noise by blocking its transmission from one area to another. Since blocking noise is directional in nature, barriers are not needed everywhere but rather in specific areas to block its direction.

Mass law is also used in the context of barrier thickness. Using its formula, we can calculate the thickness needed to limit acoustic vibration energy and remove dynamic stresses caused by those vibrations. You can learn more detailed information about acoustic barriers on our [sound control page](#).

At Technicon, we use mass-loaded vinyl (MLV) materials to create acoustic barriers. MLV barriers work by acting as a mass partition to block airborne sound transmission. These barriers are heavy but not thick, which allows them to be implemented in small spaces. While both lightweight and heavyweight materials can serve as acoustic barriers, they are used to block different kinds of noise.

Lightweight barriers typically feature a single-layer core that is capable of absorbing high-frequency noises while low-frequency noises pass through. Lightweight barriers are commonly used around construction sites. A heavyweight barrier, or multi-layer composite barrier, on the other hand, features a high-density core that provides significantly improved noise reduction performance.

Some of the most common industrial applications for heavyweight acoustic barriers include:



Air compressors



Standby power generators



Tractor, bulldozer, and excavator cabs



Heavy equipment enclosures



Vibration Damping

Vibration damping is a noise control method that works by reducing the amount of energy a system produces. This is particularly important in industrial applications as excess vibrations create wear that prematurely damages moving parts and also creates excess noise. Vibration damping dissipates this excess energy and lowers noise levels using two main techniques: vibration isolation and structural damping.

In vibration isolation, a small component like a rubber pad or steel spring is implemented to isolate a vibrating part from the materials they're rubbing against. These isolators or shock absorbers both support and separate assemblies of virtually any weight and size, including within large industrial equipment.

Structural damping, on the other hand, dissipates vibrations before they become audible noise. Materials such as metals and glass have poor vibration damping abilities, so adding structural damping materials helps to reduce their vibrations and control resonance. This solution is ideal for applications involving multiple sources of vibration, or when a material vibrates near natural resonance levels. You can learn more detailed information about this noise control method on our [vibration damping](#) and [vibration damping techniques](#) pages.

Vibration damping products are used throughout many industrial applications, such as within power and standby generators and air compressors. Depending on the needs of a specific application, one of several materials will be selected:





Rubber. Since rubber absorbs energy before re-releasing it as thermal energy, it is a popular choice for isolating vibrations. While rubber doesn't have any damping abilities on its own, it is highly effective when combined with other materials.

Polyurethane. A relatively new material in the field of vibration damping, polyurethane is a foam-like substance that absorbs a system's excess energy. It features customizable cell structures and densities that are suitable for a wide range of applications.

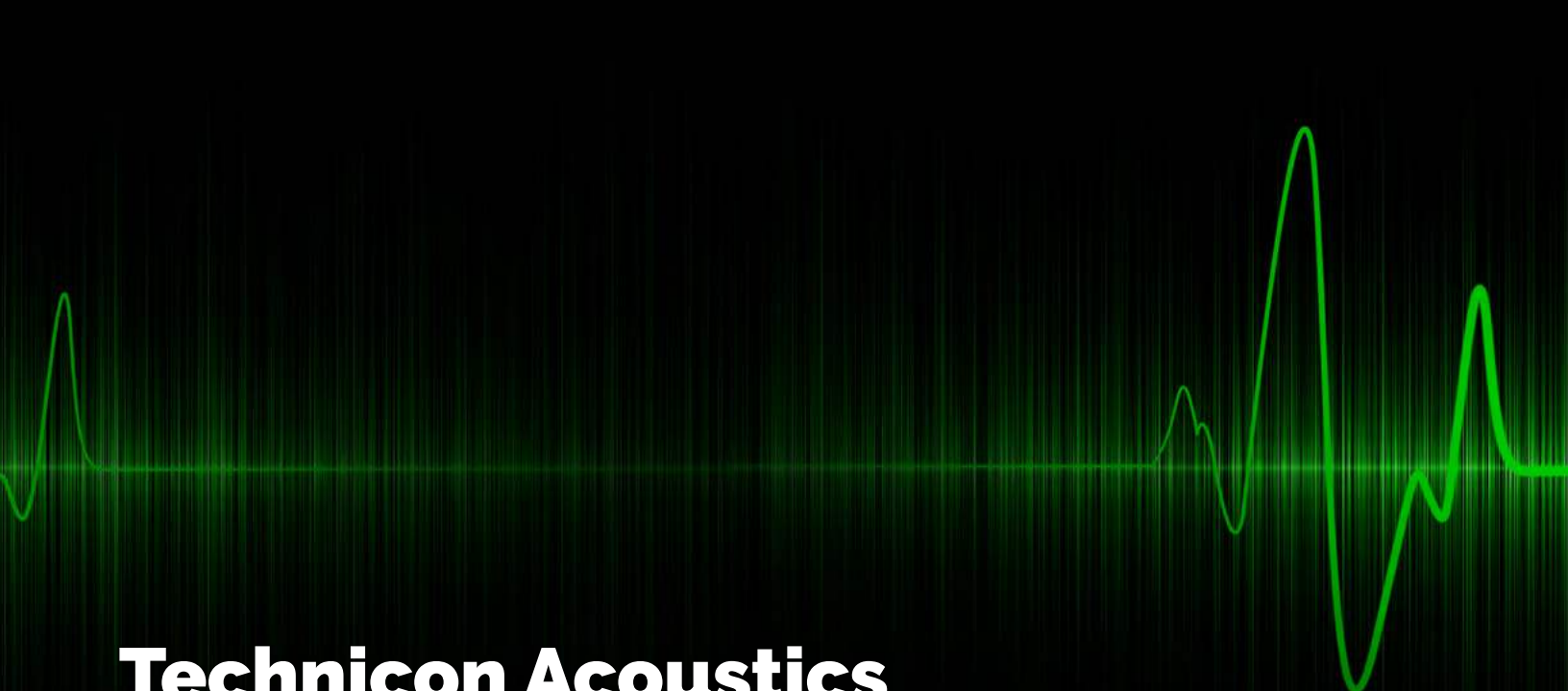


PVC. This material is effective at both resisting chemicals and absorbing vibrations. While it is commonly used to create sound barriers, it also functions well in vibration damping applications.



Industrial Noise Control Solutions from Technicon Acoustics

No matter how challenging your application is, our expert team is ready to help you create the most effective soundproofing or noise reduction solution. We are committed to delivering a superior customer service experience, including offering the highest possible product quality, order accuracy, and delivery reliability. To learn more, [Contact](#) team with any questions or [request a quote](#) to get your project started.



Technicon Acoustics

Technicon Acoustics is a leading producer of noise control solutions for commercial, industrial, and consumer-facing OEMs. These solutions include both acoustic absorption, sound transmission and vibration damping products. When needed, our technical and engineering team can work with you to design custom solutions. Our manufacturing, engineering, and administrative experts deliver high-quality materials and parts that block, absorb, and isolate noise.

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