

 **armacell**
engineered foams

THE MAKERS OF
Armaflex®



ArmaSound



High performance sound absorption for a quieter environment

What is noise and who is affected by it?

Environmental noise, which is often defined as unwanted sound, is generated by man's activity and effects the environment in which we live.

'Sound can be generated by a number of sources and can be perceived as noise by humans in many different circumstances. Environmental noise is the sound generated by human activity (road traffic, railways, air transport, industry, workplace, recreation and construction) and perceived in the work place or domestic environment.' [1]

Almost everyone is effected by noise. We experience it in our homes and in our work place, during our recreational time and when we're travelling. As technology progresses, so too does our desire for a higher standard of living. A quieter environment, free from the stress that noise causes, is one way to improve life quality.

'The effect of noise is to create annoyance, interference with communication and, in some cases, mental stress, high blood pressure, severe short- and long-term hearing damage, and even death.' [1]

The cost of noise is considerable:

'Present economic estimates of the annual damage in the EU due to environmental noise, range from EUR 13 billion to 38 billion. Elements that contribute are reduction of housing prices, medical costs, reduced possibilities of land use and cost of labour days.' [1]

Understanding the nature of noise

The noise given off by a particular source can usually be categorised into one of the following forms:

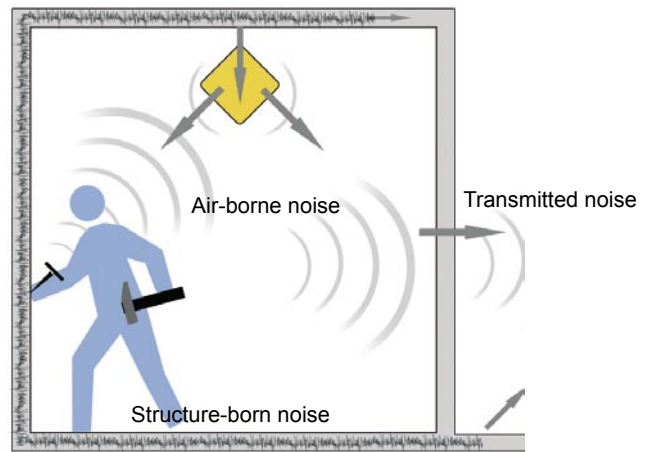
Structure-borne noise

This is the sound generated from a vibrating source or impact event. The acoustic energy created by these vibrations is transmitted into the structure of a building (e.g. floors, walls, pipe-work etc.) or into mechanical elements (e.g. metal frames, panel work, supports etc.) This energy travels through solid structures and is released as air-borne noise at different locations within the building or mechanical system.

Air-borne noise

This is the sound that travels through the air and into the surrounding environment. In closed environments such as rooms and enclosures, air-borne sound may reverberate and increase the levels of noise both in and outside the contained space.

Sympathetic response



“Understanding the nature of sound is the key to effective noise control”

Most forms of noise will contain contributions from both air-borne and structure-borne sound. Although measures can be taken to limit structure-borne components, such as by isolation and damping, air-borne sound can be treated with the use of absorbing materials. Armafoam Sound has an extremely high absorption performance per unit thickness, offering a solution for the most demanding applications.

[1] Extracts taken from the EC Directive – 2000/0194/(COD) – 'Relating to the assessment and management of environmental noise'.

ArmaSound

High perform

ArmaSound

A new approach to noise control

ArmaSound is a versatile acoustic absorber designed for use in a variety of different acoustic applications. A high performance sound absorber which also offers additional transmission loss performance and both vibration damping and isolation properties, ArmaSound is the result of 4 years of research.

The acoustic properties of ArmaSound vary depending on formulation, density and thickness. The best results will be observed by selecting the most appropriate product grade for the type of noise in question. ArmaSound can also be engineered to meet specific requirements by optimising its absorption behaviour to match particular problem frequencies.

Sound Absorption

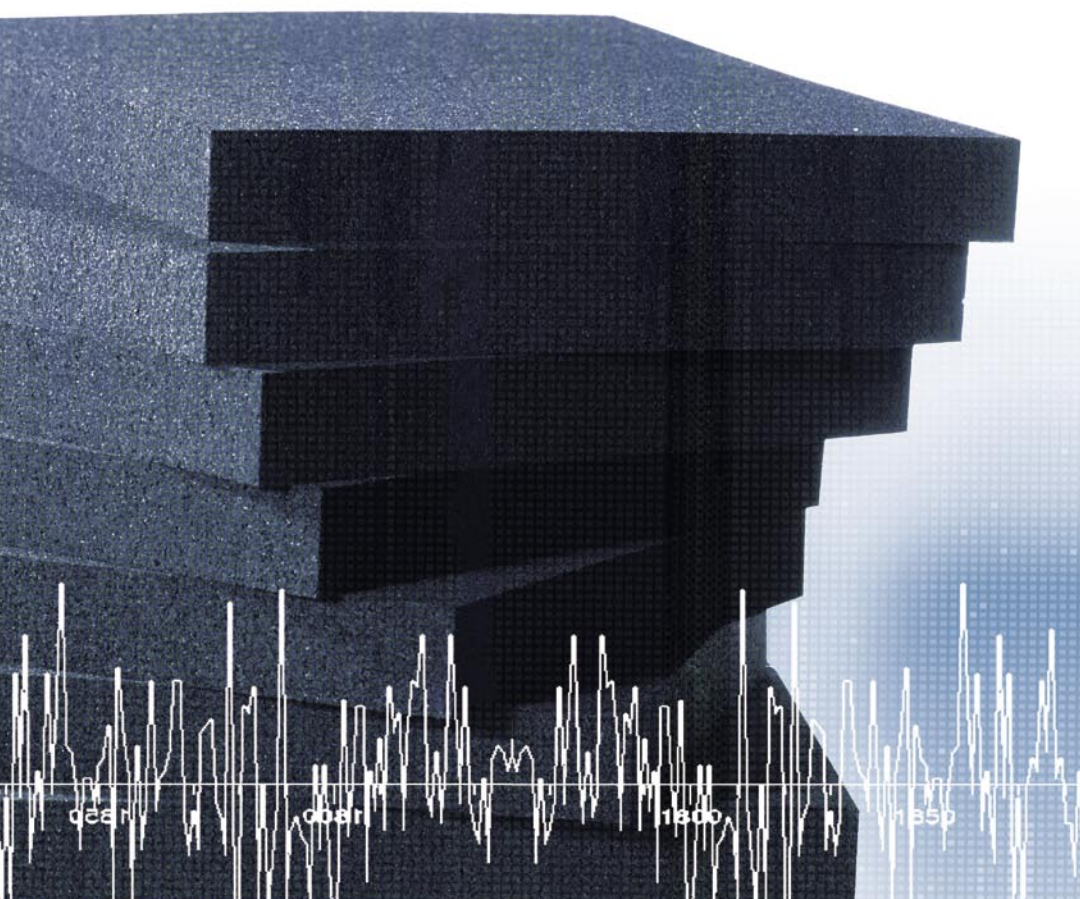
- » Open cell structure with complex pore geometry allows for effective absorption of air-borne sound across a broad frequency range
- » Unique combination of physical properties allows absorption to be maximised at key “nuisance” frequencies.

Sound Transmission Loss

- » Relatively high density and high flow resistance offers beneficial sound transmission loss properties.
- » May be suitable for use as an alternative to complex ‘foam-barrier’ multilayers.

Vibration Damping and Isolation

- » Visco-elastic properties help dampen or deaden resonance effects in metal panelwork (e.g. enclosures or ducting) which helps to reduce ‘re-radiation’ effects.
- » Reduces structure-borne noise transmission when used as isolation pads.



High performance sound absorption for a quieter environment

Application Areas_

HVAC_

Fan-coil units, duct linings, cabinet linings and chiller systems



General Mechanical/Industrial_

Enclosure and cabinet linings, reverberation control



Gas & Oil Facilities_

Engine room and pipeline insulation



Heavy Automotive_

Engine component lining and under bonnet insulation

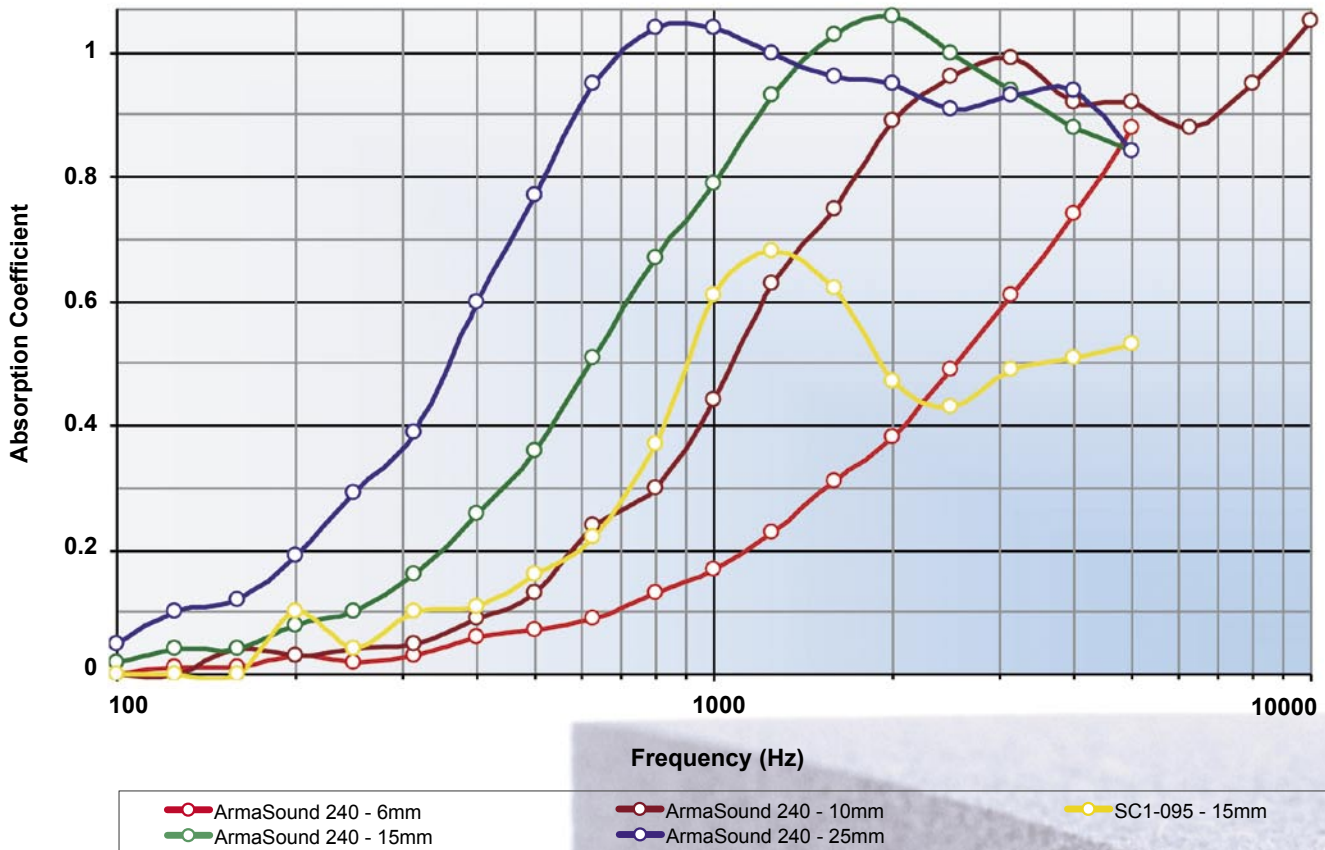


White Goods_

Internal side panels and air intake linings



Acoustic Performance of ArmaSound



This chart shows the acoustic absorption coefficient for ArmaSound 240 measured at different thicknesses. Additional data is also included for the absorption coefficient of our ArmaSound SC1-095 product at 15 mm. Measured in accordance with the ISO 354 measurement standard at the School of Acoustics and Electronic Engineering, Salford University, UK. Measured in accordance with the ISO 10534 (pt2) measurement standard at the Acoustic Group, Bradford University, UK.

Typical Performance of ArmaSound

Application	Typical Reduction	Used System	Legislation met
Pipelines	Up to 55dB	Combination System ArmaSound & Arma-Chek Systems	Class A, B & C acc. to ISO 15665 Class A, B, C & D acc. to Shell DEP Spec. No. 31
Waste water pipes	Up to 20dB	Combination System ArmaSound & Arma-Chek Systems	na
Washing machines	8dB	10 mm	na
Vacuum cleaners	10db (peak)	6mm	na
General Enclosures	Up to 25db	10-25mm	na
Generators	Up to 20dB	15mm	Various European Noise Standards
Telecommunication	Up to 20dB	15mm	ETSI 300 (Noise Standards)

Although these figures represent actual figures achieved in tests, they should only be used as a guide. Armacell cannot guarantee the performance of the product as all situations are different and should be treated separately. Actual results for a particular configuration may be worse or better than those shown here.

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