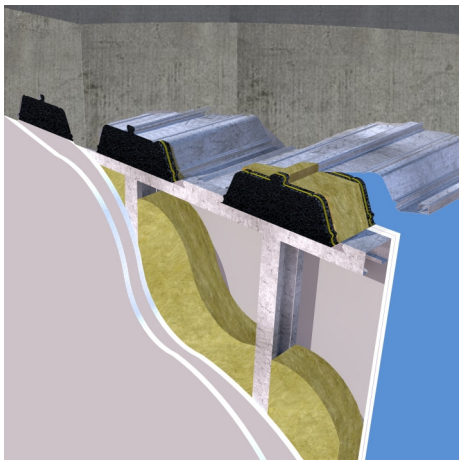
Lamaphon

Lamaphon **AVC** Acoustic Void Closures

DATA SHEET **1411-1**

Introduction



Lamaphon Acoustic Void Closures

Lamaphon Acoustic Closures are a range of bespoke products designed to effectively close small apertures and voids encountered in a wide range of building conditions.

They are produced from a range of resilient materials or laminated composites and are intended to be compression fitted into an aperture to form an efficient acoustic seal.

Depending on the sound insulation performance required they maybe employed singularly or in pairs (fitted either 'back to back' or commonly to each side of a central mineral fibre resilient infill).

Three types of closure are available, designated Type 1, 2 & 3. The type number indicates how many material layers constitute the product.

The closures are normally supplied cut to the final aperture shape but are also available in strip form (for linear gaps) or in sheet form for site cutting.

The advanced cutting techniques employed to produce the closures permit the supply of extremely complex shapes. They can also include internal cut-outs. In consequence it is normally possible to create a closure to accurately match the cross-section of any aperture.

Description

Type 1: Closures are produced from a resilient foam material only. Commonly made from Lamacell closed cell foam. Type 1 closures are ideal for very small apertures or situations requiring a less demanding sound insulation performance.

May also be produced from Lamaphon 'V' foam as a supporting backing infill for subsequent site application of an acoustic sealant / mastic to the surface.

Type 2 & 3: Closures are produced from a laminated composite combining resilient foam/s with a flexible sound barrier membrane. Type 2 closures have resilient foam to one side of the membrane only. Type 3 closures (the most common type) comprise a resilient foam layer to both sides of the barrier membrane. Type 3 closures may employ different foams to each side.

For conditions where the closures may be partially visible, a variety of pre-applied surface finishes are available offering a range of colour options.

The type and thickness of the closure is normally selected in conjunction with our technical department. Influencing factors include: acoustic performance; deformation required for fitting; size & depth of the aperture; dimensional variability; shape complexity; degree of resilience / recovery required.

Common Component Materials

Component	Type 1 Closure	Type 2 & 3 Closure
Resilient Foams	Lamacell Lamaphon 'V' Foam	Lamacell Lamaphon 'V' Foam Lamaphon 'M' Foam
Barrier Membranes	N/A	Lamaphon BM0050 Lamaphon 'P' Series Lamaphon 'L' Series

Material Characteristics (Foams)

Product	Colour	Structure	Deformation rating	Robustness rating	Fire Performance
Lamacell	Black	Closed cell	Good	Excellent	Class 'O'
Lamaphon 'V' Foam	Black	Open cell	Excellent	Good	Class 'O'
Lamaphon 'M' Foam	Light Grey	Open cell	Fair	Fair	Class 'O'

Material Characteristics (Heavy Membranes)

Product	Code	Type	Deformation rating	Recovery rating	Surface Weight
Lamaphon BM0050	BM0050	Polymeric Barrier	Fair	Excellent	5 Kg/m^2
Lamaphon 'P' Series	P5 P10	Polymeric Barrier	Good	Fair	5 Kg/m^2 10 Kg/m^2
Lamaphon 'L' Series	L5 L10	Lead foil	Excellent	Poor	5 Kg/m^2 10 Kg/m^2

Individual data sheets are available for the component materials indicated above

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Acoustic Performance

The practical sound separation achieved between adjoining areas is often severely limited by 'sound leakage'. This is a condition where a sound path is created via a single or series of small apertures or gaps occurring within the separating structure.

It should be remembered that a gap as small as 1mm is considered to be very significant from an acoustic standpoint.

In practice, the sealing of such very small openings would normally be resolved by caulking with an acoustic sealant. However, when the dimension of the aperture falls outside of the working range of sealants, optimal solutions are often unclear. Frequently ad-hoc remedies are employed without an understanding as to their potential to degrade sound insulation.

The importance of gaps can be illustrated by the following example: a 2.5m high wall with a SRI of 50dB has a continuous 2mm gap at the head. The effect of this gap is to reduce the SRI to 31dB (a 19dB change).

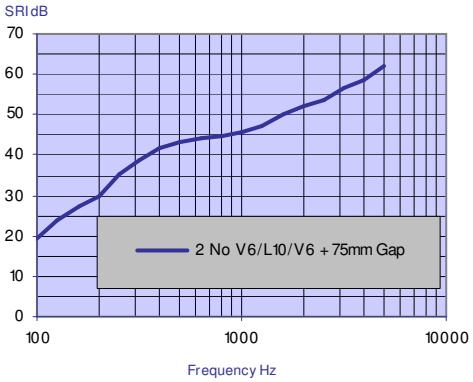
Sound leakage is not limited to unsealed gaps. Small areas within the separating structure that are filled with a construction offering a substantially lower SRI value can be equally as important.

Returning to the previous example: if the 2mm gap is replaced with a 25mm deep mineral fibre expansion / fire-stop joint with an SRI of 15dB, the effect is still to reduce the SRI to 35dB (a 15dB change). However, if Lamaphon closure strips were inserted each side of fire stop, the SRI for the joint could be raised to 40dB (as an example value), which results in only a 0.4dB reduction in the wall performance.

The final condition associated with sound leakage relates to common voids. Obvious examples such as ceiling and access floor voids are widely understood and we offer dedicated products for these applications. However, other examples include: service ducts, perimeter heater cases, continuous lighting trays and air diffusers. Whilst often small in area they have the potential to substantially reduce sound separation.

Also, they frequently have complex internal cross-sections making effective closure very difficult. Consequently, the use of Lamaphon Acoustic Closures represents a simple and reliable solution.

A wide range of SRI values are achievable using Lamaphon Acoustic Closures. Our Technical Section can advise on typical values against specific conditions. The graph below indicates performance for a pair of Type 3 closures with a gap of 75mm and provides an SRI of 44db (Rw).



Applications

Lamaphon Acoustic Closures can be employed in a wide range of applications within the construction industry. They are suitable for both refurbishment and new build projects

The following key features give rise to the product's diversity of use:

- Wide range of product make-ups.
- Can be used singly or in multiples.
- Can be combined with other materials e.g. mineral fibre or mastic coatings.
- Suitable for a wide range of aperture sizes: minor dimension 10-500mm, major dimension unrestricted.

Common application include:

- Infills to profiled decks.
- Deflection joints & fire stops.
- Metal grid & frame section infills.
- Closures for service ducts, perimeter heater cases, continuous lighting trays, blind boxes & air diffusers.

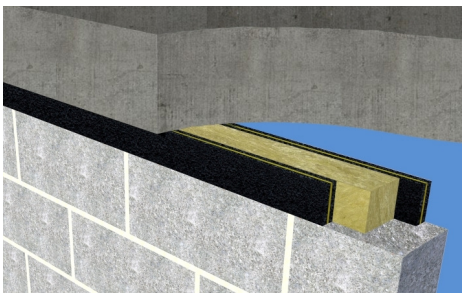
Examples

Profiled Deck / Top of Wall Junction

A common condition where a partition or wall meets the underside of a profiled metal deck resulting in the need to fill a series of trapezoidal apertures. Frequently there is an additional requirement to fire stop these voids.

The normal solution is to fit Lamaphon Type 3 Acoustic Closures each side of a central profiled mineral fibre insert (we use Lamatherm inserts when fire performance is also required)

The pre-cut closures exactly match the section of the deck including ribs and small radius bends. The grade of closure is selected with reference to the sound insulation requirement.

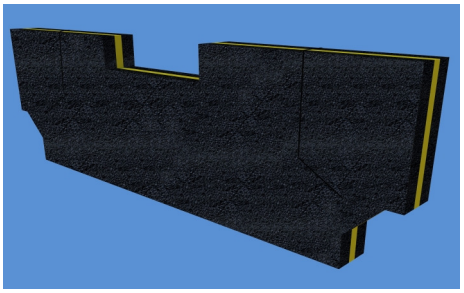


Continuous Lighting Trays

Continuous lighting trays passing directly over partition lines have traditionally been extremely difficult to treat. Limited access combined with a complex internal shape often result in a failure to achieve an effective acoustic seal above the partition.

As Lamaphon Acoustic Closures are flexible they may be severely distorted during the fitting process, but once in their final position can be straightened easily with finger pressure to close the aperture.

The following figure illustrates a typical complex closure for a lighting tray.



Deflection / Fire Seal at Top of Wall

A linear seal condition where a resilient mineral fibre fire stop material is inserted between the top of the wall and the soffit.

Such infills have relatively low SRI values (15-25dB). Compression fitting Lamaphon Type 3 Acoustic Closures in strip form to both sides of the fire stop material greatly enhances the SRI (values in the range 35-45dB are achievable).

For large deflections the closures can be securely retained top & bottom by metal angle sections.