

### Lamaphon DWX

The product comprises a flexible resin bonded glass fibre quilt with a central heavy milled lead acoustic membrane. The exposed surface of the quilt is finished with a Class 'O' reinforced H & V aluminium foil and the reverse face is finished in a non-woven glass fabric.

The product is primarily intended to improve the sound transmission loss of lightweight thin sheet structures. It is particularly suited for use as an external cladding to sheet metal ducts. The glass fibre quilt is also an efficient thermal insulation material and the outer foil facing forms an effective vapour barrier.

The product is normally fixed by the use of through mechanical fixings such as insulation support pins with non-return washers. The frequency of use is influenced by the orientation of the barrier (e.g. vertical or underside of horizontal) and the presence of any secondary cladding providing additional restraint. As a general guide fixings should be provided at 300mm centres.

All three common types of insulation support pin and washer are suitable: spot-welded; separate adhesive and self-adhesive. In the case of the latter, it is essential to secure the self-adhesive base to the background by

additional mechanical fixing e.g. blind riveting, self-tapping screws, etc.

To maximise acoustic performance it is important to maintain continuity of the sound barrier membrane. For this reason the product should preferably be overlapped by a minimum of 75mm at all joints. Ideally the overlaps should coincide with a grid line of the chosen mechanical fixings. Finally the overlap joint should be sealed by the application of a wide self-adhesive aluminium foil tape (75mm +).

#### Acoustic Performance

The improvement in sound transmission loss for the application of DWX to a light weight structure is dependent on the exact make-up and surface weight of the original structure.

In addition, it is common to apply the barrier on to a mineral fibre insulation layer. This material acts as a resilient spacing layer (positions the barrier away from the original background whilst limiting mechanical coupling). The type and thickness of this material will also change the increase in sound transmission loss. Frequently this layer additionally acts as the thermal insulation treatment.

Our technical department would be pleased to provide indicative performance values against provision of details for a particular application.

#### Technical Information

Lamaphon Material	DWX
<b>General</b>	
Standard Size	1800mm x 1200mm
Thickness	40mm Nominal overall
Surface Weight	<b>DW5</b> 6.0 Kg/m <sup>2</sup> nominal overall
	<b>DW10</b> 11.0 Kg/m <sup>2</sup> nominal overall
<b>Insulation Layer</b>	
Type	Resin bonded glass fibre quilt
Density	20 Kg/m <sup>3</sup> Nominal
Thermal Conductivity	0.035 W/mK (10°C mean)
<b>Acoustic Membrane</b>	
Type	Flexible milled lead sheet
Characteristics	Limp heavy membrane
Thickness	<b>DW5</b> 0.5 mm nominal
	<b>DW10</b> 1.0 mm nominal
Surface Weight	<b>DW5</b> 5.0 Kg/m <sup>2</sup> nominal
	<b>DW10</b> 10.0 Kg/m <sup>2</sup> nominal
<b>Surface Finish</b>	
Outer Surface	Standard Class 'O' H & V Glass filament reinforced Aluminium Foil facing
Lower Surface	Non-woven glass fabric

**Recommendations for treatment of Rectangular Ductwork**

Insulation support pins to be applied generally to duct at normal application rate for mineral wool insulation layer. According to duct dimensions it may be necessary to increase the number employed for underside of duct or for all surfaces if duct is in vertical plane.

The insulation pins used should be either of the 'spot welded' type, plain form separately adhered or self-adhesive. In the case of the latter it is essential that secondary mechanical fixings be employed through the base of the pin. The precise application rate for the fixings will alter according to the type used and the surface mass of the Lamaphon Composite. We are pleased to discuss this in detail with the contractor.

The mineral wool insulation layer to be applied over the pins and secured with non-return washers. The exposed surplus pins should not be removed. In order to avoid excessive compression of the insulation layer at the corners of the duct we recommend that densities of not less than 60 Kg/m<sup>3</sup> are employed. The preferred density will alter according to the surface mass of the covering layer but 100 Kg/m<sup>3</sup> is normally sufficient for all common grades of Lamaphon DWX.

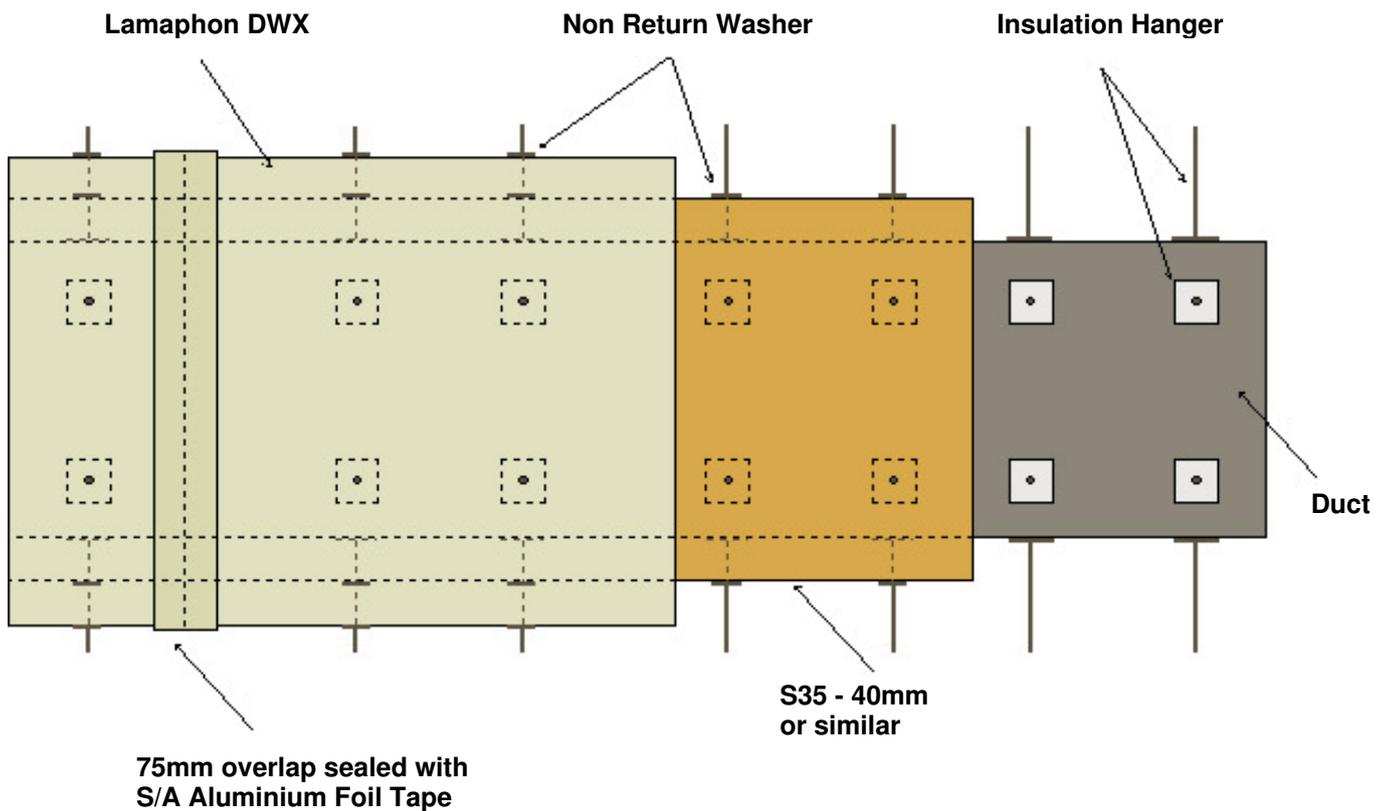
It should be noted that as flexible Lamaphon DWX has an integral glass fibre spacing layer to the rear of the lead foil it is common practice to reduce the specified thickness of the base mineral wool by 10mm (this figure approximates to the compressed spacing layer thickness once installed).

The Lamaphon DWX is then wrapped around duct and impaled over the exposed surplus pin. A second non-return washer is then fitted and any remaining visible length of pin removed.

It should be noted that as Lamaphon DWX is a limp flexible layer there is little degradation of acoustic performance due to mechanical linkage with the duct. However, to minimise even this small effect and additionally reduce the number of penetrations through the barrier we recommend that the minimum number of pins be employed (subject to the pin strength, orientation of surface and the visual requirements).

All joints in the Lamaphon DWX should be lapped by a minimum of 75mm and should ideally coincide with a line of fixing pins.

Finally, all joints to be taped with a minimum 75mm wide self-adhesive foil tape.



**Installation of Lamaphon DWX with insulation spacing layer to rectangular ductwork to prevent sound break out / in**

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