

Visco-Elastic **QUIETWAVE** Captive Membrane Technology

The thinnest, most effective, cost efficient acoustic system available.



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The world is getting more noisy each day. What is required is a simple, cost effective solution to acoustic treatment; One which will reduce sound transmission, while not taking up the space traditional mass loading methods have required.



Introducing Quietwave.

Quietwave is a flexible visco-elastic membrane consisting of a patented constrained layer with 'floating' vibration dampening material. Just 1.2mm thick, it is easily handled and can be installed by one person.

Captive Membrane Technology means that once sandwiched between two layers of plasterboard, Quietwave becomes the equivalent of adding 40kg/m² of additional plasterboard and achieves more sound transmission loss than any other dry-wall system with a saving of 30-50% in wall thickness. This means more usable floor space, while maintaining the highest of acoustical ratings.

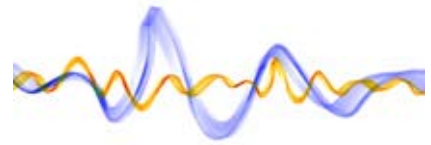
Unlike traditional mass loaded acoustic barriers, the Quietwave membrane can be penetrated; even when gaps are left in the visco-elastic layer, the acoustical performance of the wall system will not be impaired.

Quietwave also increases the low frequency performance of wall systems to counter noise from entertainment sources such as sub-woofers and in addition, controls the large coincidence dip which typically occurs in plasterboard walls in the upper-mid frequency region of 2.5 to 4 kHz.



"Quietwave is the most effective method of achieving high levels of acoustic integrity in thin wall sections"

How does it work?



When a normal wall gets hit by a sound wave, it moves a tiny bit in tune with those frequencies. In this way, sound travels through the structure of the wall as vibrations and becomes sound again on the other side.

When sound hits a wall with the Quietwave system installed, things happen a little differently...

When the outer layer of drywall is hit by a sound wave, because it is attached by the visco-elastic membrane to another piece of material, the sound energy translates into a tiny amount of sheer movement. This dampens the sound quicker, and stops the inner layer of wall resonating and letting the sound move through. The whole front panel of the wall actually moves a little, which dampens the sound profoundly. The movement is tiny, not enough to actually be noticed, but enough to make Captive Membrane Technology one of the most effective acoustic systems available.

*Here is the best bit - Quietwave is independently tested to still provide the **same level of acoustic performance at only 50% coverage!***

- Thinner, Lighter Walls - Save 40kg/m² and require less wall thickness
- Highly Impact Resistant - Solid, sounds like a masonry wall on impact
- Cost efficiency - Only requires 50% coverage for acoustical performance

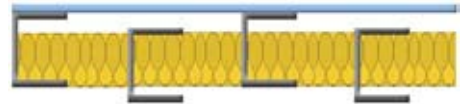
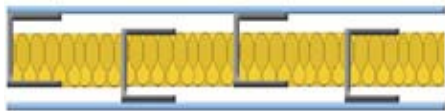
Suitable for any application that incorporates rigid panel systems, such as:

Walls, floors, ceilings, doors , marine and transport, moveable walls, partitions and furniture.

Installation Procedure

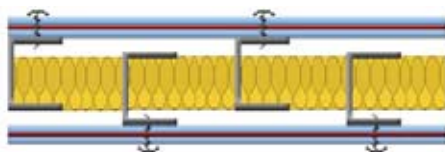
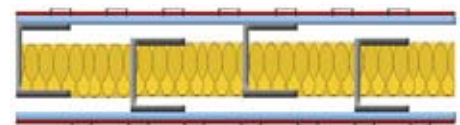
The key to the Quietwave system is the Constrained Layer Technology. The product needs to be 'captured' between two layers of rigid material in order to be able to convert the sound energy into shear energy. In the below example, we are going to construct the standardised *Quietwave Wall System*

1. Fix the first layer of plasterboard to studs & install one layer of acoustic insulation.



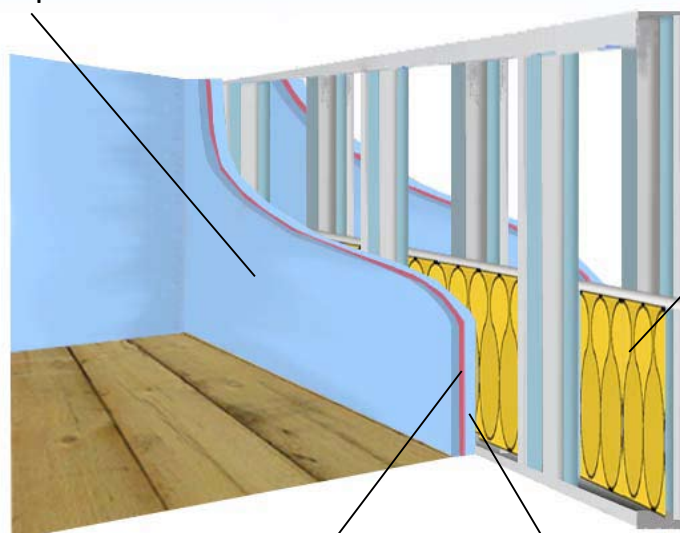
2. Fix a layer of plasterboard on the other side of the studs in order to hold the structure in.

3. Staple one layer of Quietwave along the top of the first layer of plasterboard, letting the rest of the sheet hang. Quietwave can be simply edge butted. Ensure even coverage.



4. Fix the outer layer of plasterboard by screwing through all layers and into the studs. Industry standards apply and should be followed for spacing and length of screws.

Outer layer of plasterboard



SoundRoll
Acoustic Insulation

Quietwave Membrane

Inner layer of plasterboard

A similar procedure can be applied for ceiling or door installation and for increasing the sound transmission loss (STL) of an existing wall.

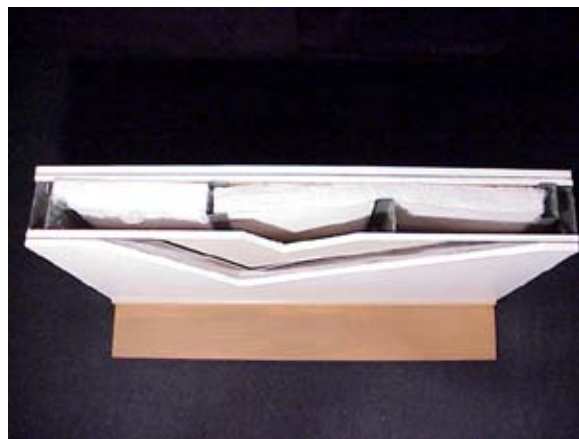
The complete Quietwave Wall System consists of:

- 13mm thick layer of standard plasterboard
- Layer of Quietwave with a minimum even coverage of 50% on the wall
- 13mm thick layer of standard plasterboard
- Staggered 64mm Studs in a 92mm track with 50mm insulation
- 13mm thick layer of standard plasterboard
- Layer of Quietwave with a minimum even coverage of 50% on the wall
- 13mm thick layer of standard plasterboard

When installed to proper specification, the Quietwave Wall System has been tested to provide a wall with rating of *Rw62 and $Rw + Ctr = 55$ dB*.

This rating is achieved while only requiring a *total wall width of 148mm*.

Compare this to other systems that require a 257mm wall width to achieve Rw62, or can only provide a Rw56 wall at 144mm width. Quietwave provides the thinnest, most highly rated wall available.



Bear in mind, that while the entire system is required to achieve the Rw62 rating, utilising the Quietwave membrane in a Constrained Layer system will achieve the equivalent of adding 40kg/m² to any surface. Quietwave has been used on doors, on ceiling, on floors, and anywhere where high acoustic isolation is required and space is at a premium.

All this from only 50% coverage!

Testing and comparison..

Two nearly identical walls were tested - the only difference being that one wall had the Quietwave membrane sandwiched between the two layers of plasterboard and the other didn't. The graph on the right illustrates the significant difference that the Quietwave makes.

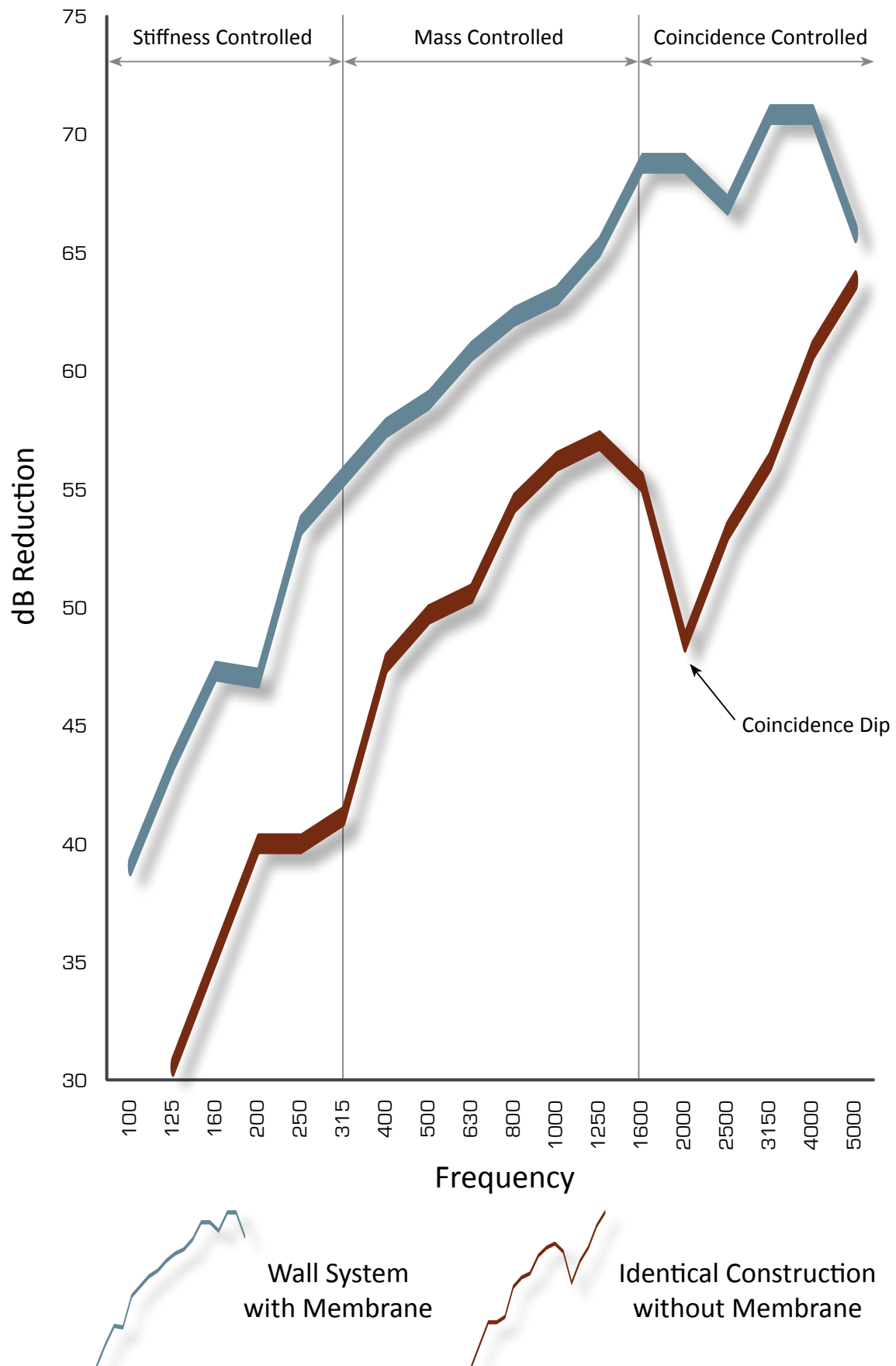
As well as increasing the STC rating of the wall over the entire range of frequencies, it should be noted that the Quietwave membrane construction significantly increased the STC around the coincidence dip - the point that plasterboard wall systems naturally resonate at. This area is where the human ear is especially sensitive, so attenuation is critical at this point.

**This amount of improvement simply from
50% even coverage of a 1.2mm membrane.**



Frequency (Hz)	Quietwave Wall (dB Reduction)	Ref. Wall
125	43.7	30
160	47.6	35
200	47.4	40
250	54.1	40
315	56.3	41
400	58.4	48
500	59.6	50
630	61.8	41
800	63.4	55
1000	64.1	57
1250	66.5	58
1600	70	56
2000	70.2	49
2500	68.3	54
3150	72.2	57
4000	72.1	62
5000	67.1	65
Rw	62	-
Ctr	-7	-
Rw + Ctr	55	-
STC	63	51

Sound Transmission Loss Comparison





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