

3 August 2021

Zenthe
Email

Attention: Adam Fyfe

Dear Adam

ZENTHE PANELS - ABSORPTION OPINION

We have been asked to provide an estimate of the sound absorption performance achieved by perforated timber panels (Globe and Impact). We have provided an opinion on the sound absorption performance for the following configurations:

MDF/Plywood thickness:

- 12mm thick with felt backing
- 18mm thick with felt backing

Cavity depth:

- 25 mm deep filled with Autex AAB 35-25
- 50 mm deep filled with Autex AAB 35-50
- 100 mm deep filled with Autex AAB 20-100

Perforation pattern:

- 6 mm holes at 16 mm centres in a square pattern (10% open area)
- 8 mm holes at 16 mm centres in a square pattern (20% open area)
- 8 mm slots at 70 mm long with 30mm vertical and 120mm horizontal spacings (10% open area)
- 8 mm slots at 250 mm long with 30mm vertical and 85mm horizontal spacings (20% open area)

To assist with our predictions, we measured the flow resistivity of the felt backing which was 52 Rayls.

The estimated sound absorption performance is provided in the table overleaf;

It has also been requested that we provide an opinion on the 25mm and 50mm thick PET Gleam panels. The 12mm thick panel has been lab tested at Intertek and the results are provided in the table overleaf. The test report is attached to this letter.

To assist with our predictions, we measured the flow resistivity of each polyester panel as follows.

12 mm Gleam	77,200 Rayls/m
25 mm Gleam	39,900 Rayls/m
50 mm Gleam	46,200 Rayls/m

The estimated sound absorption performance for each product, without an airgap, is provided in the table overleaf;

Product	Estimated α						NRC
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	
12mm Panel with felt backing on 25mm cavity filled with Autex AAB 35-25							
6 mm hole (10% OA)	0.10	0.30	0.75	0.80	0.25	0.10	0.55
8 mm hole (20% OA)	0.10	0.35	0.85	0.65	0.15	0.10	0.50
8 mm slot (10% OA)	0.10	0.35	0.75	0.75	0.20	0.10	0.50
8 mm slot (20% OA)	0.10	0.25	0.55	0.80	0.40	0.20	0.50
12mm Panel with felt backing on 50mm cavity filled with Autex AAB 35-50							
6 mm hole (10% OA)	0.35	0.85	1.05	0.60	0.25	0.2	0.70
8 mm hole (20% OA)	0.30	0.70	0.95	0.80	0.45	0.45	0.75
8 mm slot (10% OA)	0.35	0.85	1.05	0.55	0.20	0.15	0.65
8 mm slot (20% OA)	0.3-	0.70	0.90	0.75	0.40	0.40	0.70
12mm Panel with felt backing on 100mm cavity filled with Autex AAB 20-100							
6 mm hole (10% OA)	1.00	1.30	1.00	0.60	0.35	0.15	0.80
8 mm hole (20% OA)	0.90	1.25	1.05	0.80	0.65	0.40	0.95
8 mm slot (10% OA)	1.00	1.30	0.95	0.50	0.30	0.15	0.75
8 mm slot (20% OA)	0.85	1.20	1.05	0.75	0.6	0.35	0.90
18mm Panel with felt backing on 25mm cavity filled with Autex AAB 35-25							
6 mm hole (10% OA)	0.10	0.35	0.85	0.65	0.15	0.10	0.50
8 mm hole (20% OA)	0.10	0.30	0.45	0.80	0.35	0.25	0.50
8 mm slot (10% OA)	0.10	0.35	0.90	0.55	0.10	0.10	0.50
8 mm slot (20% OA)	0.10	0.25	0.60	0.75	0.30	0.20	0.45

Product	Estimated α						NRC
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	
18mm Panel with felt backing on 50mm cavity filled with Autex AAB 35-50							
6 mm hole (10% OA)	0.35	0.90	1.05	0.45	0.15	0.15	0.65
8 mm hole (20% OA)	0.30	0.75	1.00	0.70	0.40	0.40	0.70
8 mm slot (10% OA)	0.35	0.90	1.00	0.35	0.15	0.15	0.60
8 mm slot (20% OA)	0.30	0.70	0.95	0.65	0.35	0.35	0.65
18mm Panel with felt backing on 100mm cavity filled with Autex AAB 20-100							
6 mm hole (10% OA)	1.05	1.30	0.85	0.45	0.25	0.15	0.70
8 mm hole (20% OA)	0.90	1.25	1.05	0.70	0.55	0.40	0.90
8 mm slot (10% OA)	1.05	1.30	0.80	0.40	0.20	0.15	0.70
8 mm slot (20% OA)	0.90	1.25	1.00	0.65	0.50	0.35	0.85
Gleam Panel Raw							
12mm thick – from lab test	0.00	0.05	0.20	0.55	0.80	1.00	0.40
25mm thick	0.05	0.25	0.55	0.75	0.90	0.95	0.60
50mm thick	0.40	0.85	1.00	0.95	0.95	0.95	0.95

This data is an estimate only. For greater accuracy on the performance of these products they should be tested in accordance with ISO 354:2003.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD

Shaun King

Acoustic Consultant