

TEST REPORT No. GLA-1664 / 24 E**Sponsor:**DOMLO Sp. z o.o.
Olszany 55A,
05-604 Jasieniec**Manufacturers:**DOMLO Sp. z o.o.
Olszany 55A,
05-604 Jasieniec**Test specimen:**

Acoustic panel with the trade name Lameo_FX
"Lame on felt" product in the form of a sheet of 8mm thick felt, to which MDF strips in the form of 16 x 30mm lamellas have been attached.

Specimen delivered by: Sponsor**Delivery Date:**

19.04.2024

Test Date:

29.04.2024

Test method:

PN-EN ISO 354:2005 Acoustics: Measurement of sound absorption in a reverberation room

Tested parameters:Sound absorption coefficient α_s .Practical sound absorption coefficient α_p Single rating α_w according to: PN-EN ISO 11654:1999 Acoustics.
Sound absorbers use in buildings. Rating of
sound absorption

Copy No. 1

The test report consists of 7 pages.

The report was printed in 3 copies. Copies No. 1-2 - for the Client, and in the electronic version - a/a.

The test results refer only to the tested object. This report may only be reproduced as a whole, unless the Laboratory, otherwise consents in writing.
The test report is not a product acceptance certificate.

1. TEST SPECIMEN

1.1 Description of test specimen:

The subject of the sound absorption tests was a sound-absorbing product called Decorative acoustic panel - laths on felt, trade name "Lameo _FX".

The sound-absorbing product was made of 8 mm thick felt, to which MDF strips dimensions 30 mm x 16 mm (width x height) were sewn. The product is intended for decorating and "soundproofing" rooms.

Material	8 mm thick felt (PET)
MDF laths	30 mm x 16 mm (width x height)
Distance between laths	20 mm



Figure. 1. Photos showing Decorative acoustic panel - laths on felt. Photo by Gryfitlab

The product was manufactured by DOMLO Sp. z o.o.

The description of the test specimen was prepared on the basis of the documentation and information provided by the sponsor.

1.2 The area of test specimen:

$S \approx 15.68 \text{ m}^2$ (test specimen dimension $\sim 3.91 \times \sim 4.009 \text{ m}$). The test used 13 pieces of 300 mm wide by 1250 mm long panels and 13 pieces of 300 mm wide by 2750 mm long panels.

1.3 The way of mounting of the test specimen:

The test specimen was putted on the floor in the reverberation room. The mounting type A in accordance with Appendix B of standard PN-EN ISO 354:2005..

1.4 Photographic documentation



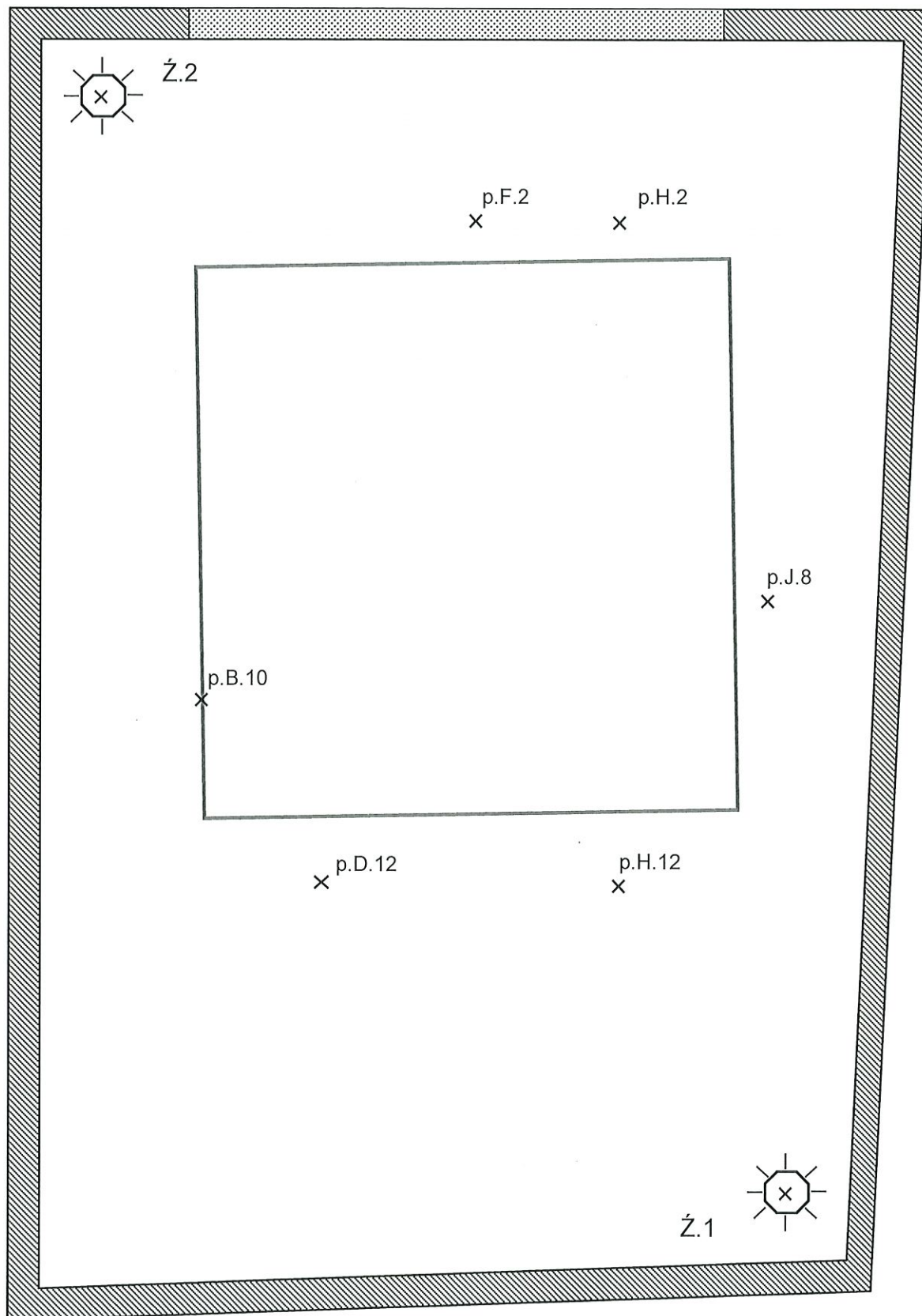
Figure. 2. Photo showing decorative acoustic panels. Test specimen No: GLA-1664/ 24 mounted on the test bench. Photo by Gryfitlab



Figure. 3. Photo showing decorative acoustic panels. Test specimen No: GLA-1664/ 24 mounted on the test bench. Photo by Gryfitlab

1.5 The measurement conditions:

The test specimen was positioned on the floor that any edge of test specimen were not close than 1 m from the wall of the reverberation room. The measurement conditions is shown in Figure 4.



Ż.1, Ż.2 sound source location, p.B.10, D.12, H.12, J.8, H.2, F.2 measurement points

Figure. 4. The view of the reverberation room with the test specimen

2. REVERBERATION ROOM

Volume – $V = 324 \text{ m}^3$.

Total surface (walls, floor and ceiling) – $S_t = 291,5 \text{ m}^2$.

The reverberation chamber dimensions (length x width x height) – $9,6 \times 6,7 \times 5,5 \text{ m}$.

No walls of the room are parallel to each other. Also the ceiling is not parallel to the floor.

3. TEST EQUIPMENT

Microphone: condenser microphone type MK255, serial no. 18810, MICROTECH GEFELL.

Preamplifier: type SV 12L, serial no. 100337, producer Svantek.

Sound analyzer: type SVAN 958A, serial no. 92322, producer Svantek.

Calibrator: type SV-36, serial no. 100129, producer Svantek.

Sound source: omnidirectional sound source: type D203, serial no.. D203 / E2217, Look Line Instruments.

Thermohygrobrometer: type C4130 serial No. 149000370, producer Comet, PP-LA-122.

4. CERTIFICATES OF PERIODIC INSPECTION OF MEASUREMENT SYSTEM

Measurement system: Analyzer+ Preamplifiers + Microphones – calibration report No. 00064674.1/02/2023 and 00064674.1/04/2023 of 13.07.2023 in Svantek Laboratory.

Calibrator: – calibration report No. 00064672/01/2023 of 07.07.2023 in Svantek laboratory.

5. MEASUREMENT RESULTS

The sound absorption coefficient α_s , was determined in one third-octave bands between 100 Hz and 5000 Hz according to PN-EN ISO 354:2005. (test results is shown in figure 5).

In addition to the sound absorption coefficient the following characteristic values were determined according to PN-EN ISO 11654:1999.

- Weighted sound absorption coefficient α_w , as single number rating,
- Practical sound absorption coefficient α_p , in octave bands,
- Class of absorption.

In the below table are showed the sound absorption performance of Domlo's product.

Tab.1 The acoustic performance for the test specimen No. GLA-1664/ 24 - Acoustic panel with the trade name Lameo_FX

Practical sound absorption coefficient	Frequency (Hz)						Single rating
	125	250	500	1000	2000	4000	α_w
α_p	0,00	0,05	0,15	0,50	0,90	0,75	0,25 (M,H)

Sound absorption class: E

Sound Absorption Coefficient

PN-EN ISO 354:2005 (EN ISO 354:2003) Measurement of sound absorption in a reverberation room

Client: **DOMLO Sp. z o.o.**
Olszany 55A,
05-604 Jasieniec

Measurement date: **29.04.2024**

Test Specimen: **Acoustic panel with the trade name Lameo_FX**

Laths in the form of MDF slats dimensions 30 mm width, 16 mm high.

Felt thickness 8 mm. Distance between slats 20 mm.

Product code: LAMEO_F103 ; EAN-13: 5905342266419

Dimensions of 1 panel: 2750 x 300 x 24 mm (length x width x thickness)

13 pieces of 1250 mm long panels and 13 pieces of 2750 mm long panels were used in the test

Surface area of the test specimen: **15,68 m²**

Type of mounting the test specimen in the reverberation room: **A**

Reverberation room:

Volume **V = 324 m³**

Surface of all partitions reverberation room **S_t = 291,5m²**

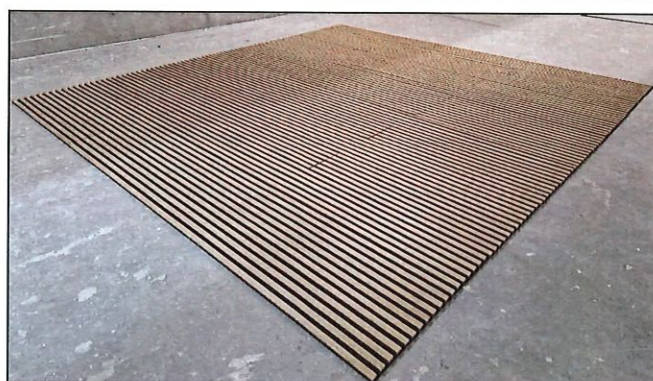
Number of Diffusers: 6

Air temperature of empty room T₁: **17,8 °C**

Air temperature of room with object T: **17,8 °C**

Relative humidity in empty room T₁: **56 %**

Relative humidity; object in room T₂: **55 %**

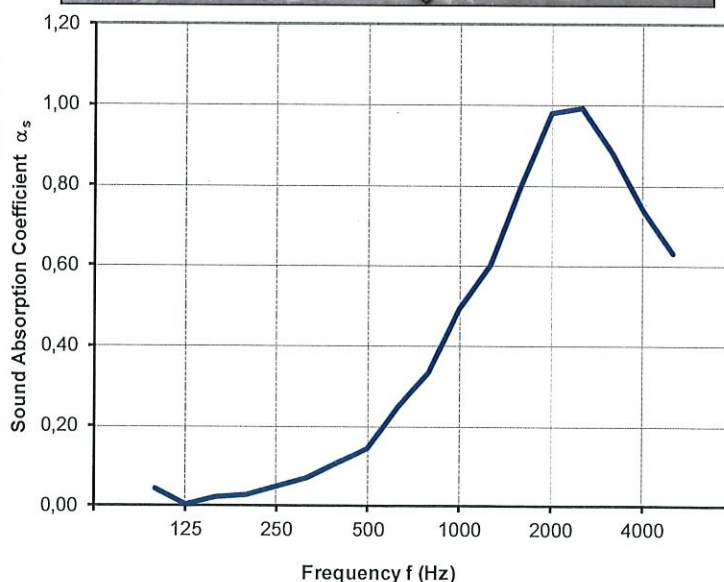


Frequency	Reverberation time empty	Reverberation time filled room	Sound Absorption Coefficient	
f	T1	T2	α_s	α_p
(Hz)	(s)	(s)		
100	7,45	6,77	0,04	0,00
125	7,93	7,87	0,00	
160	8,27	7,81	0,02	
200	7,93	7,42	0,03	0,05
250	8,09	7,23	0,05	
315	8,12	6,94	0,07	
400	7,54	6,07	0,11	0,15
500	6,96	5,33	0,15	
630	6,47	4,37	0,25	
800	6,07	3,77	0,34	0,50
1000	5,47	3,03	0,49	
1250	4,95	2,62	0,60	
1600	4,45	2,15	0,80	0,90
2000	3,71	1,78	0,98	
2500	3,08	1,61	0,99	
3150	2,54	1,52	0,88	0,75
4000	2,19	1,47	0,74	
5000	1,64	1,25	0,63	

PN-EN ISO 11654:1999

$\alpha_w = 0,25$ (MH)

Sound absorption class: E



GRYFITLAB Sp. z o.o. Laboratory of Acoustics

No. of test specimen: GLA-1664 / 24

Date: 29.04.2024

Signature: Robert Dybicz

Figure. 5 Measurement results of the test specimen No. GLA-1664/ 24

6. THE PRECISION OF THE MEASUREMENTS

Accuracy of measurement reverberation time.

The standard deviation of reverberation time T_{20} , evaluated over a 20 dB decay range can be estimated by following formula (PN-EN ISO 354: 2005 – point 8.2.2).

$$\varepsilon_{20}(T) = T \sqrt{\frac{2,42 + 3,59 / N}{f T}}$$

$\varepsilon_{20}(T)$ - The standard deviation of reverberation time T_{20} ,

T – the measured reverberation time; T_1 time for the empty room, T_2 time for the fitted room (s),

f – the centre frequency of one-third-octave band (Hz),

N – the number of decay curves evaluated.

Accuracy of measurement sound absorption coefficient.

The standard deviation of sound absorption coefficient $\varepsilon(\alpha)$, can be estimated by following formula

$$\varepsilon(\alpha) = \frac{55,3 \cdot V}{c \cdot S} \sqrt{\left(\frac{\partial \alpha}{\partial T_2} \varepsilon_{T_2}\right)^2 + \left(\frac{\partial \alpha}{\partial T_1} \varepsilon_{T_1}\right)^2} = \frac{55,3 \cdot V}{c \cdot S} \sqrt{\left(-\frac{1}{T_2^2} \varepsilon_{T_2}\right)^2 + \left(-\frac{1}{T_1^2} \varepsilon_{T_1}\right)^2}$$

V – the volume of reverberation room (m³),

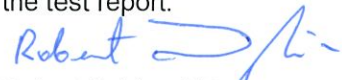
c – the speed of sound (m/s),

S – the area of test specimen (m²).

Tab. 2 The standard deviation of sound absorption coefficient $\varepsilon(\alpha)$ for test specimen
No. GLA-1664/ 24

f	Empty room		Fitted room		Accuracy
	T1	ε_{T1}	T2	ε_{T2}	$\varepsilon(\alpha)$
Hz	s		s		
100	7,45	0,43	6,77	0,41	0,04
125	7,93	0,40	7,87	0,40	0,03
160	8,27	0,36	7,81	0,35	0,03
200	7,93	0,32	7,42	0,31	0,03
250	8,09	0,29	7,23	0,27	0,02
315	8,12	0,25	6,94	0,24	0,02
400	7,54	0,22	6,07	0,20	0,02
500	6,96	0,19	5,33	0,16	0,02
630	6,47	0,16	4,37	0,13	0,03
800	6,07	0,14	3,77	0,11	0,03
1000	5,47	0,12	3,03	0,09	0,03
1250	4,95	0,10	2,62	0,07	0,04
1600	4,45	0,08	2,15	0,06	0,04
2000	3,71	0,07	1,78	0,05	0,05
2500	3,08	0,06	1,61	0,04	0,06
3150	2,54	0,05	1,52	0,03	0,06
4000	2,19	0,04	1,47	0,03	0,05
5000	1,64	0,03	1,25	0,03	0,06

7. SIGNATURES

Responsible for preparation of the test report:  Robert Dybicz, MSc	Responsible for authorization of the test report:  Krzysztof Mech, PhD	Report issue date: 10 June 2023
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