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FINAS
Finnish Accreditation Service
T293 (EN ISO/IEC 17025)

DETERMINATION OF ACOUSTIC ABSORPTION COEFFICIENT IN LABORATORY CONDITIONS

1 CLIENT

Ewona Finland Oy, Sami Luhtaanmäki. Tender May 28, 2026. Order May 29, 2026.

2 DESCRIPTION OF THE COMMISSION

Sound absorption coefficient α_S was measured for the specimen within 100–5000 Hz according to ISO 354:2003. Sound absorption class was determined according to EN ISO 11654:1997.

3 RESULTS

Detailed results are presented in Annex 1.

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4 SIGNATURES

Valtteri Hongisto
Research Group Leader

Jarkko Hakala
Research Engineer

Turku University of Applied Sciences
Acoustics laboratory

ANNEXES

Annex 1 – Test results (10 pages)
Annex 2 – Structure drawings (3 pages)
Annex 3 – Mounting of specimen (2 pages)
Annex 4 – Measurement arrangements (1 page)

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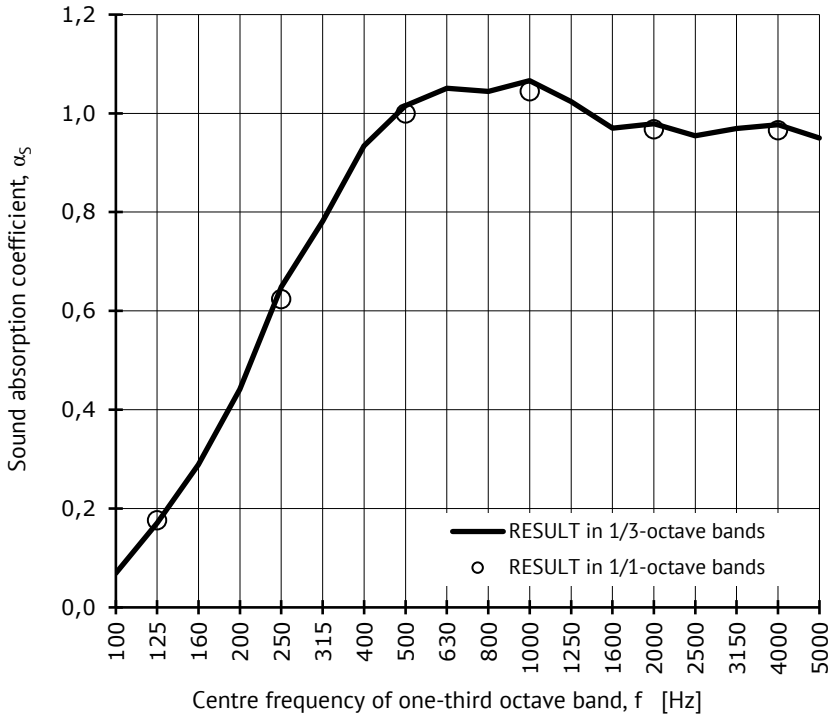
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

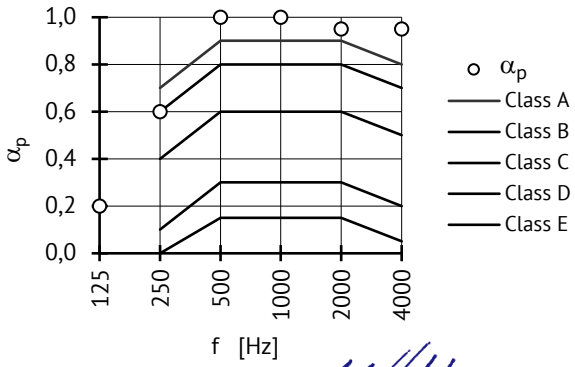
Specimen id: **1. Ewona Acustica Heavy 50mm**
Type A mounting
Manufacturer: Ewona Finland Oy
Client: Ewona Finland Oy
Contact person: Sami Luhtaanmäki
Mounting by: Jarkko Hakala
Test laboratory: Turku University of Applied Sciences, Acoustics Laboratory
Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	58,9	%	(without / with specimen)	Test date:	22.6.2026
Atmospheric pressure:	102	102	kPa	(without / with specimen)	Test file identification:	t220626a

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,07		
125	0,17	0,18	0,20
160	0,29		
200	0,44		
250	0,65	0,62	0,60
315	0,78		
400	0,93		
500	1,02	1,00	1,00
630	1,05		
800	1,04		
1000	1,07	1,04	1,00
1250	1,02		
1600	0,97		
2000	0,98	0,97	0,95
2500	0,95		
3150	0,97		
4000	0,98	0,97	0,95
5000	0,95		



EN ISO 11654:
Weighted sound absorption coefficient α_w
0,90
Absorption class (EN ISO 11654)
A



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Jarkko Hakala
Research Engineer
test performer

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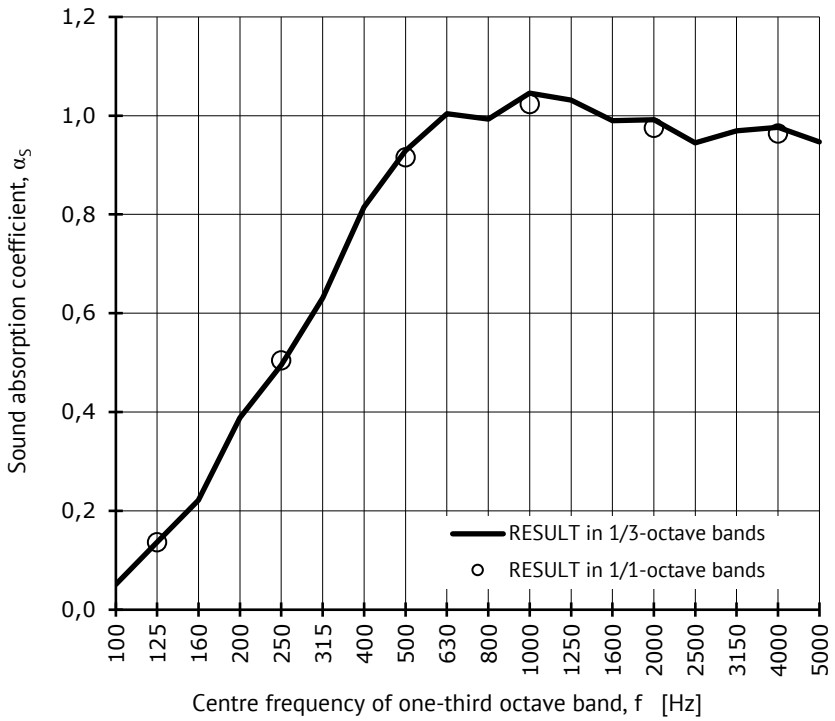
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**2. Ewona Acustica Premium MAX Wall 25 mm + 25 mm**
	Type A mounting
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Jarkko Hakala
Test laboratory:	Turku University of Applied Sciences, Acoustics Laboratory
	Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	60,9	%	(without / with specimen)	Test date:	23.6.2026
Atmospheric pressure:	102	102	kPa	(without / with specimen)	Test file identification:	t230626c

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,05		
125	0,14	0,14	0,15
160	0,22		
200	0,39		
250	0,50	0,50	0,50
315	0,63		
400	0,81		
500	0,93	0,92	0,90
630	1,00		
800	0,99		
1000	1,05	1,02	1,00
1250	1,03		
1600	0,99		
2000	0,99	0,98	1,00
2500	0,94		
3150	0,97		
4000	0,98	0,96	0,95
5000	0,95		



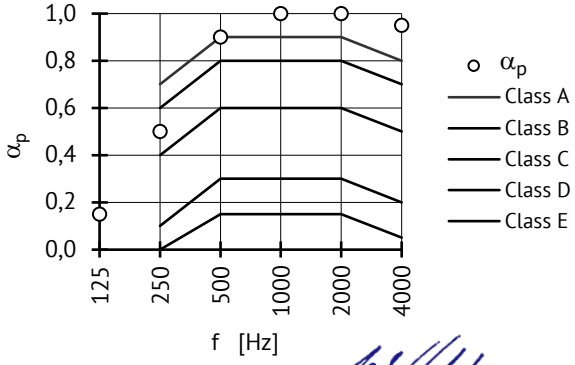
EN ISO 11654:

Weighted sound absorption coefficient α_w

0,80

Absorption class (EN ISO 11654)

B



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Jarkko Hakala
Research Engineer
test performer

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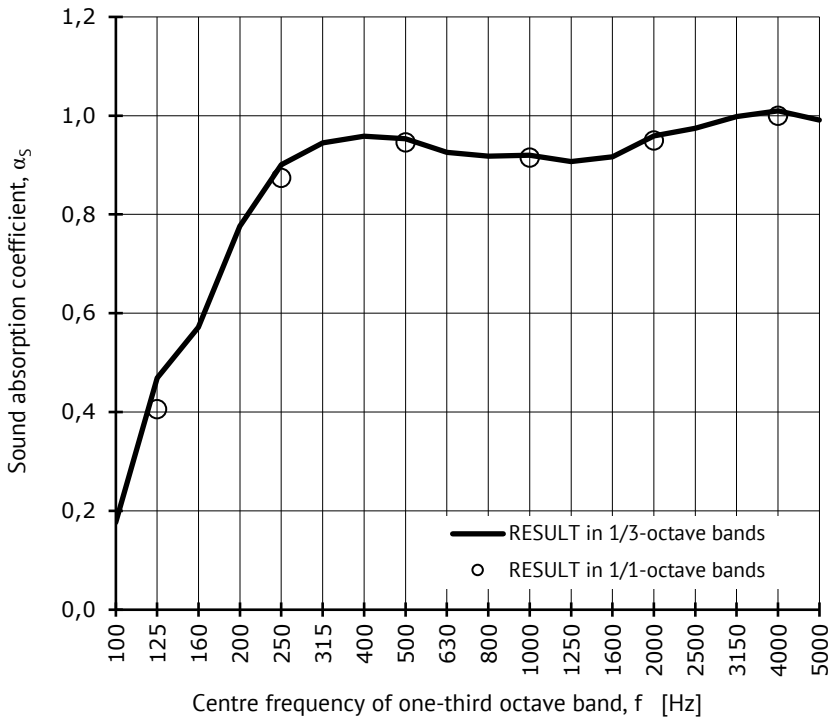
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**3. Ewona Acustica Log Panel Premium 20 mm + 100 mm**
	Type A mounting
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Jarkko Hakala
Test laboratory:	Turku University of Applied Sciences, Acoustics Laboratory
	Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	64,7	%	(without / with specimen)	Test date:	24.6.2026
Atmospheric pressure:	102	101	kPa	(without / with specimen)	Test file identification:	t240626b

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,18		
125	0,47	0,41	0,40
160	0,57		
200	0,78		
250	0,90	0,87	0,85
315	0,94		
400	0,96		
500	0,95	0,95	0,95
630	0,93		
800	0,92		
1000	0,92	0,91	0,90
1250	0,91		
1600	0,92		
2000	0,96	0,95	0,95
2500	0,97		
3150	1,00		
4000	1,01	1,00	1,00
5000	0,99		



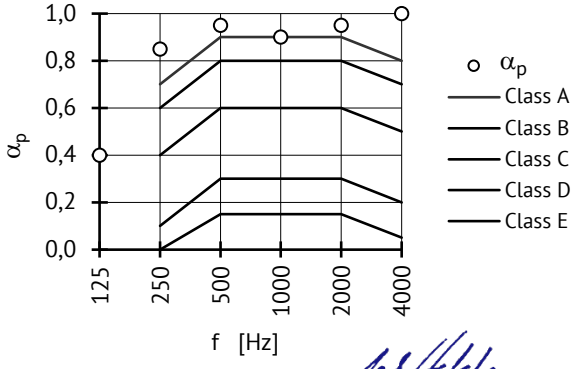
EN ISO 11654:

Weighted sound absorption coefficient α_w

0,95

Absorption class (EN ISO 11654)

A



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Jarkko Hakala
Research Engineer
test performer

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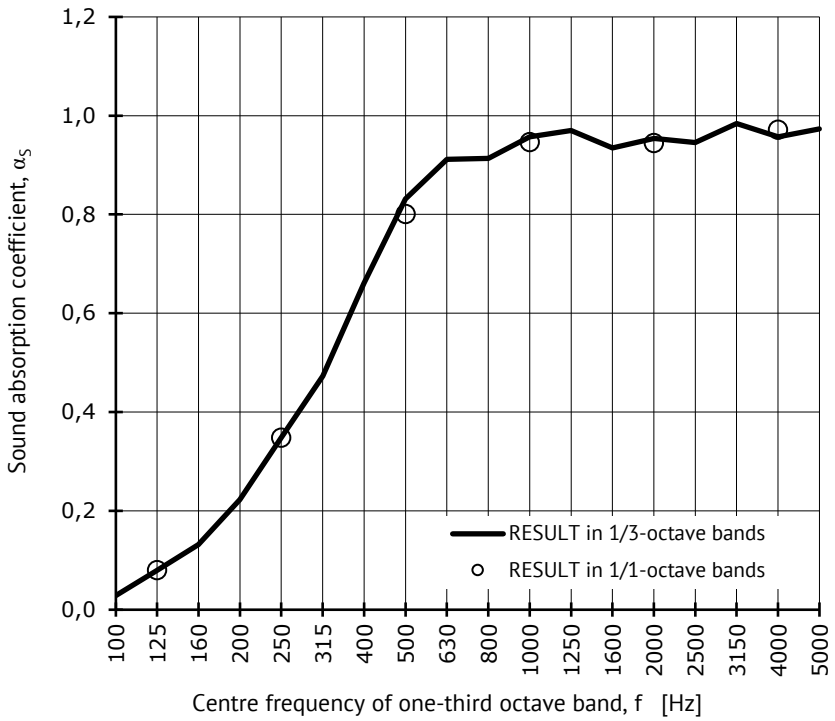
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**4. Ewona Acustica Premium Lath 20 mm + 20 mm, laths on top**
	Type A mounting
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Jarkko Hakala
Test laboratory:	Turku University of Applied Sciences, Acoustics Laboratory
	Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	60,2	%	(without / with specimen)	Test date:	23.6.2026
Atmospheric pressure:	102	102	kPa	(without / with specimen)	Test file identification:	t230626d

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,03		
125	0,08	0,08	0,10
160	0,13		
200	0,22		
250	0,35	0,35	0,35
315	0,47		
400	0,66		
500	0,83	0,80	0,80
630	0,91		
800	0,91		
1000	0,96	0,95	0,95
1250	0,97		
1600	0,93		
2000	0,95	0,94	0,95
2500	0,95		
3150	0,98		
4000	0,96	0,97	0,95
5000	0,97		



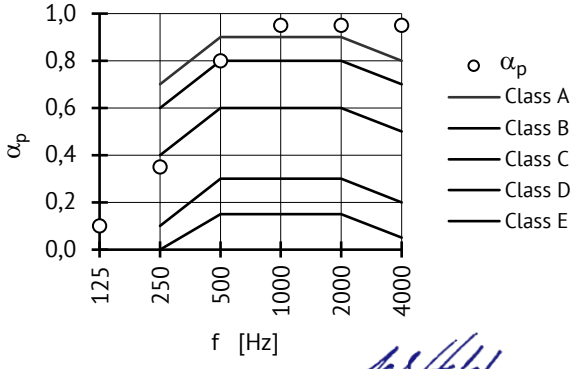
EN ISO 11654:

Weighted sound absorption coefficient α_w

0,65

Absorption class (EN ISO 11654)

C



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Jarkko Hakala
Research Engineer
test performer

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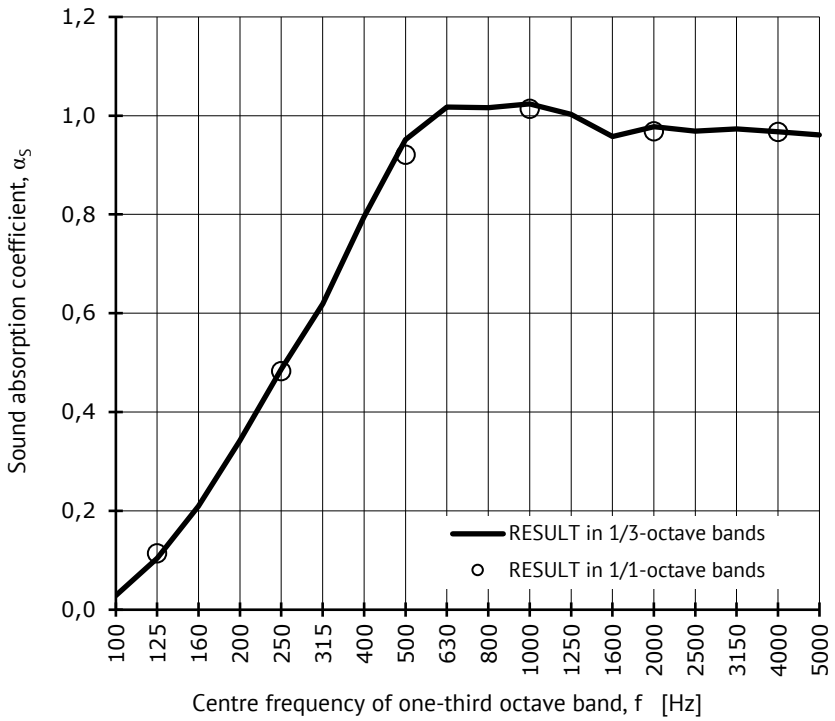
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**5. Ewona Acustica Premium Lath 20 mm + 20 mm, laths against floor**
	Type A mounting
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Jarkko Hakala
Test laboratory:	Turku University of Applied Sciences, Acoustics Laboratory
	Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	65,3	%	(without / with specimen)	Test date:	24.6.2026
Atmospheric pressure:	102	101	kPa	(without / with specimen)	Test file identification:	t240626a

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,03		
125	0,10	0,11	0,10
160	0,21		
200	0,34		
250	0,49	0,48	0,50
315	0,62		
400	0,79		
500	0,95	0,92	0,90
630	1,02		
800	1,02		
1000	1,02	1,01	1,00
1250	1,00		
1600	0,96		
2000	0,98	0,97	0,95
2500	0,97		
3150	0,97		
4000	0,97	0,97	0,95
5000	0,96		



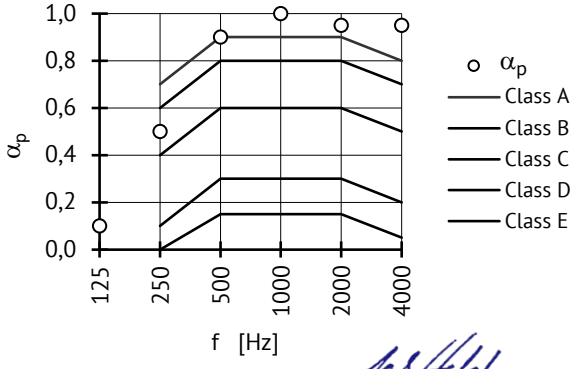
EN ISO 11654:

Weighted sound absorption coefficient α_w

0,80

Absorption class (EN ISO 11654)

B



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Jarkko Hakala
Research Engineer
test performer

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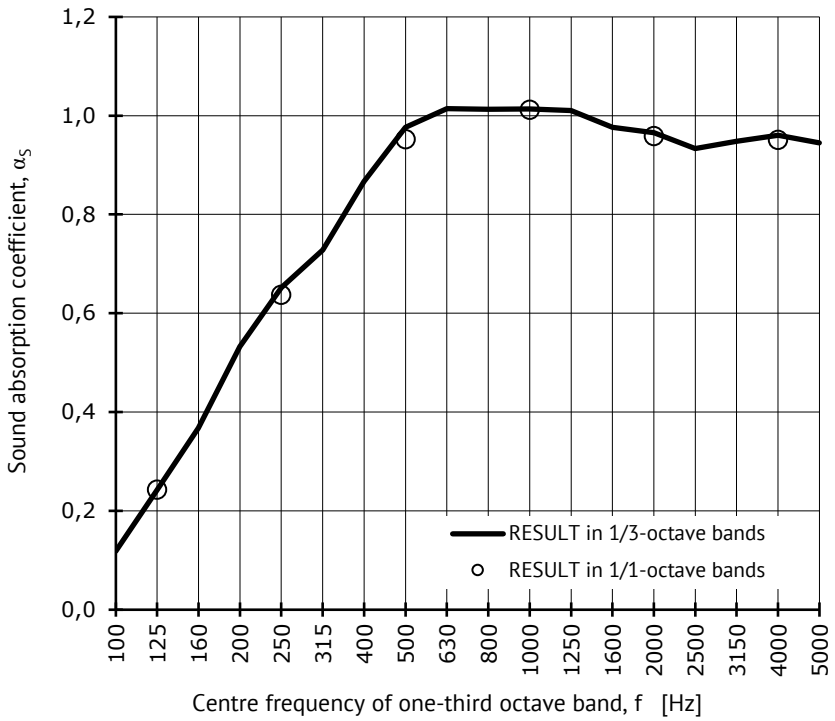
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**6. Ewona Acustica Luxury 50 mm with HUSH fabric**
	Type A mounting
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Jarkko Hakala
Test laboratory:	Turku University of Applied Sciences, Acoustics Laboratory
	Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	65,7	%	(without / with specimen)	Test date:	23.6.2026
Atmospheric pressure:	102	102	kPa	(without / with specimen)	Test file identification:	t230626a

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,12		
125	0,24	0,24	0,25
160	0,37		
200	0,53		
250	0,65	0,64	0,65
315	0,73		
400	0,87		
500	0,98	0,95	0,95
630	1,01		
800	1,01		
1000	1,01	1,01	1,00
1250	1,01		
1600	0,98		
2000	0,97	0,96	0,95
2500	0,93		
3150	0,95		
4000	0,96	0,95	0,95
5000	0,95		



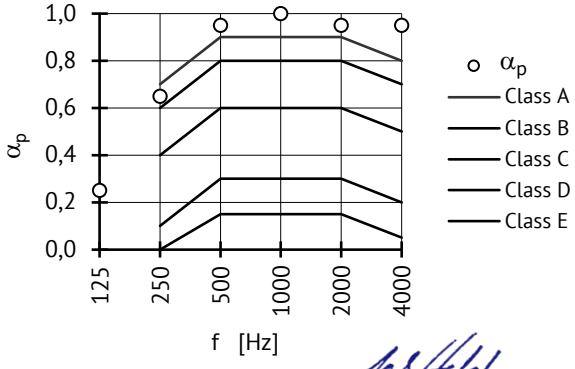
EN ISO 11654:

Weighted sound absorption coefficient α_w

0,95

Absorption class (EN ISO 11654)

A



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Jarkko Hakala
Research Engineer
test performer

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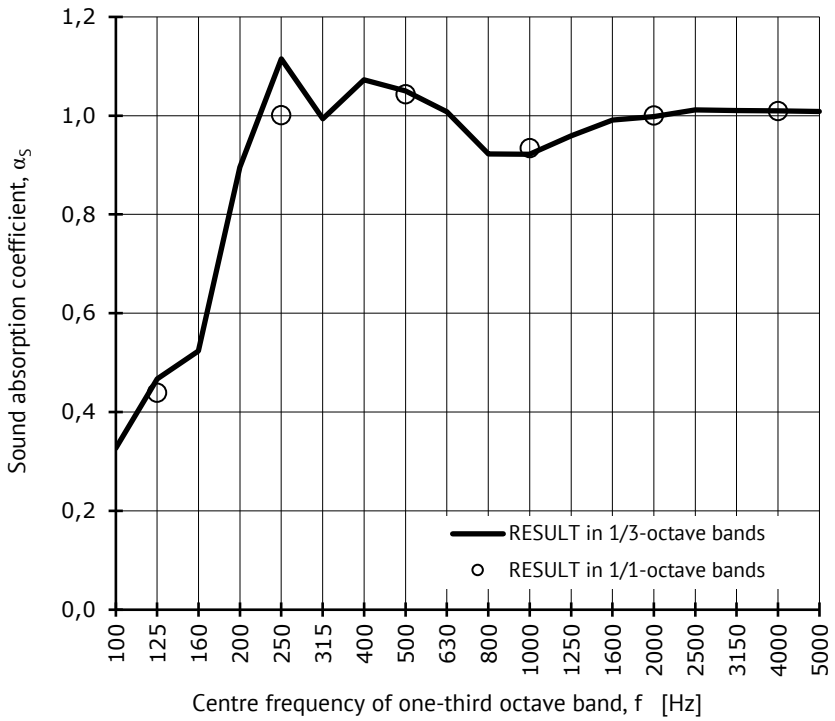
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**7. Ewona Acustica Luxury 50 mm with HUSH fabric**
	Type E-200 mounting (150 mm air gap behind the specimen)
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Jarkko Hakala
Test laboratory:	Turku University of Applied Sciences, Acoustics Laboratory
	Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	63,6	%	(without / with specimen)	Test date:	25.6.2026
Atmospheric pressure:	102	101	kPa	(without / with specimen)	Test file identification:	t250626b

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,33		
125	0,47	0,44	0,45
160	0,52		
200	0,90		
250	1,11	1,00	1,00
315	0,99		
400	1,07		
500	1,05	1,04	1,00
630	1,01		
800	0,92		
1000	0,92	0,93	0,95
1250	0,96		
1600	0,99		
2000	1,00	1,00	1,00
2500	1,01		
3150	1,01		
4000	1,01	1,01	1,00
5000	1,01		



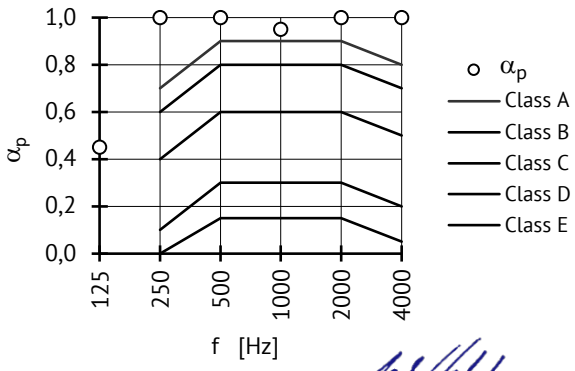
EN ISO 11654:

Weighted sound absorption coefficient α_w

1,00

Absorption class (EN ISO 11654)

A



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Jarkko Hakala
Research Engineer
test performer

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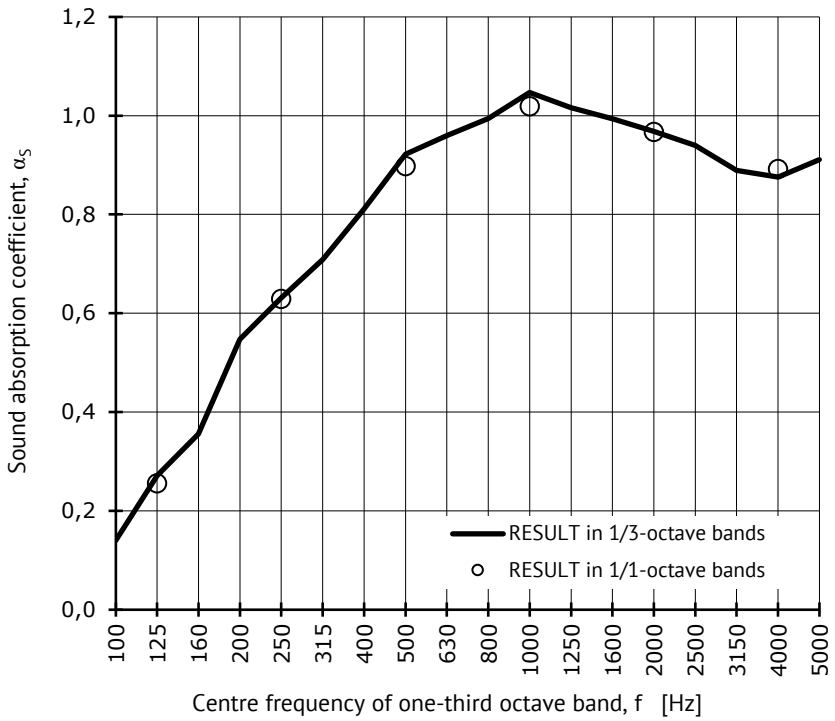
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

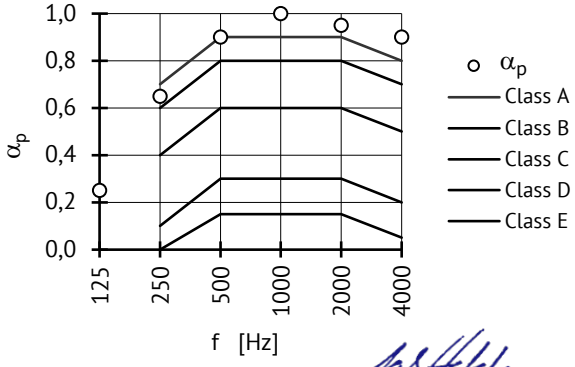
Specimen id: **8. Ewona Acustica Basic 50 mm**
Type A mounting
Manufacturer: Ewona Finland Oy
Client: Ewona Finland Oy
Contact person: Sami Luhtaanmäki
Mounting by: Jarkko Hakala
Test laboratory: Turku University of Applied Sciences, Acoustics Laboratory
Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	63,4	%	(without / with specimen)	Test date:	23.6.2026
Atmospheric pressure:	102	102	kPa	(without / with specimen)	Test file identification:	t230626b

	1/3	1/1	1/1
f (Hz)	α_S	α_S	α_p
100	0,14		
125	0,27	0,26	0,25
160	0,36		
200	0,55		
250	0,63	0,63	0,65
315	0,71		
400	0,81		
500	0,92	0,90	0,90
630	0,96		
800	0,99		
1000	1,05	1,02	1,00
1250	1,02		
1600	0,99		
2000	0,97	0,97	0,95
2500	0,94		
3150	0,89		
4000	0,88	0,89	0,90
5000	0,91		



EN ISO 11654:
Weighted sound absorption coefficient α_w
0,90
Absorption class (EN ISO 11654)
A



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Jarkko Hakala
Research Engineer
test performer

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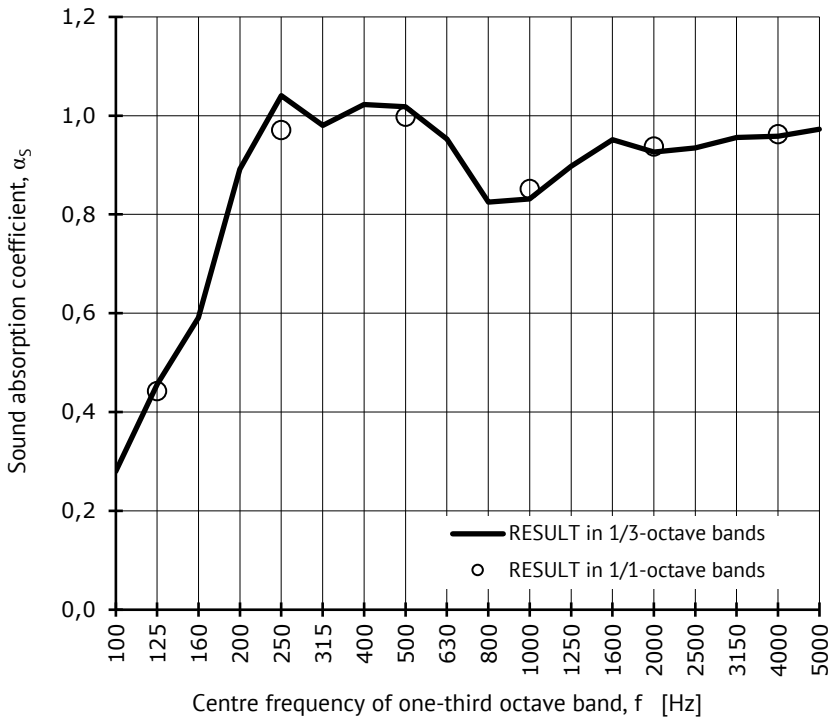
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Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

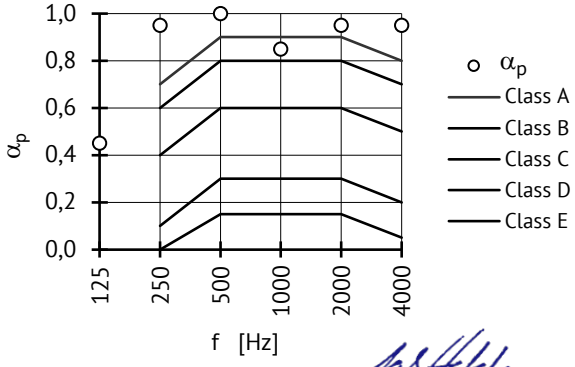
Specimen id: **9. Ewona Acustica Basic 50 mm**
Type E-200 mounting (150 mm air gap behind the specimen)
Manufacturer: Ewona Finland Oy
Client: Ewona Finland Oy
Contact person: Sami Luhtaanmäki
Mounting by: Jarkko Hakala
Test laboratory: Turku University of Applied Sciences, Acoustics Laboratory
Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	66,1	%	(without / with specimen)	Test date:	25.6.2026
Atmospheric pressure:	102	101	kPa	(without / with specimen)	Test file identification:	t250626a

	1/3	1/1	1/1
f (Hz)	**α_S**	**α_S**	**α_p**
100	0,28		
125	0,46	0,44	0,45
160	0,59		
200	0,89		
250	1,04	0,97	0,95
315	0,98		
400	1,02		
500	1,02	1,00	1,00
630	0,95		
800	0,82		
1000	0,83	0,85	0,85
1250	0,90		
1600	0,95		
2000	0,93	0,94	0,95
2500	0,93		
3150	0,96		
4000	0,96	0,96	0,95
5000	0,97		



EN ISO 11654:
Weighted sound absorption coefficient α_w
0,95
Absorption class (EN ISO 11654)
A



FINAS
Finnish Accreditation Service
T293 (EN ISO/IEC 17025)

Jarkko Hakala
Research Engineer
test performer

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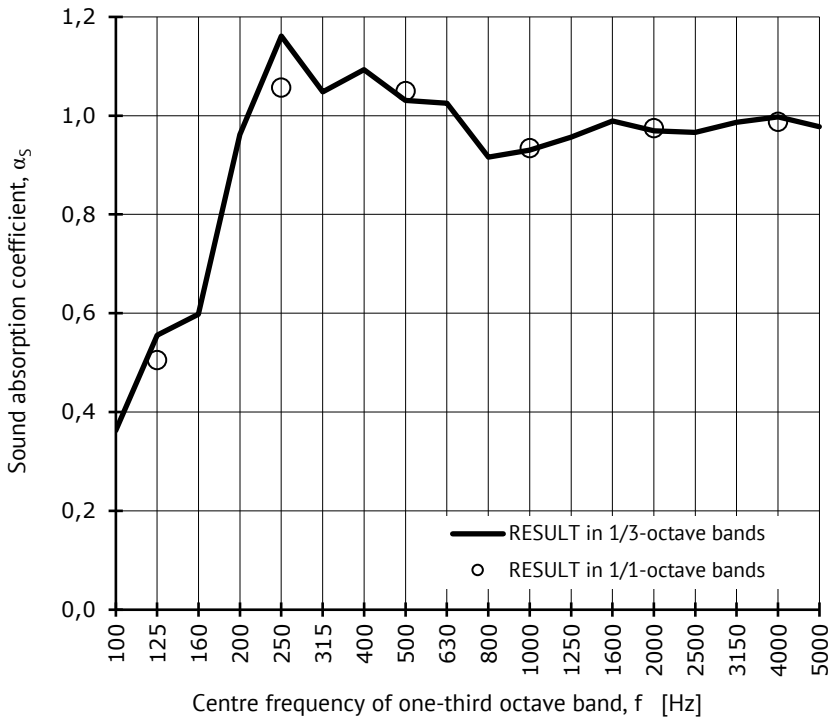
TURKU AMK
TURKU UNIVERSITY OF APPLIED SCIENCES

Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

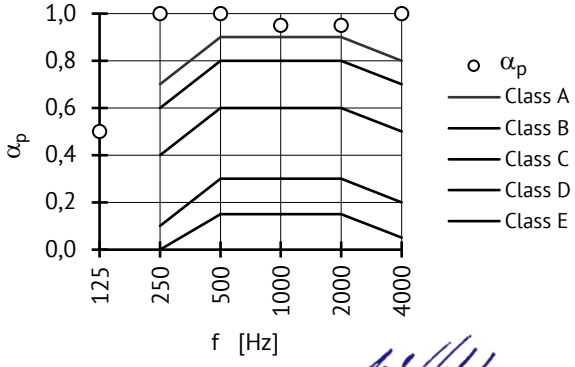
Specimen id: **10. Ewona Acustica Premium 20 mm + Ewona wool 50 mm**
Type E-200 mounting (130 mm air gap behind the specimen)
Manufacturer: Ewona Finland Oy
Client: Ewona Finland Oy
Contact person: Sami Luhtaanmäki
Mounting by: Jarkko Hakala
Test laboratory: Turku University of Applied Sciences, Acoustics Laboratory
Joukahaisenkatu 7, 20520 Turku, Finland

Specimen area:		10,6	m^2		Test room volume:	201 m^3
Temperature of test room:	22	22	°C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	57,7	62,2	%	(without / with specimen)	Test date:	25.6.2026
Atmospheric pressure:	102	101	kPa	(without / with specimen)	Test file identification:	t250626c

	1/3	1/1	1/1
f (Hz)	α_S	α_S	α_p
100	0,36		
125	0,56	0,51	0,50
160	0,60		
200	0,96		
250	1,16	1,06	1,00
315	1,05		
400	1,09		
500	1,03	1,05	1,00
630	1,02		
800	0,92		
1000	0,93	0,93	0,95
1250	0,96		
1600	0,99		
2000	0,97	0,97	0,95
2500	0,97		
3150	0,99		
4000	1,00	0,99	1,00
5000	0,98		



EN ISO 11654:
Weighted sound absorption coefficient α_w
1,00
Absorption class (EN ISO 11654)
A



FINAS
Finnish Accreditation Service
T293 (EN ISO/IEC 17025)

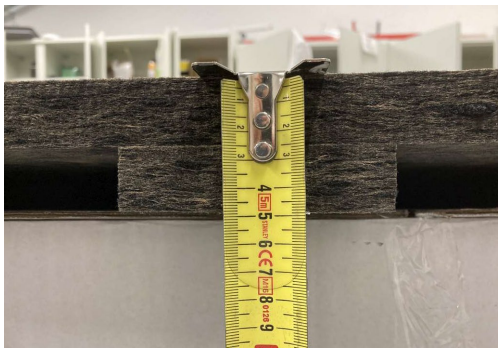
Jarkko Hakala
Research Engineer
test performer

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ANNEX 2 – STRUCTURE DRAWINGS




Ewona Acustica Heavy 50 mm, 80 kg/m^3, tile size 594 x594 mm.




Ewona Acustica Premium MAX Wall 25 mm + 25 mm, 110 kg/m^3.
(MAX 1200 x 2400 mm + Three 100 mm strips at the edges and one in the middle.

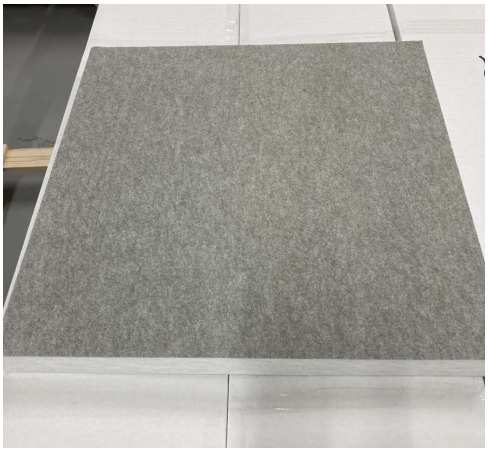
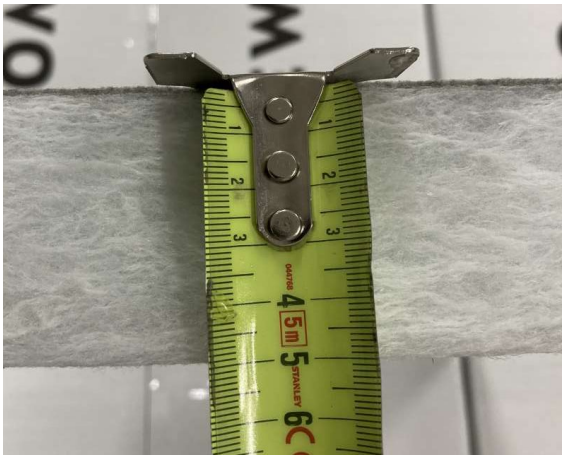


Ewona Acustica Log Panel Premium 110 kg/m^3 total thickness 120 mm. Backing tiles 20 x 600 x 1200 mm, with a semi-circular acoustic tube 20 kg/m^3

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Ewona Acustica Premium Lath, 110 kg/m³ total thickness 40 mm (Premium backing featuring slats of the same material, 20 × 30 mm slats at 20 mm spacing).

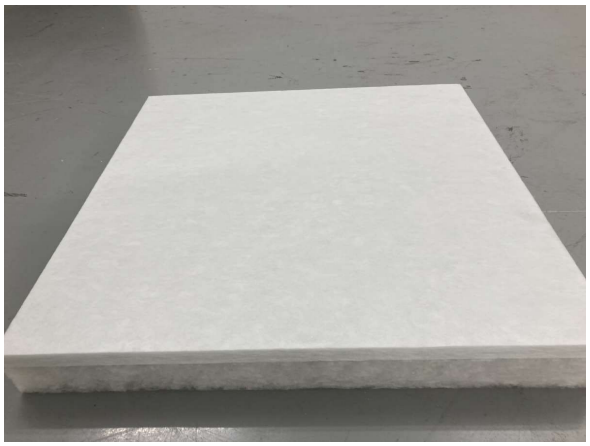



Ewona Acustica Luxury 50 mm HUSH fabric 52kg/m³, tile size 594 x 594 mm.




Ewona Acustica Basic 50mm 24kg/m³, tile size 594 x 594 mm.

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Ewona Acustica Premium 20 mm, 110 kg/m³ + 50 mm Ewona wool, 20 kg/m³. Total thickness 70 mm.

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ANNEX 3 – MOUNTING OF SPECIMEN

The specimen was mounted on the floor of the reverberation room in conformance with **ISO 354:2003 Annex B,** either using **Type A** or **Type E-200 mounting**.

The Type E-200 mountings were constructed using a prefabricated frame. The frame consisted of perimeter members made of Kerto S 45 × 200 mm timber and an internal grid (595 × 595 mm) made of 28 × 45 mm timber.

For the Type A mounting, the perimeter edges were covered with 50 × 50 mm steel angles. In Specimen 3, 120 mm plasterboard was additionally used at the perimeter.

The side edges of the specimen were sealed with adhesive tape.



Ewona Acustica Heavy. Type A



Ewona Acustica Basic. Type A



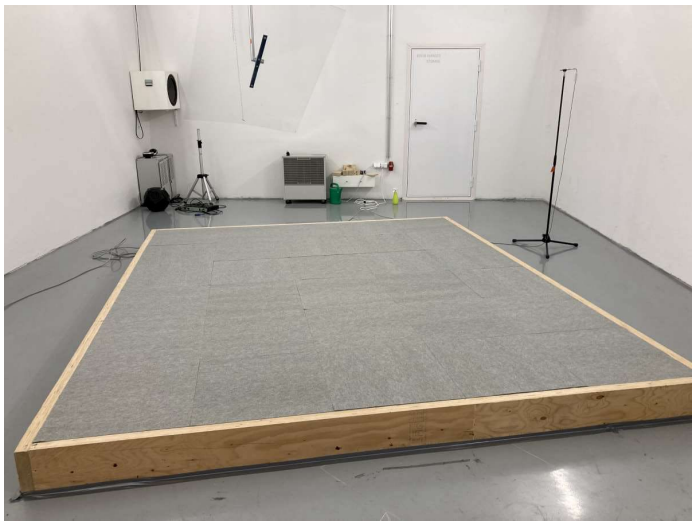


Ewona Acustica Premium Lath was measured on both sides using Type A mounting.

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Left: Ewona Acustica Log Panel Premium. Type A
Right: Ewona Acustica Premium + Ewona wool. Type E-200.



Ewona Acustica Luxury with HUSH fabric. Type E-200.

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ANNEX 4 – MEASUREMENT ARRANGEMENTS

1 Acoustical measurements

The test signal was produced to the test room using three fixed omnidirectional loudspeakers (6 x Seas W12CY001). The test signal (pink noise) was produced by a real time analyzer (Norsonic 150, serialnr. 15030842) and amplified with terminal amplifier (QSC 1300 W USA). The sound pressure level in the reverberation room was measured with the condenser microphone (Bruel&Kjær 4190, serialnr. 3324826) and the pre-amplifier (Bruel&Kjær 2669, serialnr. 2298180).

The reverberation time at third-octave bands was measured with the real time analyzer (Norsonic 150, serialnr. 15030842) using 20 dB decay range. All frequency bands were measured using 3 fixed source positions and 4 microphone positions. In every position 3 decays were measured. The total number of reverberation time measurements was 36.

The acoustical measurement equipment fulfilled the following IEC standards and grades of accuracy:

IEC 61672	Sound level meters	**class 1**
IEC 61260	Octave-band and fractional-octave-band filters	**class 1**
IEC 60942	Sound level calibrators	**class 1**

The test laboratory operates in conformance with EN/ISO/IEC 17025.

2 Other measurements

The temperature, the ambient atmospheric pressure and the relative humidity of the measurement room were measured using an environmental measurement device (EL-SIE-6+, serialnr. 2453a605634e4fcd). The specimen was weighed with a weighing machine (Vetek TI-500 SL, serialnr. 47359). The dimensions of the specimen were measured with a roll meter (Stanley FatMax).

3 The test room

The reverberation room was equipped with five fixed diffuser panels. The positions were selected randomly in respect with altitude, angle and position. The amount of diffusers and their arrangement fulfills the requirements of Annex A in ISO 354. The reverberation time of the empty reverberation room fulfills the requirements of ISO 354 for 200 m^3 test room.

4 The uncertainty of sound absorption coefficient

The uncertainty of reproducibility expresses the differences between the laboratories. The procedure to determine uncertainty of sound absorption coefficient in laboratory tests is defined in standard ISO 12999-2:2020. According to the standard, the reproducibility standard deviation varies within the measured frequency range and depends on the value of sound absorption coefficient (Figure below). The reproducibility standard deviation of the weighted sound absorption coefficient α_w is 0.035.

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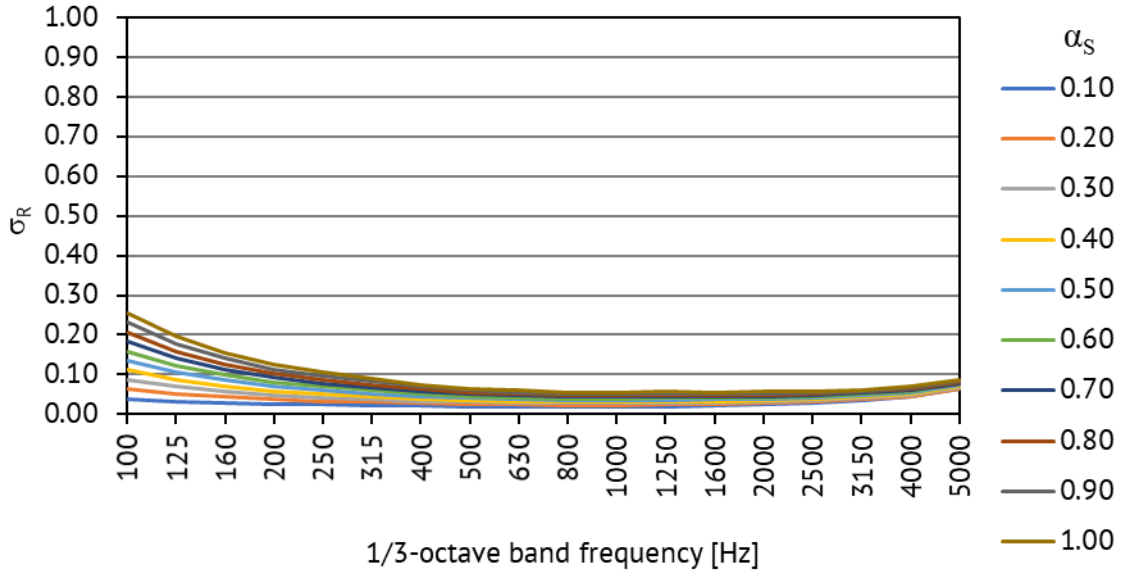


Figure. The reproducibility standard deviation, σ_R, of sound absorption coefficient, α_S, according to ISO 12999-2:2020.

5 References to the ISO standards

Test: ISO 354:2003 (E) Acoustics - Measurement of sound absorption in a reverberation room, International Organization for Standardization, 2003, Genève, Switzerland.

SFS-EN ISO 11654:1997 (E) Acoustics - Sound absorbers for use in buildings - Rating of sound absorption, International Organization for Standardization, 1997, Genève, Switzerland.

SFS-EN ISO 12999-2:2020 (E) Acoustics – Determination and application of measurement uncertainties in building acoustics. Part 2: Sound absorption, International Organization for Standardization, 2020, Genève, Switzerland.

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