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TURKU UNIVERSITY OF APPLIED SCIENCES

Ewona Finland Oy
Sami Luhtaanmäki
Annalankankaantie 18,
90830 Haukipudas
sami.luhtaanmaki@ewona.fi

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 March 30, 2026. Order March 31, 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.

4 SIGNATURES

Valtteri Hongisto
Research Group Leader

Arto Lehtonen
Research Engineer

Turku University of Applied Sciences
Acoustic laboratory

ANNEXES

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

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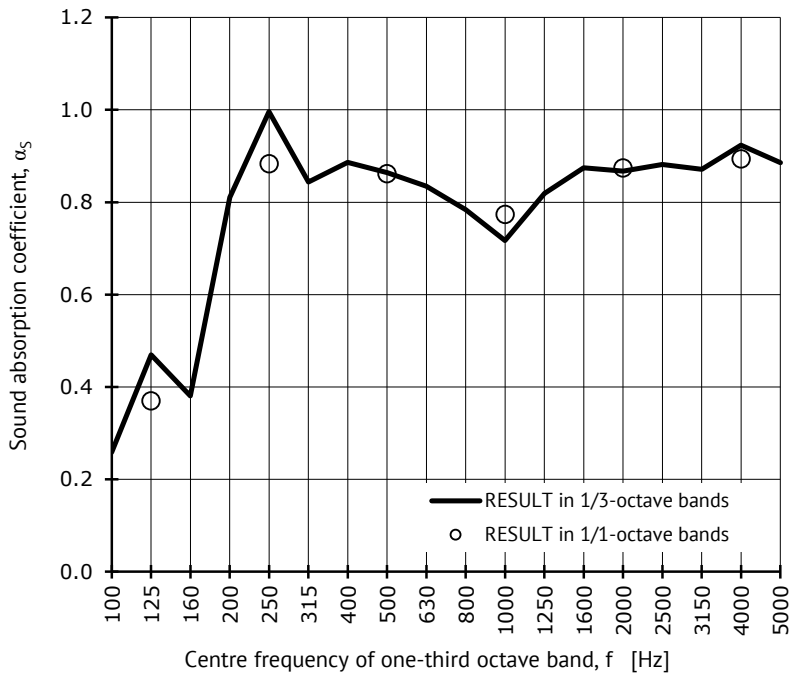
Determination of acoustic absorption coefficient according to ISO 354:2003 in laboratory conditions

Specimen id:	**Test 5 15 mm premium+ white**
	E200
Manufacturer:	Ewona Finland Oy
Client:	Ewona Finland Oy
Contact person:	Sami Luhtaanmäki
Mounting by:	Lehtonen. 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:	21	21 °C	(without / with specimen)	Room boundary area:	224 m^2
Relative humidity:	59.8	64.5 %	(without / with specimen)	Test date:	23.04.2026
Atmospheric pressure:	102	101 kPa	(without / with specimen)	Test file identification:	T230426c

	1/3	1/1	1/1
f (Hz)	α_S	α_S	α_p
100	0.26		
125	0.47	0.37	0.35
160	0.38		
200	0.81		
250	1.00	0.88	0.90
315	0.84		
400	0.89		
500	0.86	0.86	0.85
630	0.84		
800	0.78		
1000	0.72	0.77	0.75
1250	0.82		
1600	0.87		
2000	0.87	0.87	0.85
2500	0.88		
3150	0.87		
4000	0.92	0.89	0.90
5000	0.89		



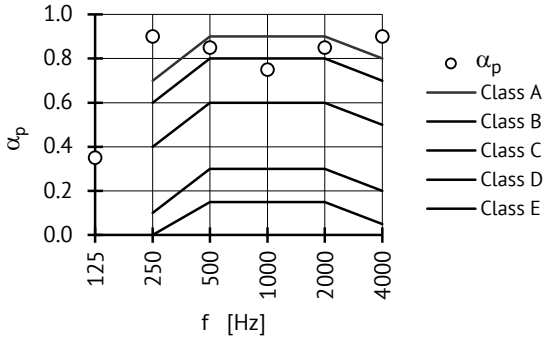
EN ISO 11654:

Weighted sound absorption coefficient α_w

0.85

Absorption class (EN ISO 11654)

B



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Arto Lehtonen
Research Engineer
test performer

ANNEX 2 – STRUCTURE DRAWINGS

15 mm Premium+ 1350 g/m^2
Top layer fabric 120g/m^2 (70% PET ja 30% PP)

Weighted surface mass was 1.6 kg/m^2

ANNEX 3 – MOUNTING OF SPECIMEN

The specimen was mounted on the floor of the reverberation room in conformance with **ISO 354:2003 Annex B, Type E200 mounting**.

On E200 mounting specimens were surrounded on the edges by a wooden vertical frame. The height of the frame was 200 mm. The side edges of the specimen were covered with adhesive tape. The wooden frame was ignored when calculating the total size of specimen area. Airgap was 185 mm with 15 mm specimen. The specimen area was 10,64 m^2. Figure A3.1 – Figure A3.2 shows view of the installation.

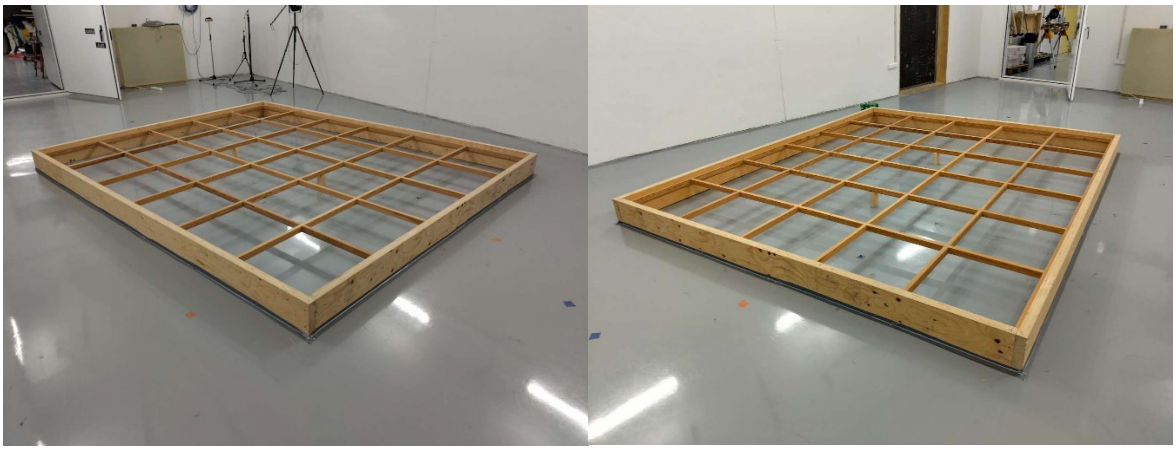

Figure A3.1. The wooden frame on the floor of the reverberation room.

Figure A3.2. The specimen mounted on the wooden frame on the reverberation room.

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.

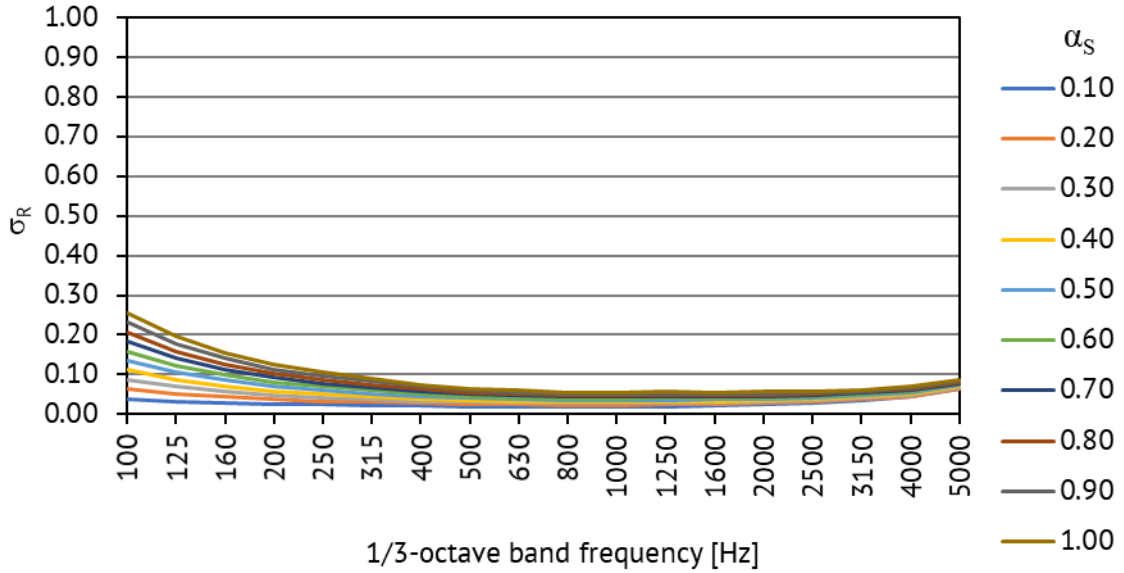

Figure. The reproducibility standard deviation, σ_R, of sound absorption coefficient, α_S, according to ISO 12999-2:2020.

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.