



**SLOVENSKA
AKREDITACIJA**
SIST EN ISO/IEC 17025
LP-005

REPORT 413/25-520-1-EN

about sound absorption measurements of felt
acoustic material (24 mm PET), in a reverberation
room according to standard SIST EN ISO 354

Orderer: **Cloud d.o.o.**
Ulica Dragutina Rakovca 3; 42000 Varaždin – Croatia

Order: **e-mail from 14th of April, 2025, our quote # 392/2025 from 11th of April, 2025**

Responsible
Investigator: **Rok Rudolf, univ. dipl. fiz.**

Head of Laboratory: **Rok Rudolf, univ. dipl. fiz.**

Director: **doc. dr. Aleš Žnidarič, univ. dipl. inž. grad.**

Date: **24. 4. 2025**

The report has been internally reviewed and approved by all listed persons, which is confirmed by the final electronic signature.
Document authenticity check : www.zag.si/pristnost

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Complaints will be considered only if received within 15 days from the date of issue of the report.
Total number of pages: 9; total number of annexes : 3

1. Test data

1.1 Test specimen

PET felt, 24 mm thick, made into 1680 mm x 1200 mm panels evaluated with E-200 and G mounting. Specimen designation A-7/25.

1.2 Brief description of the test specimen

24 mm thick polyethylene terephthalate (PET) felt, made into 1680 mm x 1200 mm panels. Testing performed with two different mountings. Once with 200 mm back cavity made from chipboard enclosed frame (E-200 mounting). Airspace behind the specimen was enclosed with non-absorbing chipboard frame, sealed with tape. Second measurement was with free standing samples propped up with metal holders (G mounting), intended to be used as office space dividers. In this case the panels were mounted at least 100 cm from the nearest wall, so technically it was a G-1000 mounting.

The total surface area of the specimen with E-200 mounting was 10,08 m² with only the top face of the panels exposed and airspace behind sealed. The total surface area of the specimen with G mounting was 12,1 m² as 3 panels were used (6,05 m² of material), and both sides of the felt were exposed. Basic composition of baffle airspace frames is shown in schematic in Annex 2, delivered by the client.

Photos of the test specimen are presented in Annex 3 to this report.

1.3 Type of delivering the test specimen

The test specimen was delivered by the client.

1.4 Test method

Measurement of sound absorption coefficient in the reverberation room according to the standard SIST EN ISO 354.

1.5 Testing location

The test was carried out in reverberation room at the Slovenian National Building and Civil Engineering Institute.

1.6 Measuring equipment

– Acoustic analyser	type 2270 B&K	ID 3.34.01-014
– Calibrator	type 4231 B&K	ID 1.29.03-007
– Omni-directional sound source	type 4292-L B&K	ID 5.29.01-006
– Amplifier	type 2716 B&K	ID 5.29.01-005
– Thermo-hygrometer	type EXTECH RHT35	ID 3.06.02-105

1.7 Date of test: 15. 4. 2025 (both measurements of empty reverberation room and of reverberation room with the test specimen present)

1.8 Measuring conditions

Empty reverberation room:

Temperature: 19,1°C

Humidity: 51 %

Barometric pressure: 974 hPa

With the test specimens present:

Temperature: 19,0°C

Humidity: %

Barometric pressure: 975 hPa

1.9 Measurements performed by: Andraž Zalar

2. Results

The values of the sound absorption coefficient α_s , measured at characteristic frequencies, are given in Annex 1 to this report. The sound absorption coefficient α_s was calculated from the formula (9) of the standard:

$$\alpha_s = \frac{A_T}{S}$$

Where A_T is the equivalent sound absorption area of the test specimen, measured and calculated according to the standard and S is the area of the specimen, depending on different mountings and surfaces – whether calculations with G mounting were performed for surface of specimen (both sides, case B1) or calculated to material quantity (single side, case B2).

Weighted sound absorption coefficients α_w of test specimens, calculated according to the provisions of the standard SIST EN ISO 11654:1999, are as follows:

- A. For the E-200 mounting with airspace behind the sample (10,08 m² top side exposed) Annex 1, page 1/3:

$$\alpha_w = 0,85 \text{ H}$$

Based on this value the specimen is classified in **category B** (according to annex B of the standard SIST EN ISO 11654:1999).

- B1. For the G mounting of free-standing panels, calculated to the surface area of the specimen (12,1 m² as both sides of the specimen are exposed) Annex 1, page 2/3:

$$\alpha_w = 0,5 \text{ H}$$

Based on this value the specimen is classified in **category D** (according to annex B of the standard SIST EN ISO 11654:1999).

B2. Additionally, we can re-calculate the weighted coefficient of the same specimen in G mounting of free-standing samples, calculated to the area of the material used (6,05 m² one side) Annex 1, page 3/3:

$$\alpha_w = 0,85 H$$

Based on this value the specimen is classified in **category B** (according to annex B of the standard SIST EN ISO 11654:1999).

Report by:

Rok Rudolf, univ. dipl. fiz.

SOUND ABSORPTION COEFFICIENT IN THE REVERBERATION ROOM
ACCORDING TO SIST EN ISO 354 STANDARD

Annex 1
Page 1/3

CLIENT: Cloud d.o.o., Ulica Dragutina Rakovca 3; 42000 Varaždin – Croatia

TEST SPECIMEN: PET felt, 24 mm thick panels tested with E-200 mounting (airspace 20 cm).

TEST SPECIMEN DELIVERED AND
ASSEMBLED BY: Cloud d.o.o., Ulica Dragutina Rakovca 3; 42000 Varaždin – Croatia

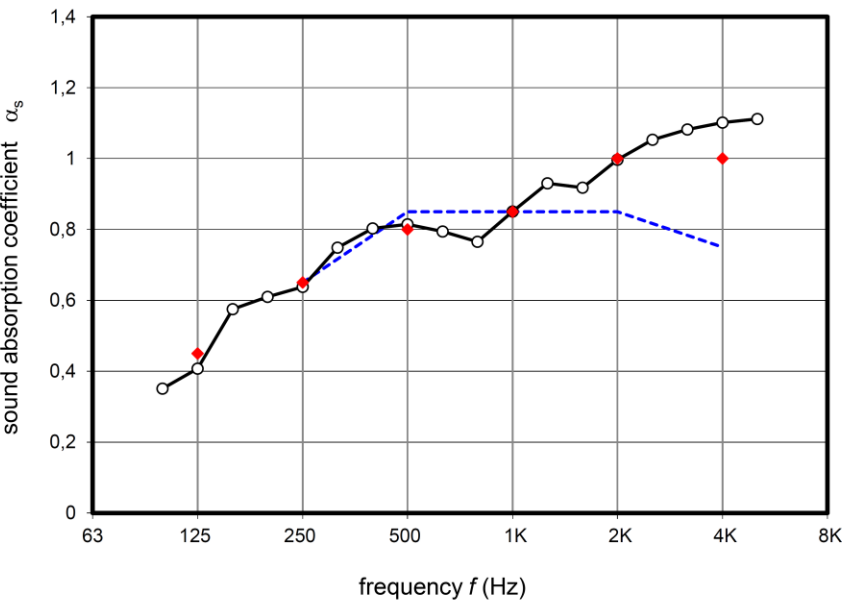
BRIEF DESCRIPTION OF THE
SPECIMEN: 24 mm thick polyethylene terephthalate (PET) felt, made into 1680 mm x 1200 mm panels. Testing performed with 200 mm back cavity made from chipboard enclosed frame (E-200 mounting). Airspace behind the specimen was enclosed with non-absorbing chipboard frame, sealed with tape, with 10,1 m² specimen area exposed on top side. Photos of the test specimen are presented in Annex 3 to this report.

TYPE OF MOUNTING: Type E-200 mounting, according to Annex B of the standard SIST EN ISO 354

		Without the specimen	With the specimen	
Surface area of the specimen (one side):	10,1 m ²	Temperature (°C)	19,1	19,2
Surface area of walls, floor and ceiling:	210 m ²	Relative humidity (%)	51	57
Volume of the reverberation room:	201 m ³	Air pressure (hPa)	974	974

f (Hz)	α _s	α _p ¹⁾
100	0,35	0,45
125	0,41	
160	0,58	
200	0,61	0,65
250	0,64	
315	0,75	
400	0,80	0,80
500	0,81	
630	0,79	
800	0,77	0,85
1000	0,85	
1250	0,93	
1600	0,92	1,00
2000	1,00	
2500	1,05	
3150	1,08	1,10
4000	1,10	
5000	1,11	

¹⁾ weighted according to SIST EN ISO 11654:1999



Date of measurement: 15.4.2025

—○— α_s ♦ α_p - - - - - shifted reference curve

Weighted sound absorption coefficient acc. to SIST EN ISO 11654:1999	α _w = 0,85 H
Classification according to SIST EN ISO 11654:1999	B

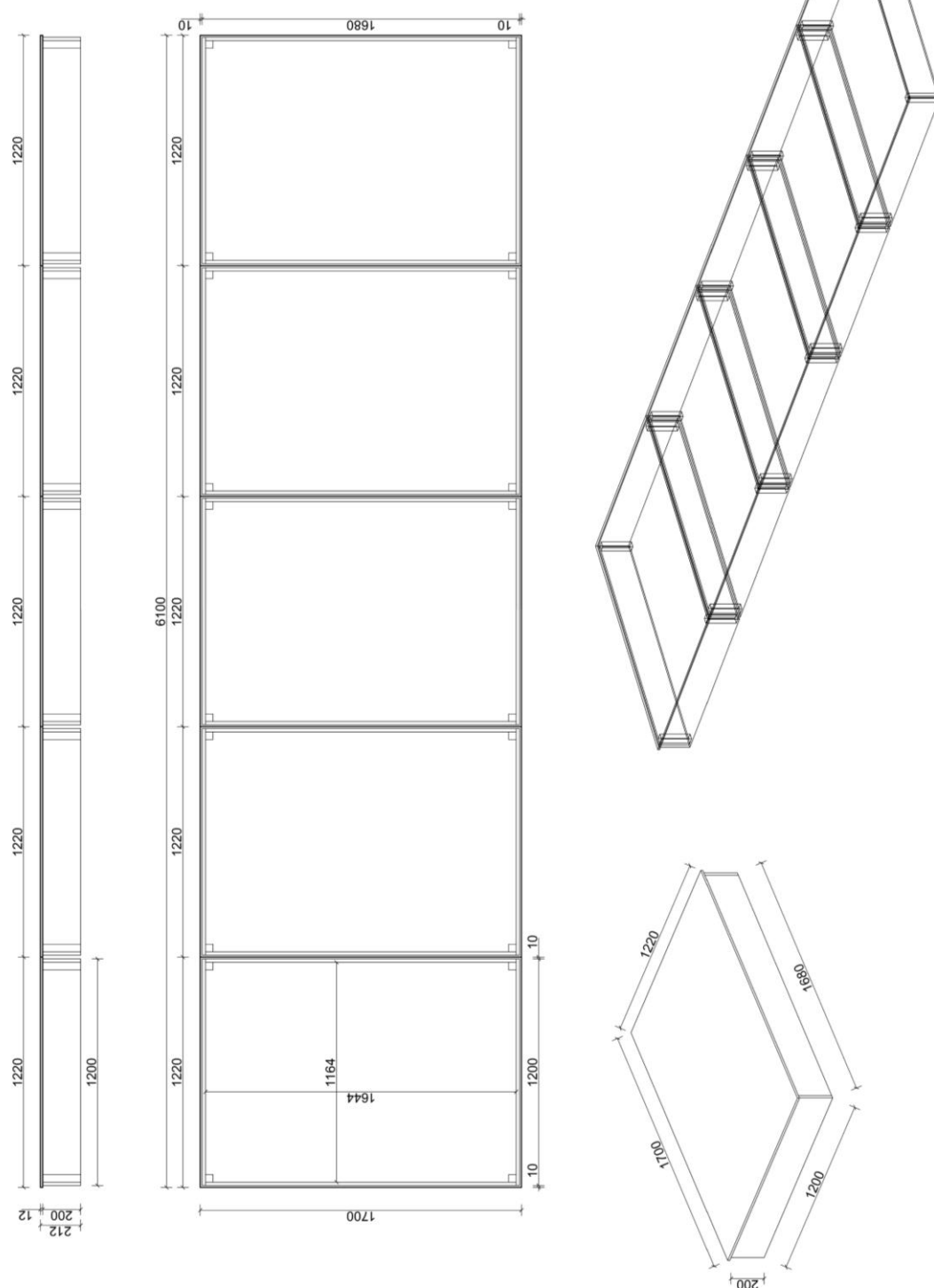
MEASUREMENT PERFORMED BY: Andraž Zalar

RESPONSIBLE INVESTIGATOR: Rok Rudolf

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SCHEMATIC OF THE SPECIMEN FRAME FOR E-200 MOUNTING



cloud
Varazdin, 14.04.2025.

NOTE:

Schematic submitted by the client. Detailed conformity of the composition of the tested specimen with the composition described in this Annex has not been verified.

PHOTOS OF THE SPECIMEN IN THE REVERBERATION ROOM AT ZAG



Figure 1: specimen, installed in the reverberation room
(ZAG photo archive No. 050037d-04)



Figure 2: detail view of the specimen E-200 mounting
(ZAG photo archive No. 050037d-03)

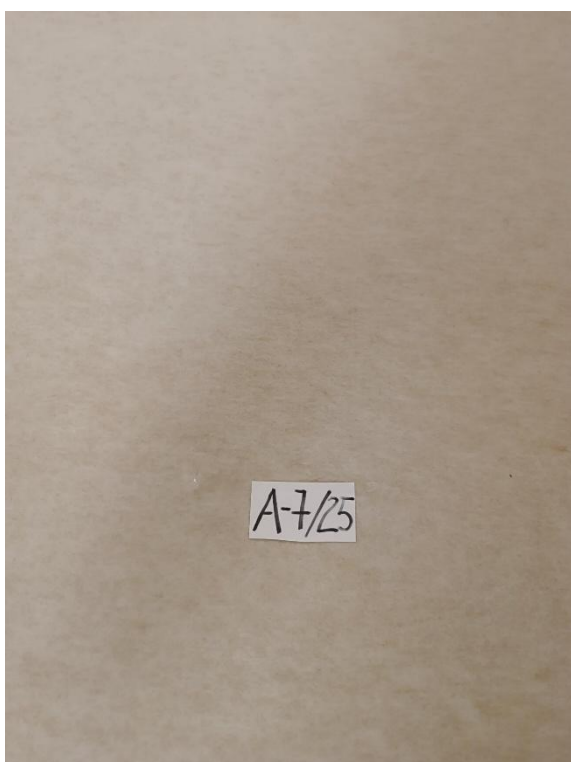


Figure 3: specimen detail and designation
(ZAG photo archive No. 050037d-01)



Figure 4: specimen, G mounting in the reverberation room
(ZAG photo archive No. 050037d-07)