



Determination of sound absorption and class of Yeseco Ilmava Acoustic Screen in a reverberation room according to SFS EN ISO 354-2003 and SFS EN ISO 11654-1997



FINAS
Finnish Accreditation Service
T001 (EN ISO/IEC 17025)

Requested by: Yeseco Oy

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Paljekatu 6
38200 Sastamala, Finland

Order Ari Heikkinen 8.6.2016 (VTT-O-177941-16)

Contact person **VTT Expert Services Ltd**
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Assignment **Determination of sound absorption and class of Yeseco acoustic panels in a reverberation room**

Specimen The customer supplied samples to the laboratory on 4.7.2016. The information of the samples was reported by the customer and are presented in Appendix 3.

Date and place of testing The samples were tested on 4.7.2016 at VTT Expert Services Ltd research hall 1 (Tekniikantie 15 A, 02150 Espoo).

Installation and Measuring The tested samples were installed in the upright position onto the reverberation chamber floor. Tests were performed by the VTT Expert Services Ltd Laboratory Technician Jukka Sulin.

Method and Equipment The sound absorption coefficient, α_s was measured according to the standard SFS EN ISO 354-2003 [1] and the rating of sound absorption (calculation of α_w) was determined according to the standard SFS EN ISO 11654-1997 [2] Reverberation room dimensions and measuring equipment are presented in Appendix 2.

Result The sound absorption coefficient α_s in one-third-octave bands and the practical sound absorption coefficient α_p in octave bands are presented in Appendix 1. The weighted sound absorption coefficient α_w and the sound absorption class are presented also in Table 1.

Table 1. Weighted sound absorption coefficient α_w and sound absorption class.

Test no.	Product name	Weighted sound absorption coefficient α_w	Sound absorption class
7.	Yeseco Ilmava Acoustic Screen 60 x 120	0,65 (H)	C

Espoo, 1.8.2016



Tero Jalkanen
Product Manager



Jukka Sulin
Laboratory Technician

VTT Expert Services Ltd is notified body No. NB 0809

FINAS Finnish Accreditation Service has accredited our laboratory (T001, VTT Expert Services Ltd) to perform measurements according to SFS EN ISO 354-2003 and SFS EN ISO 11654-1997.

References

[1] *SFS EN ISO 354-2003, Acoustics - Measurement of sound absorption in a reverberation room.*

[2] *SFS EN ISO 11654-1997, Acoustics - Sound absorbers for use in buildings – Rating of sound absorption*

Appendices

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Distribution

Customer
Archive

Original
Original

Determination of sound absorption and classification

Client: Yeseco Oy
 Paljokatu 6, 38200 Sastamala, Finland

Order: VTT-O-177941-16

Test place: VTT Expert Services Ltd TH1

Task: Determination of absorption coefficient (EN ISO 354)
 Octaves valuation and classification (ISO 11654:1997)

Test date: 4.7.2016

Sample: 7. Yeseco Ilmava Acoustic Screen 60 x 120

Board size: 600 x 1200 x 45 mm

Surface mass: 4,9 kg/m²

Arrangements: The sample upright position

Volume of the rev. room: 201 m³

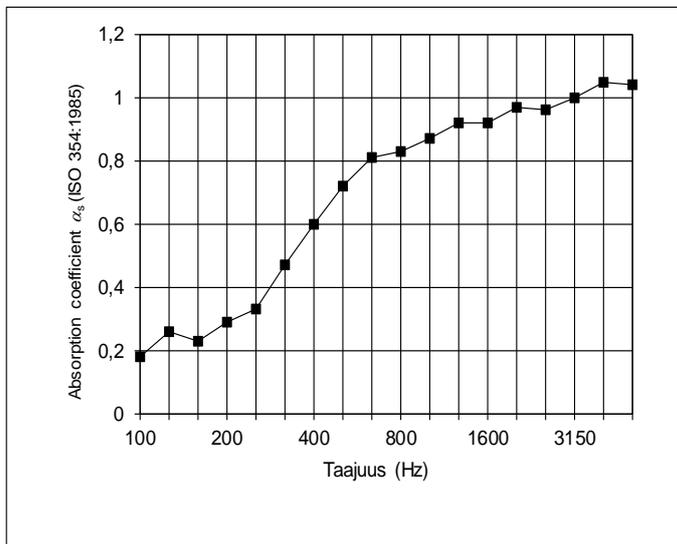
Area of the inner surf.: 209 m²

Sample size: 12 m²

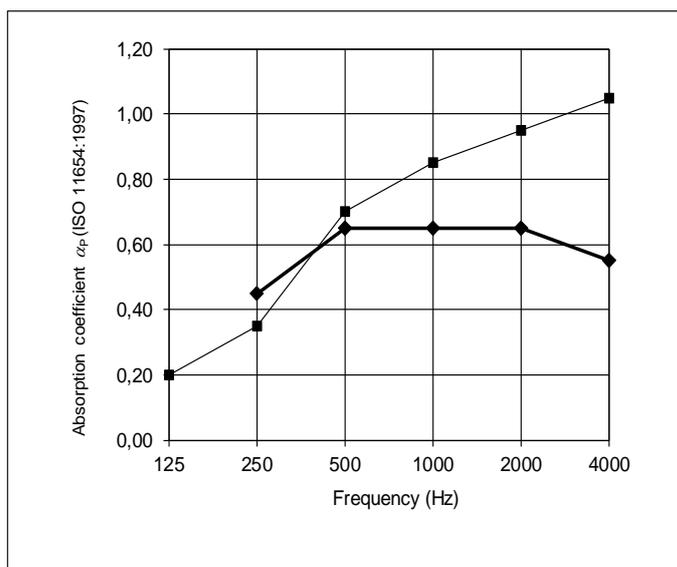
Temperature and relative humidity of rev. room

Empty: 21 °C 65 %

Sample: 21 °C 63 %



Frequency (Hz)	T ₁ (s)	T ₂ (s)	α_s
100	4,13	3,24	0,18
125	4,87	3,31	0,26
160	5,27	3,63	0,23
200	5,09	3,27	0,29
250	5,30	3,21	0,33
315	5,30	2,76	0,47
400	4,68	2,29	0,60
500	4,65	2,08	0,72
630	4,91	1,99	0,81
800	4,92	1,95	0,83
1000	4,97	1,91	0,87
1250	4,70	1,81	0,92
1600	4,18	1,72	0,92
2000	3,87	1,62	0,97
2500	3,63	1,58	0,96
3150	3,23	1,47	1,00
4000	2,81	1,34	1,05
5000	2,44	1,25	1,04



Octave values and classification - ISO 11654

Frequency (Hz)	Reference Curve	α_p
125		0,20
250	0,45	0,35
500	0,65	0,70
1000	0,65	0,85
2000	0,65	0,95
4000	0,55	1,05

Weighted absorption coefficient, α_w : 0,65 (H)

Sound absorption class: C

Absorption classes: A, B, C, D, E and no classification.

MEASURING ROOMS AND EQUIPMENT

Measuring equipment	Name
Condenser microphone	B&K (Brüel&Kjær) 4134
Microphone preamplifier	B&K 2660
Rotating microphone boom	B&K 3923
Power amplifier	Peavey PV 2600
Loudspeakers	Sinmarc V121L
Real-time analyser	Norsonic 830
Sound calibrator	B&K 4228

	Floor	Height	Volume
Reverberation room dimensions	5.95 m x 7.20 m	4.70 m	201 m ³

Thickness of the concrete walls, floors and ceilings of the reverberation rooms is 0.25 m

Samples information

Yeseco Ilmava Acoustic Screen 60 x 120		
Materials	Weight (kg)	Density (kg/m³)
Fabric	0,32	0,32
Natural fibre	0,55	1,375
Cellulosic pulp	3,14	0,897
Natural fibre	0,55	1,375
Fabric	0,32	0,32