

Technical Report

80057-SRL-RP-XT-001-PI

Project

The Laboratory Measurement of The
Random Incidence Sound Absorption of
Office Screens

Prepared for

Panel Screens Ltd

By

Kieron Farrow

Published

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Quality Assurance	
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Tester

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1.0 Description of Test

Tests have been done in SRL's Laboratory at Holbrook House, Sudbury, Suffolk, to determine the equivalent sound absorption per object of free standing office screens generally in accordance with BS EN ISO 354:2003.

As the supplied test samples were too small these tests are not fully in accordance with the test standard and not UKAS accredited tests.

The results are given in 1/3rd octave bands over the frequency range 50Hz to 10kHz, which is beyond that required by the test standard.

1.1 Description of Sample

Various office screens were tested. See Section 2.0, Data Sheets 1 to 5 and Photographs 1 to 5 for more details.

Sampling plan:	Selected at Random
Sample condition:	New
Details supplied by:	Panel Screens Ltd
Sample installed by:	Panel Screens Ltd and SRL Technical Services Ltd

1.2 Sample Delivery Date

07 August 2023

1.3 Test Procedures

The sample was mounted/located and tested in accordance with the relevant standard. The details of measurements are given in Appendix A. The method and procedure are described in Appendix B. The measurement uncertainty is given in Appendix C.

2.0 Results

The results of the measurements and subsequent analysis are given in Data Sheets 1 to 5 and summarised below.

Results relate only to the items as received and tested.

SRL Test No.	Description in Brief
1	Muffle 50 Free Standing Acoustic Screen 1500x1000x50mm
2	Muffle 70 Free Standing Acoustic Screen 1500x1000x70mm
3	Muffle 50 Acoustic Desk Screen 1400x600x50mm
4	Muffle 70 Acoustic Desk Screen 1400x600x70mm
5	Muffle Acoustic Wall Panel 1000x1000x30mm

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Data Sheet 1

NOT UKAS ACCREDITED due to sample size being too small

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number:	I	Test Room:	Empty	With Sample
Client:	Panel Screens LTD	Air Temperature:	18.3 °C	18.3 °C
Test Date:	07/08/2023	Air Humidity:	63 % RH	62 % RH
Chamber Volume:	300.1 m ³	Air Pressure:	1010 mbar	1010 mbar
		Number of Objects:	1.00	

Sample Muffle 50 Free Standing Acoustic Screen 1500x1000x50mm

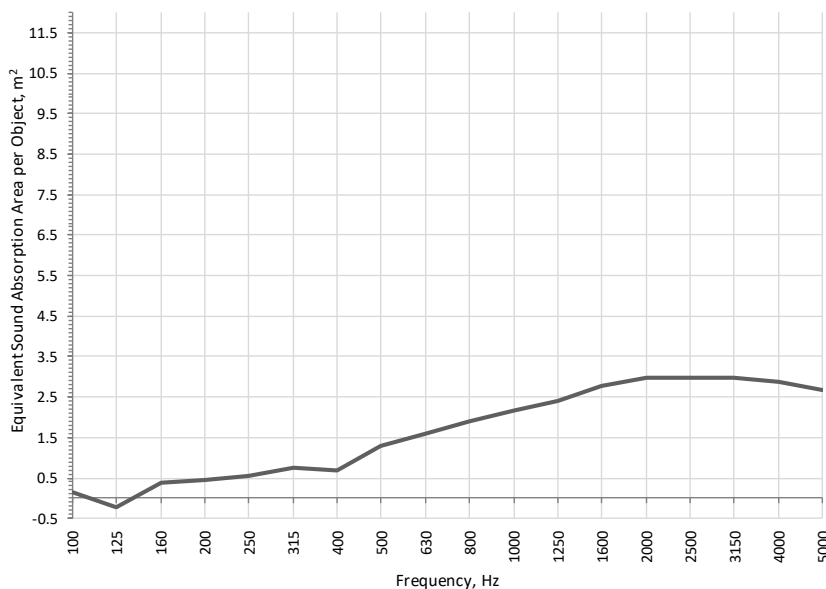
Description:

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Equivalent Sound Absorption Area per Object, m ²
50*	4.28	4.31	-0.1
63*	4.22	4.19	0.1
80*	6.73	6.81	-0.1
100	6.84	6.69	0.2
125	6.20	6.40	-0.2
160	6.77	6.43	0.4
200	6.37	6.02	0.4
250	6.46	6.01	0.6
315	6.75	6.10	0.8
400	6.42	5.88	0.7
500	5.66	4.92	1.3
630	5.08	4.36	1.6
800	5.14	4.28	1.9
1000	5.60	4.48	2.2
1250	5.45	4.30	2.4
1600	5.17	3.99	2.8
2000	4.88	3.75	3.0
2500	4.36	3.44	3.0
3150	3.62	2.95	3.0
4000	2.99	2.53	2.9
5000	2.39	2.10	2.7
6300*	1.78	1.62	2.5
8000*	1.44	1.33	2.5
10000*	1.01	0.95	2.6

* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited

Version 2

Equivalent Sound Absorption Area per Object



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Data Sheet 2

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Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

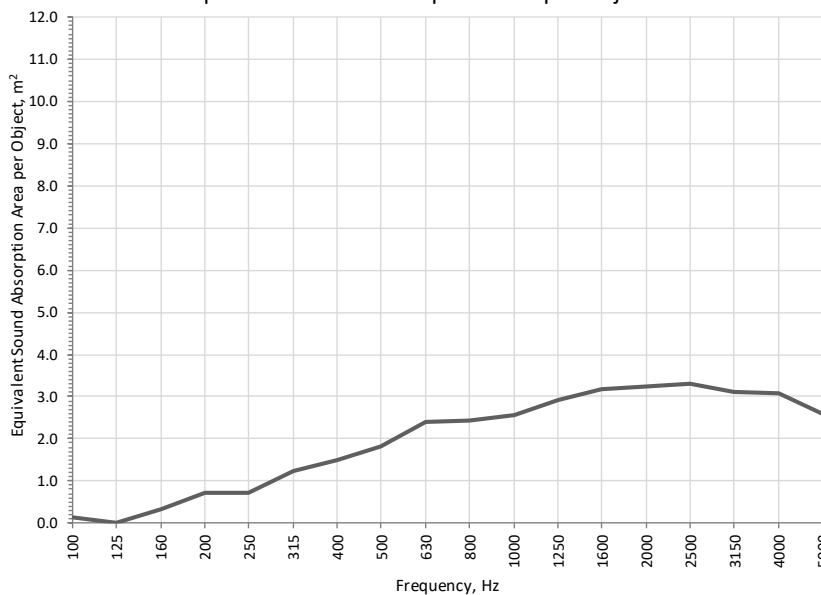
Test Number:	2	Test Room:	Empty	With Sample
Client:	Panel Screens LTD	Air Temperature:	18.3 °C	18.3 °C
Test Date:	07/08/2023	Air Humidity:	63 % RH	62 % RH
Chamber Volume:	300.1 m ³	Air Pressure:	1010 mbar	1010 mbar
		Number of Objects:	1.00	

Sample Muffle 70 Free Standing Acoustic Screen 1500x1000x70mm

Description:

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Equivalent Sound Absorption Area per Object, m ²
50*	4.28	4.31	-0.1
63*	4.22	4.04	0.5
80*	6.73	6.53	0.2
100	6.84	6.71	0.1
125	6.20	6.20	0.0
160	6.77	6.46	0.3
200	6.37	5.81	0.7
250	6.46	5.89	0.7
315	6.75	5.76	1.2
400	6.42	5.36	1.5
500	5.66	4.68	1.8
630	5.08	4.06	2.4
800	5.14	4.08	2.4
1000	5.60	4.32	2.6
1250	5.45	4.10	2.9
1600	5.17	3.87	3.2
2000	4.88	3.67	3.3
2500	4.36	3.36	3.3
3150	3.62	2.93	3.1
4000	2.99	2.50	3.1
5000	2.39	2.11	2.6
6300*	1.78	1.61	2.7
8000*	1.44	1.32	2.8
10000*	1.01	0.94	2.7
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited			
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Equivalent Sound Absorption Area per Object



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Data Sheet 3

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Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number:	3	Test Room:	Empty	With Sample
Client:	Panel Screens LTD	Air Temperature:	18.3 °C	18.4 °C
Test Date:	07/08/2023	Air Humidity:	63 % RH	62 % RH
Chamber Volume:	300.1 m ³	Air Pressure:	1010 mbar	1010 mbar
		Number of Objects:	1.00	

Sample Muffle 50 Acoustic Desk Screen 1400x600x50mm

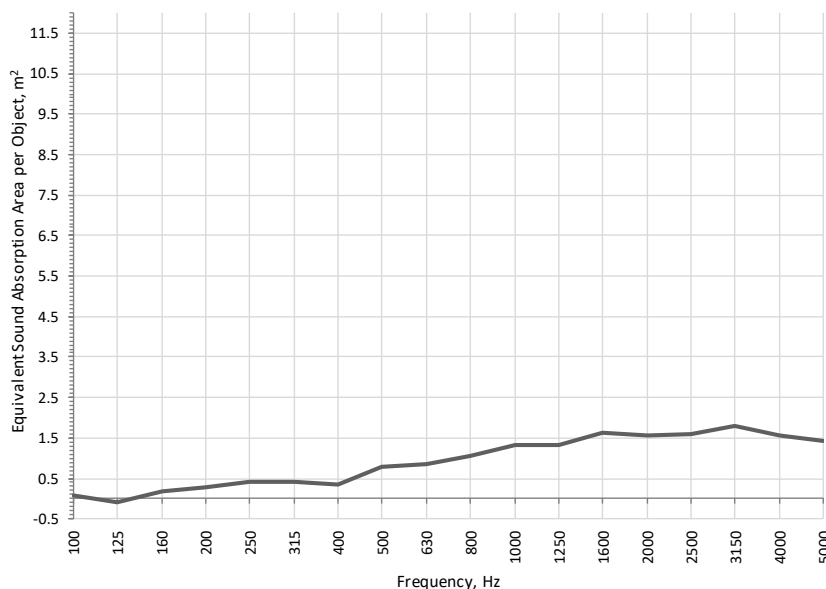
Description:

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Equivalent Sound Absorption Area per Object, m ²
50*	4.28	4.36	-0.2
63*	4.22	4.22	0.0
80*	6.73	6.61	0.1
100	6.84	6.75	0.1
125	6.20	6.28	-0.1
160	6.77	6.60	0.2
200	6.37	6.13	0.3
250	6.46	6.12	0.4
315	6.75	6.39	0.4
400	6.42	6.12	0.4
500	5.66	5.18	0.8
630	5.08	4.66	0.9
800	5.14	4.61	1.1
1000	5.60	4.86	1.3
1250	5.45	4.75	1.3
1600	5.17	4.40	1.6
2000	4.88	4.21	1.6
2500	4.36	3.80	1.6
3150	3.62	3.18	1.8
4000	2.99	2.72	1.6
5000	2.39	2.22	1.4
6300*	1.78	1.70	1.1
8000*	1.44	1.38	1.3
10000*	1.01	0.99	0.4

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Equivalent Sound Absorption Area per Object



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Data Sheet 4

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Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number:	4	Test Room:	Empty	With Sample
Client:	Panel Screens LTD	Air Temperature:	18.3 °C	18.4 °C
Test Date:	07/08/2023	Air Humidity:	63 % RH	62 % RH
Chamber Volume:	300.1 m ³	Air Pressure:	1010 mbar	1010 mbar
		Number of Objects:	1.00	

Sample Muffle 70 Acoustic Desk Screen 1400x600x70mm

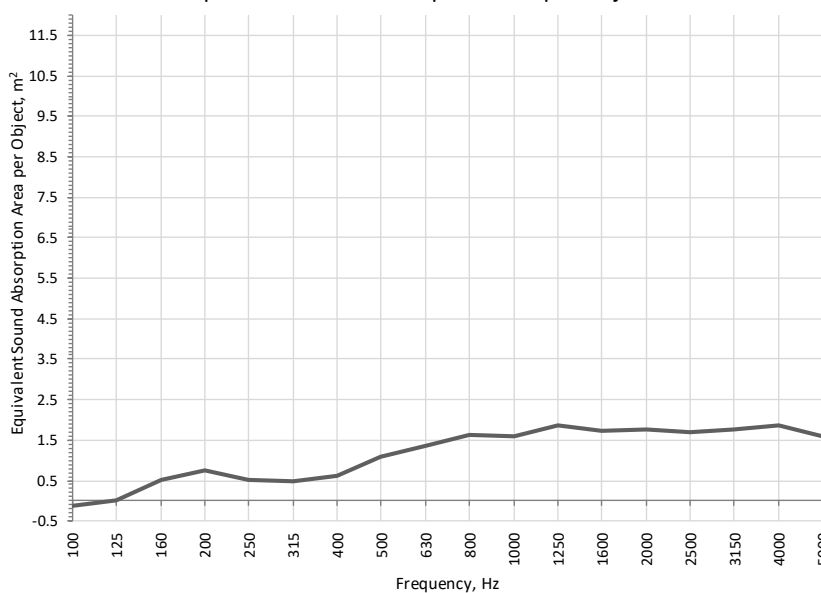
Description:

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Equivalent Sound Absorption Area per Object, m ²
50*	4.28	4.40	-0.3
63*	4.22	4.14	0.2
80*	6.73	6.66	0.1
100	6.84	6.96	-0.1
125	6.20	6.20	0.0
160	6.77	6.32	0.5
200	6.37	5.78	0.8
250	6.46	6.04	0.5
315	6.75	6.32	0.5
400	6.42	5.94	0.6
500	5.66	5.02	1.1
630	5.08	4.44	1.4
800	5.14	4.39	1.6
1000	5.60	4.72	1.6
1250	5.45	4.50	1.9
1600	5.17	4.36	1.7
2000	4.88	4.14	1.8
2500	4.36	3.78	1.7
3150	3.62	3.19	1.8
4000	2.99	2.67	1.9
5000	2.39	2.20	1.6
6300*	1.78	1.68	1.4
8000*	1.44	1.39	1.0
10000*	1.01	0.97	1.3

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Equivalent Sound Absorption Area per Object



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Data Sheet 5

NOT UKAS ACCREDITED due to sample size being too small

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number:	5	Test Room:	Empty	With Sample
Client:	Panel Screens LTD	Air Temperature:	18.3 °C	18.4 °C
Test Date:	07/08/2023	Air Humidity:	63 % RH	62 % RH
Chamber Volume:	300.1 m ³	Air Pressure:	1010 mbar	1010 mbar
		Number of Objects:	1.00	

Sample Muffle Acoustic Wall Panel 1000x1000x30mm

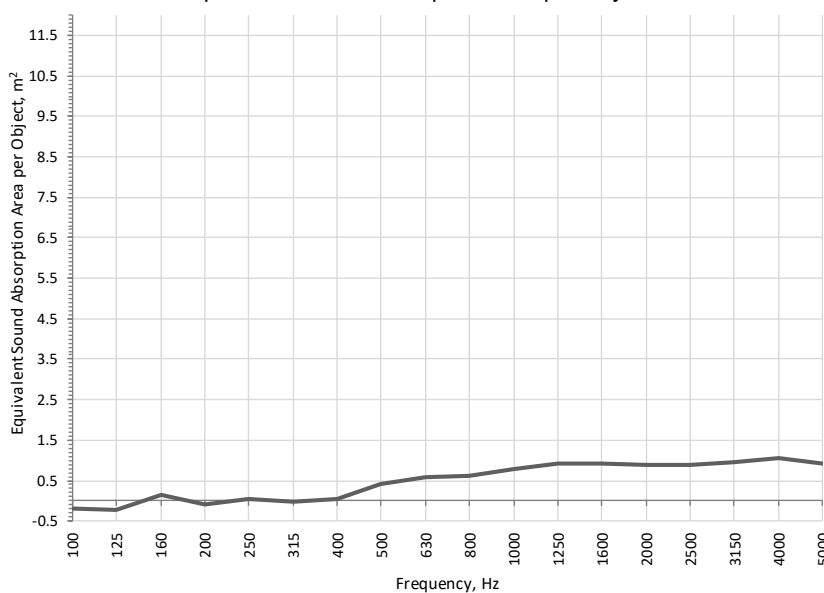
Description:

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Equivalent Sound Absorption Area per Object, m ²
50*	4.28	4.37	-0.2
63*	4.22	4.21	0.0
80*	6.73	6.84	-0.1
100	6.84	7.04	-0.2
125	6.20	6.39	-0.2
160	6.77	6.63	0.2
200	6.37	6.44	-0.1
250	6.46	6.42	0.0
315	6.75	6.78	0.0
400	6.42	6.38	0.0
500	5.66	5.40	0.4
630	5.08	4.79	0.6
800	5.14	4.83	0.6
1000	5.60	5.13	0.8
1250	5.45	4.94	0.9
1600	5.17	4.71	0.9
2000	4.88	4.47	0.9
2500	4.36	4.03	0.9
3150	3.62	3.36	1.0
4000	2.99	2.80	1.1
5000	2.39	2.28	0.9
6300*	1.78	1.71	0.9
8000*	1.44	1.40	0.8
10000*	1.01	0.99	0.6

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Equivalent Sound Absorption Area per Object



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Photographs 1 & 2 – Free Standing Acoustic Screens



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Photographs 3 & 4 – Desk Screens



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Photograph 5 – Wall Panel



Appendix A - Details of Measurements

A1. Location

Sound Research Laboratories
Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TF

A2. Test Date

07 August 2023

A3. Testers

Charlie Gardner & Allen Smalls of SRL Technical Services Limited

A4. Instrumentation and Apparatus Used

Make	Description	Type
Abtronix	Microphone Multiplexer	
EDI	Microphone Power Supply Unit	
Norwegian Electronics	Multichannel Sound Level Meter	Nor850
Brüel & Kjaer	Windshields	UA0237

	Pre Amplifiers	2669C
	Microphone Calibrator	4231
	Omnipower Sound Source	4296
Larson Davis	12mm Condenser Microphone	2560, 377A60
Oregon Scientific	Temperature & Humidity & Probe	THGR810
TOA	Graphic Equalizer	E-1231
Crown	Power Amplifier	1502
G.R.A.S	Pre Amplifier	26AK
	Microphone	40AR

A5. References

BS EN ISO 354:2003	Measurement of sound absorption in a reverberation room.
BS EN ISO 11654:1997	Sound absorbers for use in buildings. Rating of sound absorption.
ATSM C423-01	Sound Absorption and sound Absorption Coefficients by the Reverberation Room Method.

Appendix B – Test Procedure

Measurement of The Equivalent Sound Absorption Area To BS EN ISO 354:2003 TPI4 (Discrete objects or arrays)

In the laboratory, the equivalent sound absorption area of a sample is determined from the rate of decay of a sound field in a reverberation room, with and without a test sample installed. The rate of decay is described by the time a sound field takes to decay by 60dB, known as the reverberation time.

The reverberation room is constructed from 215mm brick, which is internally plastered with a reinforced concrete roof and floor. The room is rectangular and has a volume of 300 cubic metres and a total surface area of 275m². From the ceiling hang 10 randomly positioned diffusers, with a total surface area (for one side) of 20m². The room is isolated from the surrounding structure by the use of resilient mountings and seals, ensuring good acoustic isolation.

Using at least two omnidirectional loudspeaker positions, broad band random noise is produced in the room using an electronic generator and power amplifier. When the amplification system is switched off, the decay of sound is filtered into one-third octave band widths and the reverberation times measured. This process is repeated for each of six microphone positions and the values arithmetically averaged to obtain a final value for each frequency.

The sample is positioned on the floor of the reverberation room so that no part of it is closer than one metre from any edge of the boundaries. The procedure of measuring the reverberation times then repeated.

The equivalent sound absorption area is calculated from the difference in decay rates for each frequency according to the formula:

where

$$A_{\text{obj}} = \frac{A_T}{n}$$

A_{obj} is the equivalent sound absorption area

A_T is the increase in equivalent sound absorption area of the test specimen (m²)

n is the number of objects ($n=1$ for an array)

The equivalent absorption area of the test specimen is further defined as:

$$A_T = 55.3V \left(\frac{1}{c_2 T_2} - \frac{1}{c_1 T_1} \right) - 4V(m_2 - m_1)$$

where

- V is the volume of the empty reverberation room (m³)
- c₁ is the speed of sound in the empty room (m/sec)
- T₁ is the reverberation time in the empty room (sec)
- m₁ is the power attenuation coefficient calculated according to ISO 9613-1 using the climatic conditions that have been present in the empty room during the measurement.

c₂, T₂ and m₂ have the same meanings as c₁, T₁ and m₁ but with the test specimen in the room.

Appendix C – Measurement Uncertainty

This Appendix gives the measurement uncertainties for the various sound absorption test measurements. The measurement uncertainties have been calculated in accordance with BS EN ISO 12999-2:2020 and based on repeatability conditions with a coverage factor of $k=2$.

Weighted sound absorption coefficient, α_w , (according to BS EN ISO 11654)

Expanded measurement uncertainty ± 0.07

1/3 octave band sound absorption coefficient measurements, α_s

Measured sound absorption coefficient, α_s																					
0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
f, Hz	Expanded uncertainties $\pm U$ (k=2) Derived from BS EN ISO 12999-2:2020 based on repeatability conditions and a coverage factor of k=2																				
50*	n/a																				
63*	0.02	0.05	0.07	0.10	0.13	0.15	0.18	0.21	0.23	0.26	0.29	0.32	0.34	0.37	0.40	0.42	0.45	0.48	0.50	0.53	0.56
80*	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.33	0.35	0.37	0.39	0.41
100	0.02	0.03	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.19	0.21	0.22	0.23	0.25	0.26	0.28	0.29	0.31
125	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23
160	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.14	0.14	0.15	0.16	0.17	0.18	0.19
200	0.02	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.12	0.12	0.13	0.14	0.14	0.15
250	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.12	0.12	0.13
315	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.11
400	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.09
500	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08
630	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07
800	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07
1000	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07
1250	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07
1600	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06
2000	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07
2500	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07
3150	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07
4000	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08
5000	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10
6300*	n/a																				
8000*																					
10000*																					

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Practical sound absorption coefficient measurements, α_p

Measured practical sound absorption coefficient, α_p																				
0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00

f, Hz	Expanded uncertainties ±U (k=2) Derived from BS EN ISO 12999-2:2020 based on repeatability conditions and a coverage factor of k=2																				
63*	n/a																				
125																					
250	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09
500	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
1000	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2000	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
4000	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
8000*	n/a																				

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Equivalent sound absorption area of the test specimen, A_T

Measured equivalent sound absorption area, A _T , m ²																					
0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	
f, Hz	Expanded uncertainties ±U (k=2) Derived from BS EN ISO 12999-2:2020 based on repeatability conditions and a coverage factor of k=2																				
50*	n/a																				
63*	0.2	0.5	0.7	1.0	1.3	1.5	1.8	2.1	2.3	2.6	2.9	3.2	3.4	3.7	4.0	4.2	4.5	4.8	5.0	5.3	5.6
80*	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.1
100	0.2	0.3	0.5	0.6	0.8	0.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.3	2.5	2.6	2.8	2.9	3.1
125	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
160	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.9
200	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.4	1.5
250	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.2	1.2
315	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1
400	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9
500	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8
630	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7
800	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7
1000	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7
1250	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7
1600	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
2000	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7
2500	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7
3150	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
4000	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
5000	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
6300*	n/a																				
8000*																					
10000*																					

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