

Test Report No.: A-2024-409-01



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Deutsche
Akkreditierungsstelle
D-PL-11217-01-00

The accreditation is valid for the test procedures listed in the annex of the certificate D-PL-11217-01-00.

Test Order: Measurement of sound absorption in a reverberation room according DIN EN ISO 354:2003-12

Order date: 13.12.2024

Sample description: Acoustic element

a) TYSTIQ - Table Screen [1,800 m x 0,655 m x 0,035 m]

Number of samples: 3

Sampling: by client

Sample receipt: 13.12.2024

Test period: 09.01.2025

Aachen, 27.01.2025

A handwritten signature in black ink, appearing to read "A. Siebel".

i.V. Prof. Dr.-Ing. Alexander Siebel
Laboratory Manager

A handwritten signature in black ink, appearing to read "P. Thomas M.Eng".

i.V. Patrick Thomas M.Eng
Deputy Laboratory Manager

The test results relate only on the items tested. Without the written approval of the testing laboratory, a duplication in extracts of the test report is not permitted.

a) Information provided by the client, k) Modification

Geschäftsführer: Prof. Dr. Roland Hüttl, Wulf Jannsen, Dr. Gero Schönwaßer
Amtsgericht Hamburg, HRB 130568, St.Nr.: 46/736/03268

1 Product Description

Product Description a)

Description
TYSTIQ - Table Screen [1,800 m x 0,655 m x 0,035 m]



Illustration / drawing for sample assembly

2 Scope of testing / Annexes

No	Annex	Designation	Standard	Pages general	Pages evaluation
1	SA	Sound Absorption in Reverberation Rooms	DIN EN ISO 354:2003-12	1	1

QMF PA 101 a_R.8_07.03.2024



Annex SA for Measurement of sound absorption in reverberation rooms

1 Test stand description

Test rooms:	Laboratory of Kiwa GmbH, Hauptstraße 133, 52477 Alsdorf
Test method:	reverberation room method
Volume:	211 m ³
Total surface:	213 m ²
Floor plan:	trapezoidal
Reflectors:	6 aluminium plates 1.0 m x 2.0 m 7 plywood boards 1.5 m x 1.3 m 1 aluminium plate 1.8 m x 0.9 m
Test noise:	broadband pink noise
Receive filter:	third octave band filter
Measurement:	2 loudspeaker positions 6 microphone positions

2 Evaluation

The decay curves are determined using the interrupted noise method. Several decay curves measured at one microphone and/or loudspeaker position are averaged in order to reach a sufficient reproducibility. The reverberation time of the room is expressed by the arithmetic mean derived from the total number of all reverberation time measurements in each frequency band.

The equivalent sound absorption area of the test specimen(s) A_T is calculated as the difference between the equivalent sound absorption area of the reverberation room with test specimen A2 and the equivalent sound absorption area of the empty reverberation room A1 without test specimen(s). If the test object includes several identical individual objects, A_{obj} is determined by dividing A_T by the number of individual objects.

The frequency-dependent absorption coefficient α_{obj} of an individual object (for use in 3D simulations) of the product refers to the ratio of the equivalent sound absorption area A_{obj} of a test object to the surrounding area of the test object.

3 Standards

Norm: (Ausgabe)	Titel
DIN EN ISO 354:2003	Messung der Schallabsorption in Hallräumen
DIN ISO 20189:2020-12	Akustik – Stellwände und einzelne Objekte zur Verwendung in Innenräumen – Bewertung der Schallabsorption und Schalldämmung von Bauteilen aus Messungen im Prüfstand

Measurement of sound absorption in reverberation rooms

Annex SA

according DIN EN ISO 354:2003-12

Rating of sound absorption of elements based on laboratory measurements DIN ISO 20189:2020-12

Determination and application of measurement uncertainties DIN EN ISO 12999-2:2020-11

Testing period: 09.01.2025

Description: 3 x TYSTIQ - Table Screen [1,800 m x 0,655 m x 0,035 m]

Remarks: -

Type of Mounting: Desk attachments, mounting type I according to DIN ISO 20189:2020-12.

Boundary conditions:

	T1	T2
Temperature:	18,1 °C	18,7 °C
Relative humidity:	43,0 %	47,7 %

Surface area of the object: 2,53 m²

Total room area S_r: 213 m²

Room volume: 211 m³

α_{obj} : Single object absorption coefficient

A_{obj}: Equivalent sound absorption area for each object

T1: Reverberation time in the empty reverberation room

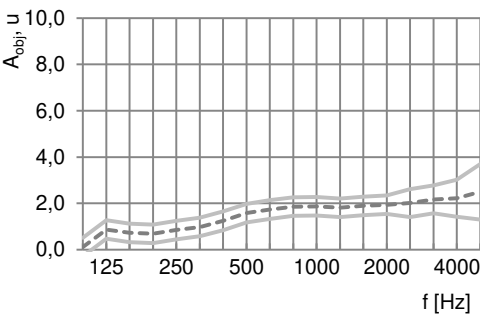
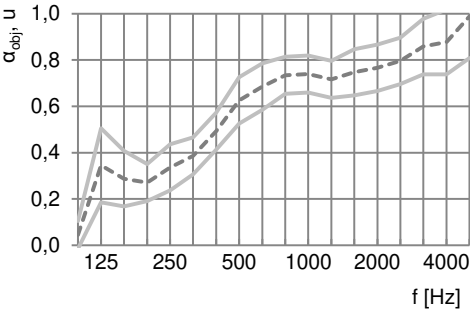
T2: Reverberation time in the reverberation room with sample

U: Expanded measurement uncertainty (k=2)

f	α_{obj}	$\pm U$	A _{obj}	$\pm U$	T1	T2
[Hz]	[-]	(k = 2)	[m ²]	(k = 2)	[s]	[s]
50	0,10	\	0,3	\	7,46	6,39
63	0,08	0,10	0,2	0,6	8,29	7,20
80	0,09	0,08	0,2	0,4	11,70	9,53
100	0,04	0,06	0,1	0,4	13,91	12,22
125	0,34	0,16	0,9	0,4	8,33	5,08
160	0,29	0,12	0,7	0,4	7,03	4,85
200	0,27	0,08	0,7	0,4	7,78	5,29
250	0,34	0,10	0,9	0,4	7,19	4,67
315	0,39	0,08	1,0	0,4	6,26	4,07
400	0,49	0,08	1,2	0,4	6,10	3,65
500	0,63	0,10	1,6	0,4	6,18	3,31
630	0,69	0,10	1,7	0,4	6,31	3,21
800	0,73	0,08	1,9	0,4	6,01	3,02
1000	0,74	0,08	1,9	0,4	5,74	2,95
1250	0,72	0,08	1,8	0,4	5,69	2,99
1600	0,75	0,10	1,9	0,4	5,33	2,84
2000	0,77	0,10	1,9	0,4	4,92	2,71
2500	0,80	0,10	2,0	0,6	4,16	2,44
3150	0,86	0,12	2,2	0,6	3,44	2,14
4000	0,88	0,14	2,2	0,8	2,69	1,84
5000	0,99	0,18	2,5	1,2	1,99	1,46

Diagram:

----- α_{obj}
— U
— α_p



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