Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

daidalos peutz
laboratory of acoustics

N° 451-TEST
NBN EN ISO 17025:2017
EA MLA signatory

NOISE LAB
TEST REPORT Number A-2024LAB-021-2-45443_E

Customer :	Texdecor Rue d'Hem, 2 59780 Willems France
Contacts :	**Client :** Max Olivier Loubert **Noise lab :** Gert-Jan Loobuyck
Tests :	Measurement of sound absorption in the reverberation room
Product name :	**Texdecor: SlimBox Baffle 1140x280x50, one object - suspension height 300 mm**

Normative references:

NBN EN ISO 354:2003	**Acoustics - Measurement of sound absorption in a reverberation room**
NBN EN ISO 11654:1997	Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
NBN ISO 9613-1:1996	Acoustics - Attenuation of sound during propagation outdoors - part 1 : Calculation of the absorption of sound by the atmosphere
ISO 12999-2:2020	Acoustics - Determination and application of measurement uncertainties in building acoustics Part 2: Sound absorption

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BELAC is a signatory of all existing multilateral agreements and recognition agreements of International Laboratory Accreditation Cooperation (ILAC). In this way, reports issued by BELAC accredited bodies are internationally accredited.

Date and reference of the request:	21/02/2024	2024LAB-021
Date of receipt of the specimen(s):	27/05/2024	2
Date of construction:	31/05/2024	
Date of tests:	31/05/2024	
Date of preparation of the test report:	9/07/2024	

The measurements were carried out at Daidalos Peutz Laboratory for Acoustics at Hooglede, see appendix 1
This test report together with its annexes contains : 9 pages and must be multiplied only in its entirety

Technical Manager,

Paul Mees

Laboratory Engineer,

Els Meulemans

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MEASURING EQUIPMENT

Signal
Brüel & Kjaer - 4292 : Omni Power Sound Source

Microphone system:
Brüel & Kjaer - 4189-L-001 : 1/2" free field microphone prepolarized, inclusive 2669L TEDS
Brüel & Kjaer - 4189 : 1/2" free field microphone, 6Hz to 20kHz, prepolarized
Brüel & Kjaer - 2669 : 1/2" microphone preamplifier
Brüel & Kjaer - 4231 : Sound calibrator 94&114dB SPL-1000Hz, Fulfils IEC 60942(2003)Class1

Number of source positions:	2	(Different sound source positions at least 3m apart.
Number of microphone positions for each source position:	8	The measurements shall be made with different microphone positions
Number of measured decays curves:	3	which are at least 1,5m apart, 2m from any sound source and 1m from
Total number of measurements with different positions for microphone & source:	16	any room surface and the test specimen.)

Signal processing
Brüel & Kjaer - 2716C : Power amplifier
Brüel & Kjaer - 3050-A-6/0: Signal generator, 6-ch. Inputmodule LAN-XI
Brüel & Kjaer - 3160-A-042: Signal generator, 4/2-ch. Input/output module LAN-XI
Brüel & Kjaer : PULSE Labshop Version 13.5
A PC with all necessary software

Reverberation room

Dimensions of the room:	Total volume :	298,3 m³
	Length:	9,99 m
	Width	4,97 m
	Height	5,98 m
	Volume door opening :	1,32 m³
	Total area:	279,9 m²
	l_{max} = 12,65 m < 1,9 $V^{⅓}$	

In order to improve the diffusivity, the use of diffusers is necessary
The test specimen shall have a maximum area of 15,62 m², which depends on the room volume

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TEST METHOD

The tests were conducted in accordance with the provisions of the test method EN ISO354:2003. A detailed description of the test set up has been given in the figures of annex 1 of this report.
The measurement method can be simply descibed as follows:

Essence of the test is in measuring of the reverberation time in the empty reflecting room and in the same room with the test sample inside it. The sound-absorption properties of a material depend on how the material is mounted during the test. Annex B of ISO 354:2003 specifies several different standard mountings that shall be used during a test for sound absorption. Normally a test specimen is tested using only one of the specified mountings.

From these reverberation times, the equivalent sound absorption area of the test specimen, is calculated by using Sabine's equation. Measurement is carried out in ranges of 1/3 octave and interval from 100Hz to 5000Hz.

The equivalent sound absorption area of the empty reverberation room, A1, in square metres, shall be calculated using the formula (1) :

$A_1 = 55{,}3\ V / (c_1 T_1) - 4Vm_1$ [m²] (1)

The equivalent sound absorption area of the reverberation room containing a test specimen, A2, in square metres, shall be calculated using the formula (2) :

$A_2 = 55{,}3\ V / (c_2 T_2) - 4Vm_2$ [m²] (2)

The equivalent sound absorption area of the test specimen, AT, in square metres, shall be calculated using the formula (3) :

$A_T = A_2 - A_1 = 55{,}3\ V\ (1/c_2T_2 - 1/c_1T_1) - 4V(m_2 - m_1)$ [m²] (3)

The sound absorption coefficient of a plane absorber or a specified array of test objects shall be calculated using the formula (4):

$\alpha_S = A_T / S$ (4)

NOTE *For discrete objects A_{obj} is used instead of α_s*
For a specific array of objects the result is given as α_s

The equivalent sound absorption area of discrete absorbers or individual objects shall be calculated using the formula (5):

$A_{obj} = A_T / n$ *where n is the number of tested objects* (5)

whereas:

A_1	=	*The equivalent sound absorption area of the empty reverberation room in square metres*
A_2	=	*The equivalent sound absorption area of the reverberation room containing a test specimen in square metres*
V	=	*volume , in cubic metres, of the empty reverberation room [m³]*
c_1, c_2	=	*the propagation speed of sound in air, in [m/s], calculated using the formula (in function of the temperature in the room during the test)* c=331 + 0,6 t with t = the air temperature in degrees Celsius for temperatures in the range of 15°C to 30°C
T_1	=	*the reverberation time, in seconds, of the empty reverberation room*
T_2	=	*the reverberation time, in seconds, of the reverberation room after the test specimen has been introduced*
m_1, m_2	=	*the power attenuation coefficient, in reciprocal metres, calculated according to ISO 9613-1:1993*
A_T	=	*The equivalent sound absorption area of the test specimen in square metres*
S	=	*the area, in square metres, covered by the test specimen*
α_s	=	*the sound absorption coefficient*
A_{obj}	=	*the equivalent sound absorption area per object*
n	=	*the number of tested discrete or individual objects*

SPECIAL MEASUREMENT CONDITIONS

-
-
-
-
-

n/a

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RATING OF SOUND ABSORPTION

A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

Frequency-dependent value of the sound absorption coefficient which is based on measurements on one-third-octave bands in accordance with ISO 354 and which is calculated in octave bands in accordance with the standard ISO 11654:1997.
The equivalent sound absorption area for each octave band i, is calculated from the arithmetic mean value of the three one-third octave sound absorption coefficients within the octave. In line with the standard ISO 354, the mean value is calculated to the first decimal.

α_w WEIGHTED SOUND ABSORPTION COEFFICIENT

The weighted sound absorption coefficient is determined as a single number value from the practical sound absorption coefficients from 250 Hz to 4000 Hz. The practical sound absorption coefficient is calculated according to ISO 11654:1997.
Single-number frequency-independent value which equals the value of the reference curve at 500 Hz after shifting is as specified in the standard ISO 11654:1997.

But an individual object is NOT evaluated with the standard ISO 11654, both in terms of the single-number value and the absorption class.

Test results related to tested object only. The test results should not be considered as material constants, the absorption depends not only on the material itself. The method of construction, the size of the material surface and its place in the room, affect the sound absorption characteristics of the test element.

ACCURACY

The accuracy of the absorption coefficients as calculated can be expressed in terms of repeatability of measured reverberation times (tests within one laboratory) and reproducibility (between various laboratories)

The expanded uncertainty under reproducibility conditions, U, is calculated in accordance to the standard ISO 12999-2 for the confidence level of 95%, used the coverage factor k=2

$U = u*k$ met

u = uncertainty under reproducibility conditions
k = coverage factor (k=2 for a confidence level of 95%)
U = expanded uncertainty under reproducibility conditions

This standard specifies how to calculate :
- the uncertainty of sound absoption coefficients and equivalent sound absorption areas measured according to ISO 354
The numbers given are derived form inter-laboratory measurements with different types of test specimens including suspended ceilings, mineral wool, foams.

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A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

EN ISO 354:2003 Acoustics - Measurement of sound absorption in a reverberation room
EN ISO 11654:1997 Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 2: sound absorption

Identification number of test element: 2 **Test date:** 31/05/2024
Name of test institute : Daidalos Peutz Laboratory of Acoustics, Hooglede, Belgium

Reverberation room: V = 298,3 m³ S_{tot} = 279,9 m²

Room conditions during measurements:		Empty room	With testelement	
Temperature:	T =	19,0	19,0	°C
Atmospheric pressure:	p =	100,8	100,8	kPa
Relative humidity :	h_r =	72	72	%

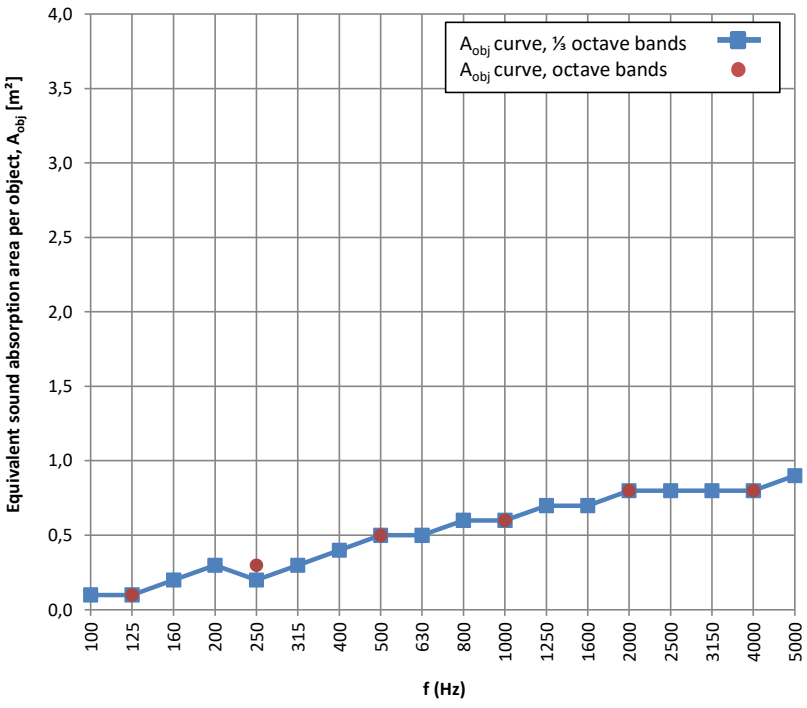
Type of test element: **Discrete object**
Construction characteristics:

Number of tested objects 3
Number of location setups in the reverberation room 2

Test setup: 3 panels were hung in the reverberation room with the supplied accessories from Texdecor
Height of the panels = 300 mm (distance between concrete floor and bottom of the panel)
Distance between each panel > 2 m

f(Hz)	T_1 (s)	T_2 (s)	A_{obj} [m²]	±U (k=2)
50	12,70	12,67	0,0	
63	**9,72**	**9,43**	**0,1**	± 0,1
80	11,24	10,02	0,2	± 0,2
100	9,51	9,17	0,1	± 0,1
125	**8,37**	**7,81**	**0,1**	± 0,1
160	8,74	7,97	0,2	± 0,1
200	9,50	8,23	0,3	± 0,2
250	**9,11**	**7,99**	**0,2**	± 0,1
315	9,18	7,89	0,3	± 0,1
400	8,66	7,22	0,4	± 0,1
500	**8,54**	**6,83**	**0,5**	± 0,1
630	8,57	6,73	0,5	± 0,1
800	8,22	6,36	0,6	± 0,1
1000	**8,35**	**6,34**	**0,6**	± 0,1
1250	7,85	5,90	0,7	± 0,2
1600	7,09	5,35	0,7	± 0,2
2000	**6,37**	**4,87**	**0,8**	± 0,2
2500	5,60	4,37	0,8	± 0,2
3150	4,72	3,81	0,8	± 0,3
4000	**3,80**	**3,19**	**0,8**	± 0,3
5000	3,16	2,70	0,9	± 0,4

f(Hz)	A_{obj} [m²]	±U (k=2)
63	0,1	
125	0,1	
250	0,3	± 0,1
500	0,5	± 0,3
1000	0,6	± 0,3
2000	0,8	± 0,3
4000	0,8	± 0,3



Note: an individual object is not evaluated according to ISO 11654 (α_w and class)

Requested by: Texdecor,Rue d'Hem, 2,59780 Willems
TESTELEMENT: (product name, for details see Annex 2)

Texdecor: SlimBox Baffle 1140x280x50, one object - suspension height 300 mm

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ANNEX 1: Description test items by manufacturer

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Texdecor: SlimBox Baffle 1140x280x50, one object - suspension height 300 mm
Dimensions of the baffle: 1140 mm x 280 mm x 50 mm

Material: PET felt thickness 9 mm
The object is filled with non-woven PES (polyesterwool), thickness 30 mm, 20 kg/m³
remark: the laboratory was unable to inspect the inside of the object,
The technical data sheet of the absorption material is obtained by Texdecor and is listed on the next page in this test report.

Suspension height: 300 mm (distance between the concrete floor and the bottom of the tested object in the reverberation room,
or in practice this corresponds to the distance from the ceiling and the top of the object.
Weight: indicative measurement in the laboratory of one panel: ±1461gr

Photo: sample mounted in the reverberation room

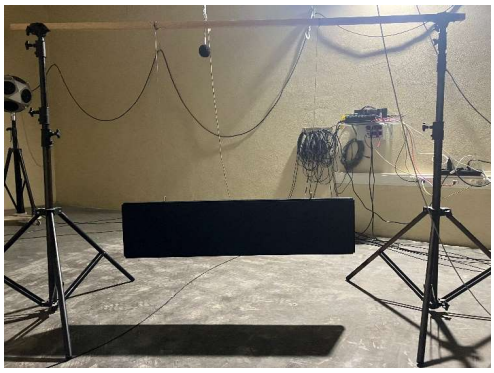

Photo: section view, Slimbox baffle

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ANNEX 2: Technical datasheet

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Technical datasheet of the absorption material inside the baffle, provided by Texdecor:
remark: the laboratory was unable to inspect the inside of the baffles

rePEaT®

Absorption acoustique

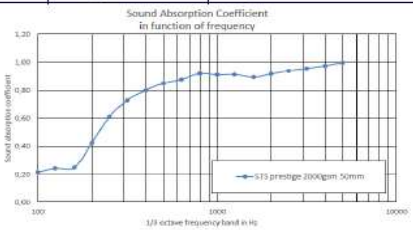
Safe-T-Sound® PRESTIGE rePEaT®

Description
- Non-tissé ouate PES avec fibres fines
- 100% fibres polyester, certifié GRS
- Thermolié
- Couleur : blanc

Applications
Le traitement acoustique vise à limiter la diffusion et l'amplification des sons en ajoutant des matériaux absorbants polyester

Caractéristiques environnementales
- Aucune irritation de la peau et des yeux
- Produit classe I selon Ökotex 100,
- Recyclable (100% PET)
- Pas d'odeur
- Sans aucun produit chimique (sans formaldehyde)
- Imputrescible, pas de prolifération des moisissures
- Ne dégage aucune particule volatile
- Pas d'émission de substances nocives (class A+)

Physical properties

Poids	g/m²	400 - 2000
Densité	kg/m³	20 - 50
Epaisseur	mm	10 – 50
Réaction au feu	400 – 1000g	B-s1, d0 selon EN 13501-1
Réaction au feu	2000g	B-s2, d0 selon EN 13501-1
Absorption Acoustique (Salle de réverbération selon ISO 354)		
Dimensions panneaux		Standard :
Largeur	cm	60 – 120
Longueur	m	60 – 120 – 240

twe group
smart nonwoven solutions

Only intended for information – no specification sheet

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ANNEX 3: photographs of the test element or the test arrangement

Description of the assembly or drawing or photo

3 identical SlimBox baffles were randomly placed in the reverberation room according to ISO 354.
each object was suspended with the provided slings from Texdecor.
the suspension system in the reverberation room consisted of tripods with a horizontal wooden beam.
The suspension system was not absorbent and is acoustically reflective.
Care was taken to ensure that the objects were at least 1 m from any room boundary and at least 1 m from any microphone.
The objects were treated as individual objects and were arranged randomly, spaced at least 2 m apart.
Aobj [m²] was determined from measurements, with 3 identical baffles placed at two different measurement positions in the reverberation room.

Test position 1:

Test position 2:

Photo : suspension height 300 mm

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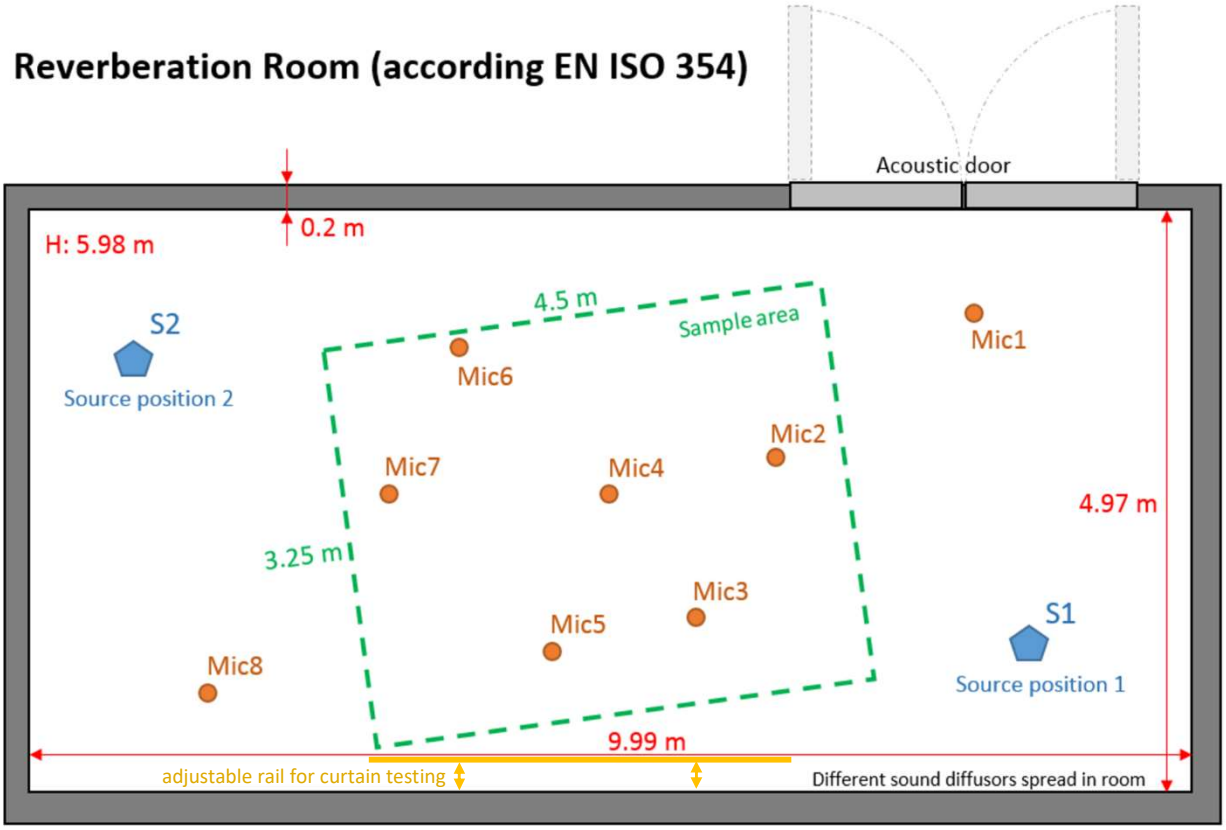
ANNEX 4: Sketch of the test room

Daidalos Peutz Laboratory of Acoustics, Diksmuidesteenweg 17B/1, B-8830 Hooglede, Belgium

The test room was built and finished according ISO 354.



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NOISE LAB
TEST REPORT Number A-2024LAB-021-1-45443_E

Customer :	Texdecor Rue d'Hem, 2 59780 Willems France
Contacts :	**Client :** Max Olivier Loubert **Noise lab :** Gert-Jan Loobuyck
Tests :	Measurement of sound absorption in the reverberation room
Product name :	**Texdecor: SlimBox Baffle 1140x580x50, one object - suspension height 300 mm**

Normative references:

NBN EN ISO 354:2003	**Acoustics - Measurement of sound absorption in a reverberation room**
NBN EN ISO 11654:1997	Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
NBN ISO 9613-1:1996	Acoustics - Attenuation of sound during propagation outdoors - part 1 : Calculation of the absorption of sound by the atmosphere
ISO 12999-2:2020	Acoustics - Determination and application of measurement uncertainties in building acoustics Part 2: Sound absorption

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Brüel & Kjaer - 4231 : Sound calibrator 94&114dB SPL-1000Hz, Fulfils IEC 60942(2003)Class1

Number of source positions:	2	(Different sound source positions at least 3m apart.
Number of microphone positions for each source position:	8	The measurements shall be made with different microphone positions
Number of measured decays curves:	3	which are at least 1,5m apart, 2m from any sound source and 1m from
Total number of measurements with different positions for microphone & source:	16	any room surface and the test specimen.)

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Brüel & Kjaer - 3050-A-6/0: Signal generator, 6-ch. Inputmodule LAN-XI
Brüel & Kjaer - 3160-A-042: Signal generator, 4/2-ch. Input/output module LAN-XI
Brüel & Kjaer : PULSE Labshop Version 13.5
A PC with all necessary software

Reverberation room

Dimensions of the room:	Total volume :	298,3 m³
	Length:	9,99 m
	Width	4,97 m
	Height	5,98 m
	Volume door opening :	1,32 m³
	Total area:	279,9 m²
	l_{max} = 12,65 m < 1,9 $V^{⅓}$	

In order to improve the diffusivity, the use of diffusers is necessary
The test specimen shall have a maximum area of 15,62 m², which depends on the room volume

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From these reverberation times, the equivalent sound absorption area of the test specimen, is calculated by using Sabine's equation. Measurement is carried out in ranges of 1/3 octave and interval from 100Hz to 5000Hz.

The equivalent sound absorption area of the empty reverberation room, A1, in square metres, shall be calculated using the formula (1) :

$A_1 = 55{,}3\ V / (c_1 T_1) - 4Vm_1$ [m²] (1)

The equivalent sound absorption area of the reverberation room containing a test specimen, A2, in square metres, shall be calculated using the formula (2) :

$A_2 = 55{,}3\ V / (c_2 T_2) - 4Vm_2$ [m²] (2)

The equivalent sound absorption area of the test specimen, AT, in square metres, shall be calculated using the formula (3) :

$A_T = A_2 - A_1 = 55{,}3\ V\ (1/c_2T_2 - 1/c_1T_1) - 4V(m_2 - m_1)$ [m²] (3)

The sound absorption coefficient of a plane absorber or a specified array of test objects shall be calculated using the formula (4):

$\alpha_S = A_T / S$ (4)

NOTE *For discrete objects A_{obj} is used instead of α_s*
For a specific array of objects the result is given as α_s

The equivalent sound absorption area of discrete absorbers or individual objects shall be calculated using the formula (5):

$A_{obj} = A_T / n$ *where n is the number of tested objects* (5)

whereas:

A_1	=	*The equivalent sound absorption area of the empty reverberation room in square metres*
A_2	=	*The equivalent sound absorption area of the reverberation room containing a test specimen in square metres*
V	=	*volume , in cubic metres, of the empty reverberation room [m³]*
c_1, c_2	=	*the propagation speed of sound in air, in [m/s], calculated using the formula*
		(in function of the temperature in the room during the test)
		$c = 331 + 0{,}6\ t$ with t = the air temperature in degrees Celsius for temperatures in the range of 15°C to 30°C
T_1	=	*the reverberation time, in seconds, of the empty reverberation room*
T_2	=	*the reverberation time, in seconds, of the reverberation room after the test specimen has been introduced*
m_1, m_2	=	*the power attenuation coefficient, in reciprocal metres, calculated according to ISO 9613-1:1993*
A_T	=	*The equivalent sound absorption area of the test specimen in square metres*
S	=	*the area, in square metres, covered by the test specimen*
α_s	=	*the sound absorption coefficient*
A_{obj}	=	*the equivalent sound absorption area per object*
n	=	*the number of tested discrete or individual objects*

SPECIAL MEASUREMENT CONDITIONS

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n/a

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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NOISE LAB
TEST REPORT Number A-2024LAB-021-1-45443_E

RATING OF SOUND ABSORPTION

A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

Frequency-dependent value of the sound absorption coefficient which is based on measurements on one-third-octave bands in accordance with ISO 354 and which is calculated in octave bands in accordance with the standard ISO 11654:1997.
The equivalent sound absorption area for each octave band i, is calculated from the arithmetic mean value of the three one-third octave sound absorption coefficients within the octave. In line with the standard ISO 354, the mean value is calculated to the first decimal.

α_w WEIGHTED SOUND ABSORPTION COEFFICIENT

The weighted sound absorption coefficient is determined as a single number value from the practical sound absorption coefficients from 250 Hz to 4000 Hz. The practical sound absorption coefficient is calculated according to ISO 11654:1997.
Single-number frequency-independent value which equals the value of the reference curve at 500 Hz after shifting is as specified in the standard ISO 11654:1997.

But an individual object is NOT evaluated with the standard ISO 11654, both in terms of the single-number value and the absorption class.

Test results related to tested object only. The test results should not be considered as material constants, the absorption depends not only on the material itself. The method of construction, the size of the material surface and its place in the room, affect the sound absorption characteristics of the test element.

ACCURACY

The accuracy of the absorption coefficients as calculated can be expressed in terms of repeatability of measured reverberation times (tests within one laboratory) and reproducibility (between various laboratories)

The expanded uncertainty under reproducibility conditions, U, is calculated in accordance to the standard ISO 12999-2 for the confidence level of 95%, used the coverage factor k=2

$U = u*k$ met

u = uncertainty under reproducibility conditions
k = coverage factor (k=2 for a confidence level of 95%)
U = expanded uncertainty under reproducibility conditions

This standard specifies how to calculate :
- the uncertainty of sound absoption coefficients and equivalent sound absorption areas measured according to ISO 354
The numbers given are derived form inter-laboratory measurements with different types of test specimens including suspended ceilings, mineral wool, foams.

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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
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A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

EN ISO 354:2003 Acoustics - Measurement of sound absorption in a reverberation room
EN ISO 11654:1997 Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 2: sound absorption

Identification number of test element: 1 **Test date:** 31/05/2024
Name of test institute : Daidalos Peutz Laboratory of Acoustics, Hooglede, Belgium

Reverberation room: V = 298,3 m³ S_{tot} = 279,9 m²

Room conditions during measurements:		Empty room	With testelement	
Temperature:	T =	19,0	19,3	°C
Atmospheric pressure:	p =	100,8	100,8	kPa
Relative humidity :	h_r =	72	70	%

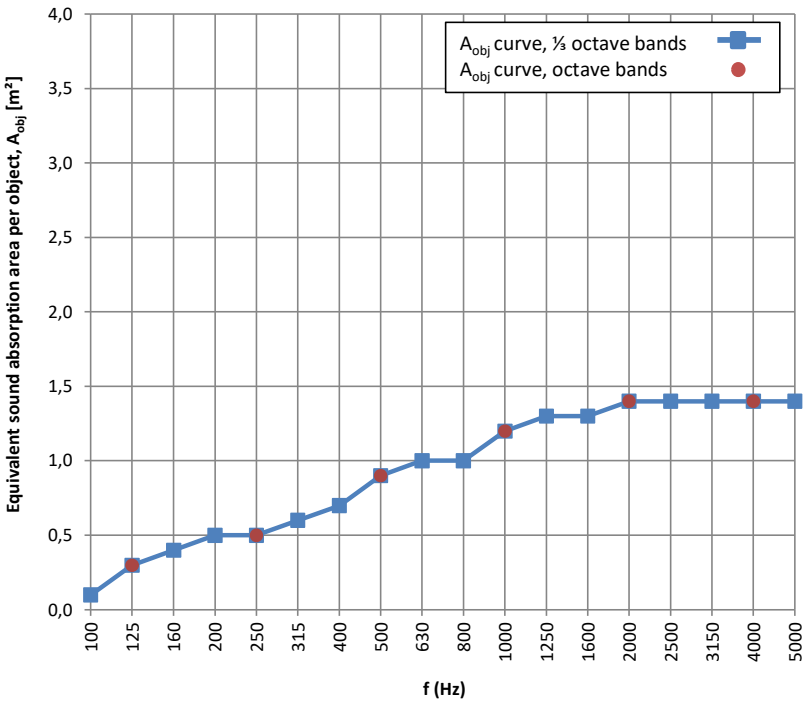
Type of test element: **Discrete object**
Construction characteristics:

Number of tested objects 3
Number of location setups in the reverberation room 2

Test setup: 3 panels were hung in the reverberation room with the supplied accessories from Texdecor
Height of the panels = 300 mm (distance between concrete floor and bottom of the panel)
Distance between each panel > 2 m

f(Hz)	T_1 (s)	T_2 (s)	A_{obj} [m²]	±U (k=2)
50	12,70	12,58	0,0	
63	**9,72**	**8,82**	**0,2**	± 0,3
80	11,24	9,47	0,3	± 0,3
100	9,51	8,82	0,1	± 0,2
125	**8,37**	**7,10**	**0,3**	± 0,2
160	8,74	7,29	0,4	± 0,2
200	9,50	7,47	0,5	± 0,2
250	**9,11**	**7,00**	**0,5**	± 0,2
315	9,18	6,80	0,6	± 0,2
400	8,66	6,21	0,7	± 0,2
500	**8,54**	**5,78**	**0,9**	± 0,2
630	8,57	5,65	1,0	± 0,2
800	8,22	5,37	1,0	± 0,2
1000	**8,35**	**5,16**	**1,2**	± 0,2
1250	7,85	4,85	1,3	± 0,2
1600	7,09	4,46	1,3	± 0,2
2000	**6,37**	**4,10**	**1,4**	± 0,2
2500	5,60	3,72	1,4	± 0,3
3150	4,72	3,33	1,4	± 0,3
4000	**3,80**	**2,81**	**1,4**	± 0,4
5000	3,16	2,46	1,4	± 0,5

f(Hz)	A_{obj} [m²]	±U (k=2)
63	0,2	
125	0,3	
250	0,5	± 0,1
500	0,9	± 0,3
1000	1,2	± 0,3
2000	1,4	± 0,3
4000	1,4	± 0,3



Note: an individual object is not evaluated according to ISO 11654 (α_w and class)

Requested by: Texdecor,Rue d'Hem, 2,59780 Willems
TESTELEMENT: (product name, for details see Annex 2)

Texdecor: SlimBox Baffle 1140x580x50, one object - suspension height 300 mm

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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TEST REPORT Number A-2024LAB-021-1-45443_E

ANNEX 1: Description test items by manufacturer

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Texdecor: SlimBox Baffle 1140x580x50, one object - suspension height 300 mm
Dimensions of the baffle: 1140 mm x 580 mm x 50 mm

Material: PET felt thickness 9 mm
The object is filled with non-woven PES (polyesterwool), thickness 30 mm, 20 kg/m³
remark: the laboratory was unable to inspect the inside of the object,
The technical data sheet of the absorption material is obtained by Texdecor and is listed on the next page in this test report.

Suspension height: 300 mm (distance between the concrete floor and the bottom of the tested object in the reverberation room,
or in practice this corresponds to the distance from the ceiling and the top of the object.
Weight: indicative measurement in the laboratory of one panel: ±2982gr

Photo: sample mounted in the reverberation room

Photo: section view, Slimbox baffle

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Belgium
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TEST REPORT Number A-2024LAB-021-1-45443_E

ANNEX 2: Technical datasheet

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Technical datasheet of the absorption material inside the baffle, provided by Texdecor:
remark: the laboratory was unable to inspect the inside of the baffles

rePEaT®

Absorption acoustique

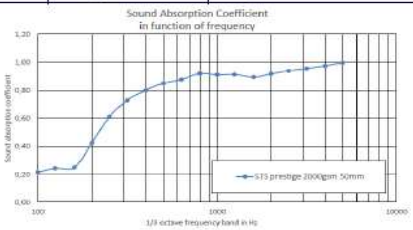
Safe-T-Sound® PRESTIGE rePEaT®

Description
- Non-tissé ouate PES avec fibres fines
- 100% fibres polyester, certifié GRS
- Thermolié
- Couleur : blanc

Applications
Le traitement acoustique vise à limiter la diffusion et l'amplification des sons en ajoutant des matériaux absorbants polyester

Caractéristiques environnementales
- Aucune irritation de la peau et des yeux
- Produit classe I selon Ökotex 100,
- Recyclable (100% PET)
- Pas d'odeur
- Sans aucun produit chimique (sans formaldehyde)
- Imputrescible, pas de prolifération des moisissures
- Ne dégage aucune particule volatile
- Pas d'émission de substances nocives (class A+)

Physical properties

Poids	g/m²	400 - 2000
Densité	kg/m³	20 - 50
Epaisseur	mm	10 – 50
Réaction au feu	400 – 1000g	B-s1, d0 selon EN 13501-1
Réaction au feu	2000g	B-s2, d0 selon EN 13501-1
Absorption Acoustique (Salle de réverbération selon ISO 354)		
Dimensions panneaux		Standard :
Largeur	cm	60 – 120
Longueur	m	60 – 120 – 240

twe group
smart nonwoven solutions

Only intended for information – no specification sheet

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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
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N° 451-TEST
NBN EN ISO 17025:2017
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NOISE LAB
TEST REPORT Number A-2024LAB-021-1-45443_E

ANNEX 3: photographs of the test element or the test arrangement

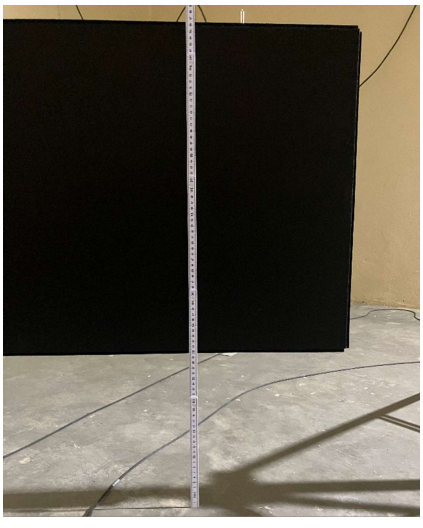
Description of the assembly or drawing or photo

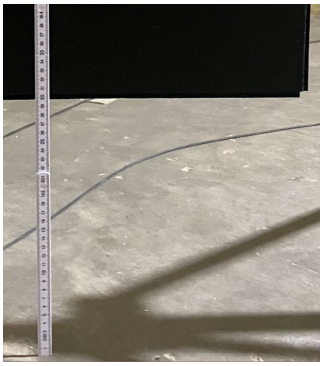
3 identical SlimBox baffles were randomly placed in the reverberation room according to ISO 354.
each object was suspended with the provided slings from Texdecor.
the suspension system in the reverberation room consisted of tripods with a horizontal wooden beam.
The suspension system was not absorbent and is acoustically reflective.
Care was taken to ensure that the objects were at least 1 m from any room boundary and at least 1 m from any microphone.
The objects were treated as individual objects and were arranged randomly, spaced at least 2 m apart.
Aobj [m²] was determined from measurements, with 3 identical baffles placed at two different measurement positions in the reverberation room.

Test position 1:

Test position 2:

Photo : suspension height 300 mm





Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
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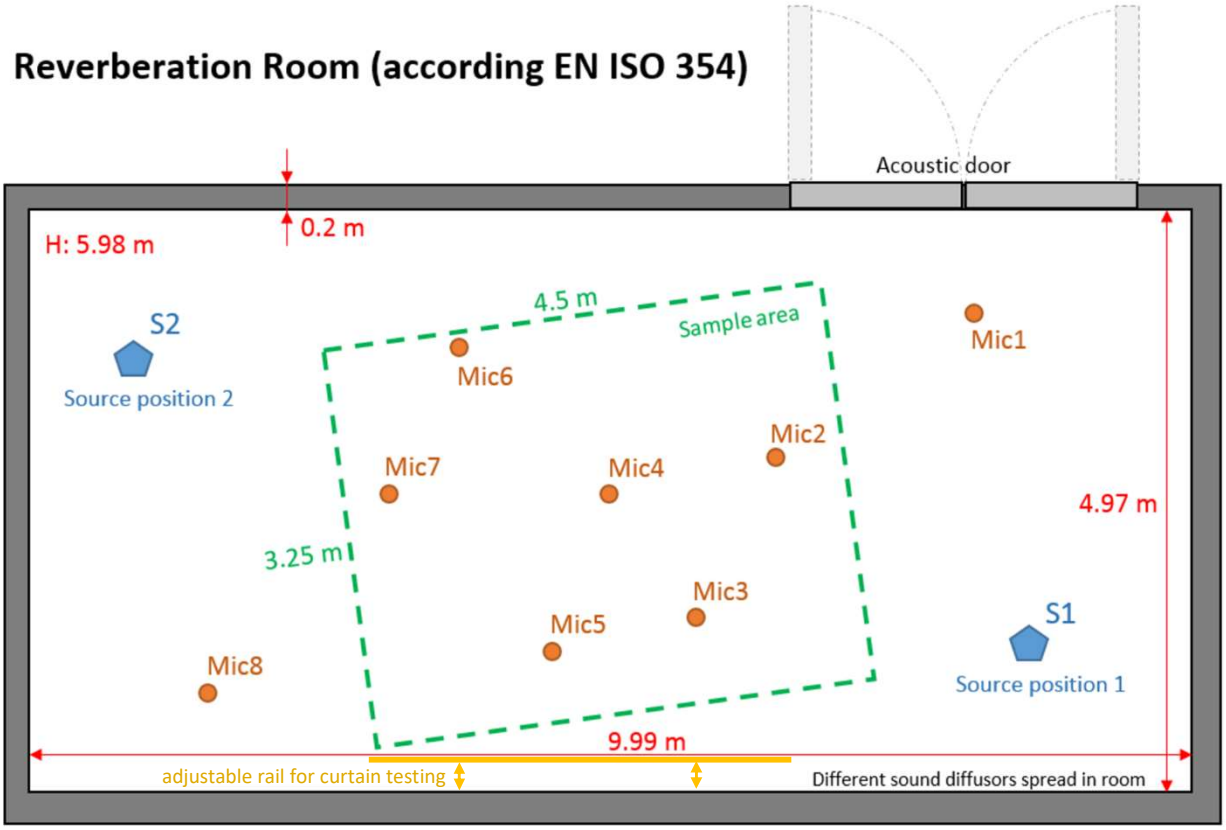
ANNEX 4: Sketch of the test room

Daidalos Peutz Laboratory of Acoustics, Diksmuidesteenweg 17B/1, B-8830 Hooglede, Belgium

The test room was built and finished according ISO 354.



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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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NOISE LAB
TEST REPORT Number A-2022LAB-106-9-45050_E

Customer :	Texdecor Rue d'Hem, 2 59780 Willems France	
Contacts :	**Client :**	Max Olivier Loubert
	Noise lab :	Els Meulemans
Tests :	Measurement of sound absorption in the reverberation room	
Product name :	**SlimBox Baffles (1120 x 260 x 40 mm) - 560 mm between the parallel rows - air cavity 230 mm**	

Normative references:

NBN EN ISO 354:2003	**Acoustics - Measurement of sound absorption in a reverberation room**
NBN EN ISO 11654:1997	Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
NBN ISO 9613-1:1996	Acoustics - Attenuation of sound during propagation outdoors - part 1 : Calculation of the absorption of sound by the atmosphere
ISO 12999-2:2020	Acoustics - Determination and application of measurement uncertainties in building acoustics Part 2: Sound absorption

To perform the above measurements, the laboratory of Daidalos Peutz is accredited by BELAC, "The Belgian Accreditation Body", under the certificate nr N°451-TEST. The activities covered by this accreditation certificate are covered by the EA MLA.
BELAC is a signatory of all existing multilateral agreements and recognition agreements of International Laboratory Accreditation Cooperation (ILAC). In this way, reports issued by BELAC accredited bodies are internationally accredited.

Date and reference of the request:	8/10/2022	2022LAB-106
Date of receipt of the specimen(s):	4/05/2023	9
Date of construction:	4/05/2023	
Date of tests:	4/05/2023	
Date of preparation of the test report:	25/09/2023	

The measurements were carried out at Daidalos Peutz Laboratory for Acoustics at Hooglede, see appendix 1
This test report together with its annexes contains : 9 pages and must be multiplied only in its entirety

Technical Manager,

Paul Mees

Laboratory Engineer,

Els Meulemans

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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NOISE LAB
TEST REPORT Number A-2022LAB-106-9-45050_E

MEASURING EQUIPMENT

Signal
Brüel & Kjaer - 4292 : Omni Power Sound Source

Microphone system:
Brüel & Kjaer - 4189-L-001 : 1/2" free field microphone prepolarized, inclusive 2669L TEDS
Brüel & Kjaer - 4189 : 1/2" free field microphone, 6Hz to 20kHz, prepolarized
Brüel & Kjaer - 2669 : 1/2" microphone preamplifier
Brüel & Kjaer - 4231 : Sound calibrator 94&114dB SPL-1000Hz, Fulfils IEC 60942(2003)Class1

Number of source positions:	2	(Different sound source positions at least 3m apart.
Number of microphone positions for each source position:	8	The measurements shall be made with different microphone positions
Number of measured decays curves:	3	which are at least 1,5m apart, 2m from any sound source and 1m from
Total number of measurements with different positions for microphone & source:	16	any room surface and the test specimen.)

Signal processing
Brüel & Kjaer - 2716C : Power amplifier
Brüel & Kjaer - 3050-A-6/0: Signal generator, 6-ch. Inputmodule LAN-XI
Brüel & Kjaer - 3160-A-042: Signal generator, 4/2-ch. Input/output module LAN-XI
Brüel & Kjaer : PULSE Labshop Version 13.5
A PC with all necessary software

Reverberation room

Dimensions of the room:	Total volume :	298,3 m³
	Length:	9,99 m
	Width	4,97 m
	Height	5,98 m
	Volume door opening :	1,32 m³
	Total area:	279,9 m²
	l_{max} = 12,65 m < 1,9 $V^{⅓}$	

In order to improve the diffusivity, the use of diffusers is necessary
The test specimen shall have a maximum area of 15,62 m², which depends on the room volume

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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TEST REPORT Number A-2022LAB-106-9-45050_E

TEST METHOD

The tests were conducted in accordance with the provisions of the test method EN ISO354:2003. A detailed description of the test set up has been given in the figures of annex 1 of this report.
The measurement method can be simply descibed as follows:

Essence of the test is in measuring of the reverberation time in the empty reflecting room and in the same room with the test sample inside it. The sound-absorption properties of a material depend on how the material is mounted during the test. Annex B of ISO 354:2003 specifies several different standard mountings that shall be used during a test for sound absorption. Normally a test specimen is tested using only one of the specified mountings.

From these reverberation times, the equivalent sound absorption area of the test specimen, is calculated by using Sabine's equation. Measurement is carried out in ranges of 1/3 octave and interval from 100Hz to 5000Hz.

The equivalent sound absorption area of the empty reverberation room, A1, in square metres, shall be calculated using the formula (1) :

$$A_1 = 55{,}3\ V / (c_1 T_1) - 4Vm_1 \quad [m^2] \quad (1)$$

The equivalent sound absorption area of the reverberation room containing a test specimen, A2, in square metres, shall be calculated using the formula (2) :

$$A_2 = 55{,}3\ V / (c_2 T_2) - 4Vm_2 \quad [m^2] \quad (2)$$

The equivalent sound absorption area of the test specimen, AT, in square metres, shall be calculated using the formula (3) :

$$A_T = A_2 - A_1 = 55{,}3\ V\ (1/c_2T_2 - 1/c_1T_1) - 4V(m_2 - m_1) \quad [m^2] \quad (3)$$

The sound absorption coefficient of a plane absorber or a specified array of test objects shall be calculated using the formula (4):

$$\alpha_S = A_T / S \quad (4)$$

whereas:

A_1	=	*The equivalent sound absorption area of the empty reverberation room in square metres*
A_2	=	*The equivalent sound absorption area of the reverberation room containing a test specimen in square metres*
V	=	volume , in cubic metres, of the empty reverberation room [m³]
c_1, c_2	=	the propagation speed of sound in air, in [m/s], calculated using the formula (in function of the temperature in the room during the test) c=331 + 0,6 t with t= the air temperature in degrees Celsius for temperatures in the range of 15°C to 30°C
T_1	=	*the reverberation time, in seconds, of the empty reverberation room*
T_2	=	*the reverberation time, in seconds, of the reverberation room after the test specimen has been introduced*
m_1, m_2	=	*the power attenuation coefficient, in reciprocal metres, calculated according to ISO 9613-1:1993*
A_T	=	*The equivalent sound absorption area of the test specimen in square metres*
S	=	*the area, in square metres, covered by the test specimen*
α_s	=	*the sound absorption coefficient*

SPECIAL MEASUREMENT CONDITIONS

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n/a

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
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RATING OF SOUND ABSORPTION

α_p PRACTICAL SOUND ABSORPTION COEFFICIENT

Frequency-dependent value of the sound absorption coefficient which is based on measurements on one-third-octave bands in accordance with ISO 354 and which is calculated in octave bands in accordance with the standard ISO 11654:1997.
The practical sound absorption coefficient, api, for each octave band i, is calculated from the arithmetic mean value of the three one-third octave sound absorption coefficients within the octave. The mean value is calculated to the second decimal and rounded in steps of 0,05 and maximized to 1,00 for rounded mean values > 1,00

α_w WEIGHTED SOUND ABSORPTION COEFFICIENT

The weighted sound absorption coefficient is determined as a single number value from the practical sound absorption coefficients from 250 Hz to 4000 Hz. The practical sound absorption coefficient is calculated according to ISO 11654:1997.
Single-number frequency-independent value which equals the value of the reference curve at 500 Hz after shifting is as specified in the standard ISO 11654:1997.

SHAPE INDICATORS, L,M,H

Whenever a practical sound absorption coefficient api exceeds the value of the shifted reference curve by 0,25 or more, one or more shape indicators shall be added, in parantheses, to the aw value.
If the excess absorption occurs at 250 Hz, use the notation L.
If the excess absorption occurs at 500 Hz or 1000 Hz, use the notation M.
If the excess absorption occurs at 2000 Hz or 4000 Hz, use the notation H.

NRC NOISE REDUCTION COEFFICIENT

The NRC is a single-number index determined in a lab test and used for rating how absorptive a particular material is. This industry standard ranges from zero (perfectly reflective) to 1 (perfectly absorptive). It is simply the average of the mid-frequency sound absorption coefficients (250, 500, 1000 and 2000 Hertz) rounded to the nearest 5%.

SAA SOUND ABSORPTION AVERAGE

NRC is being replaced by the Sound Absorption Average (SAA), which is described in the current ASTM C423-17. The SAA is a single-number rating of sound absorption properties of a material similar to NRC, except that the sound absorption values employed in the averaging are taken at the twelve one-third octave bands from 200 Hz to 2500 Hz, inclusive, and rounding is to the nearest multiple of 0.01.

The NRC and SAA results are not within the scope of the accreditation.

Test results related to tested object only. The test results should not be considered as material constants, the absorption depends not only on the material itself. The method of construction, the size of the material surface and its place in the room, affect the sound absorption characteristics of the test element.

ACCURACY

The accuracy of the absorption coefficients as calculated can be expressed in terms of repeatability of measured reverberation times (tests within one laboratory) and reproducibility (between various laboratories)

The expanded uncertainty under reproducibility conditions, U, is calculated in accordance to the standard ISO 12999-2 for the confidence level of 95%, used the coverage factor k=2

$U = u*k$ met

u = uncertainty under reproducibility conditions
k = coverage factor (k=2 for a confidence level of 95%)
U = expanded uncertainty under reproducibility conditions

This standard specifies how to calculate :
- the uncertainty of sound absoption coefficients and equivalent sound absorption areas measured according to ISO 354
- the uncertainty of the practical and weighted sound absorption coefficients determined according to ISO 11654

The numbers given are derived form inter-laboratory measurements with different types of test specimens including suspended ceilings, mineral wool, foams.

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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α_s SOUND ABSORPTION COEFFICIENT

EN ISO 354:2003	Acoustics - Measurement of sound absorption in a reverberation room
EN ISO 11654:1997	Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
ISO 12999-2:2020	Acoustics - Determination and application of measurement uncertainties in building acoustics - Part 2: sound absorption

Identification number of test element: **9** **Test date:** 4/05/2023
Name of test institute : Daidalos Peutz Laboratory of Acoustics, Hooglede, Belgium

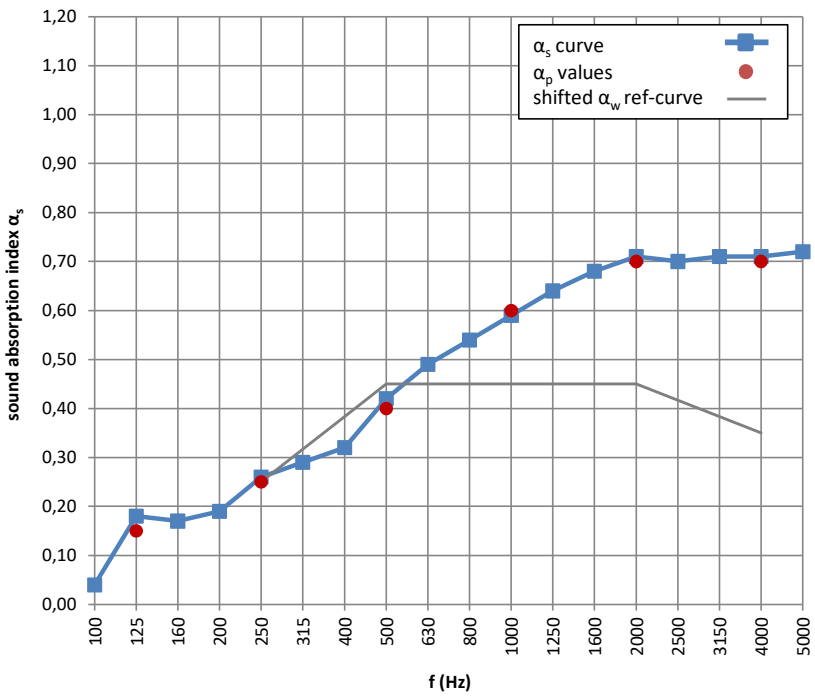
Reverberation room: V = 298,3 m³ S_{tot} = 279,9 m²

Room conditions during measurements:		Empty room	With testelement	
Temperature:	T =	17,4	18,7	°C
Atmospheric pressure:	p =	102,1	101,1	kPa
Relative humidity :	h_r =	60	58	%

Type of test element: **Plane absorber**
Construction characteristics: Mounting type in line with ISO354 Annex B: Type J mounting (array of baffles or pads)
Area of test element: 10,0 m²
Total thickness: 490 mm
Number of layers,including air spaces: 2
Connection of layers: The baffles were arranged in 5 parallel rows and there was no airspace between the single baffles in a row.
There was an airspace of 230 mm between the baffles and the floor of the reverberation room.

f(Hz)	T_1 (s)	T_2 (s)	α_s	±U (k=2)
50				
63				
80				
100	9,86	9,07	0,04	± 0,05
125	**8,02**	**6,16**	**0,18**	± 0,09
160	7,58	5,96	0,17	± 0,08
200	7,92	5,99	0,19	± 0,07
250	**8,55**	**5,83**	**0,26**	± 0,08
315	8,76	5,74	0,29	± 0,07
400	8,01	5,24	0,32	± 0,07
500	**7,87**	**4,66**	**0,42**	± 0,07
630	8,00	4,40	0,49	± 0,07
800	7,85	4,15	0,54	± 0,07
1000	**7,86**	**4,00**	**0,59**	± 0,08
1250	7,39	3,72	0,64	± 0,08
1600	6,50	3,38	0,68	± 0,08
2000	**5,75**	**3,11**	**0,71**	± 0,08
2500	4,77	2,81	0,70	± 0,07
3150	3,96	2,50	0,71	± 0,07
4000	**3,19**	**2,17**	**0,71**	± 0,07
5000	2,55	1,85	0,72	± 0,07

f(Hz)	α_p	±U (k=2)
125	0,15	
250	0,25	± 0,06
500	0,40	± 0,08
1000	0,60	± 0,08
2000	0,70	± 0,08
4000	0,70	± 0,10



α_w = **0,45** **(H)*** **± 0,07 (k=2)**
Sound absorption class: D

NRC = 0,5 **
SAA = 0,49 **

* It is strongly recommended to use this single-number rating in combination with the complete sound absorption coefficient curve
** These results are not within the scope of the accreditation

Requested by: Texdecor,Rue d'Hem, 2,59780 Willems
TESTELEMENT: (product name, for details see Annex 2)

SlimBox Baffles (1120 x 260 x 40 mm) - 560 mm between the parallel rows - air cavity 230 mm

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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TEST REPORT Number A-2022LAB-106-9-45050_E

ANNEX 1: Description test items by manufacturer

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Texdecor - SlimBox Baffle
manufacturer: Texdecor
Type : acoustic baffle
application : ceiling
composition: Slimbox baffles are made of PET. (coating and acoustic fleece) 60% coming from recycled plastic bottles

The acoustic SlimBox Baffles are produced without frame and are ceiling-mounted vertically.
With a total thickness of 40 mm, the 9 mm PET on the surface combined with acoustic molleton (450 g/m², thickness +/- 22,5 mm)
dimensions : 1120 x 260 x 40 mm

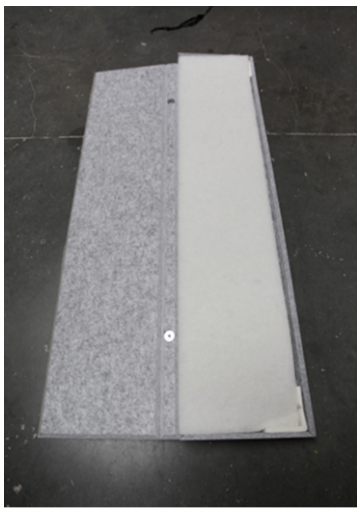

photo : Interior of SlimBox Baffle (1120 x 260 x 40 mm) with PE-wool (thickness ± 22,5 mm)

photo : detail of the SlimBox Baffle assembly during the test set-up.

photo : detail of the Slimbox Baffle

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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
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ANNEX 2: Technical datasheet

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Further information can be obtained directly from the manufacturer.

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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
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ANNEX 3: photographs of the test element or the test arrangement

Description of the assembly or drawing or photo

The baffles (1120 x 260 x 40 mm) were aranged in five parallel rows. Each row contains three baffles and there was no airspace between the single bafles in a row.
The distance, "d", between each row was 560 mm. There was an airspace of 230 mm between the baffles and the floor of the reverberation room.
The array of baffles was surrounded by a non-absorptive wooden frame, with a height of 500 mm, in line with the "well approach - type J mounting" of the standard ISO354.
The part of the wooden frame perpendicular to the rows of baffles flush with the ends of the baffles.
The part of the wooden frame parrallel to the absorptive area of the baffles was 280 mm (d/2) from the centreline of the nearest row of baffles, where d is the distance between the parallel rows.

photo : Empty reverberation room with non-absorbent frame for measurement setup

photo : total measurement setup

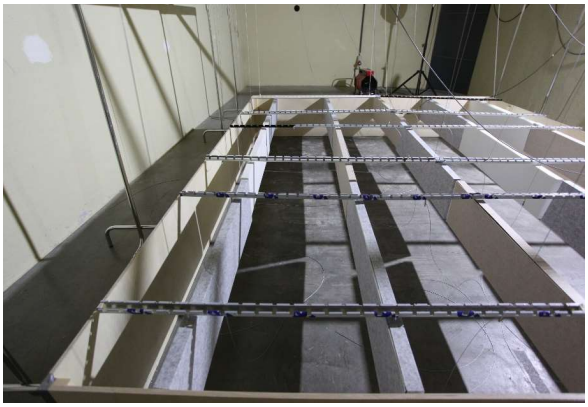

photo : detail of the measurement setup

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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
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ANNEX 4: Sketch of the test room

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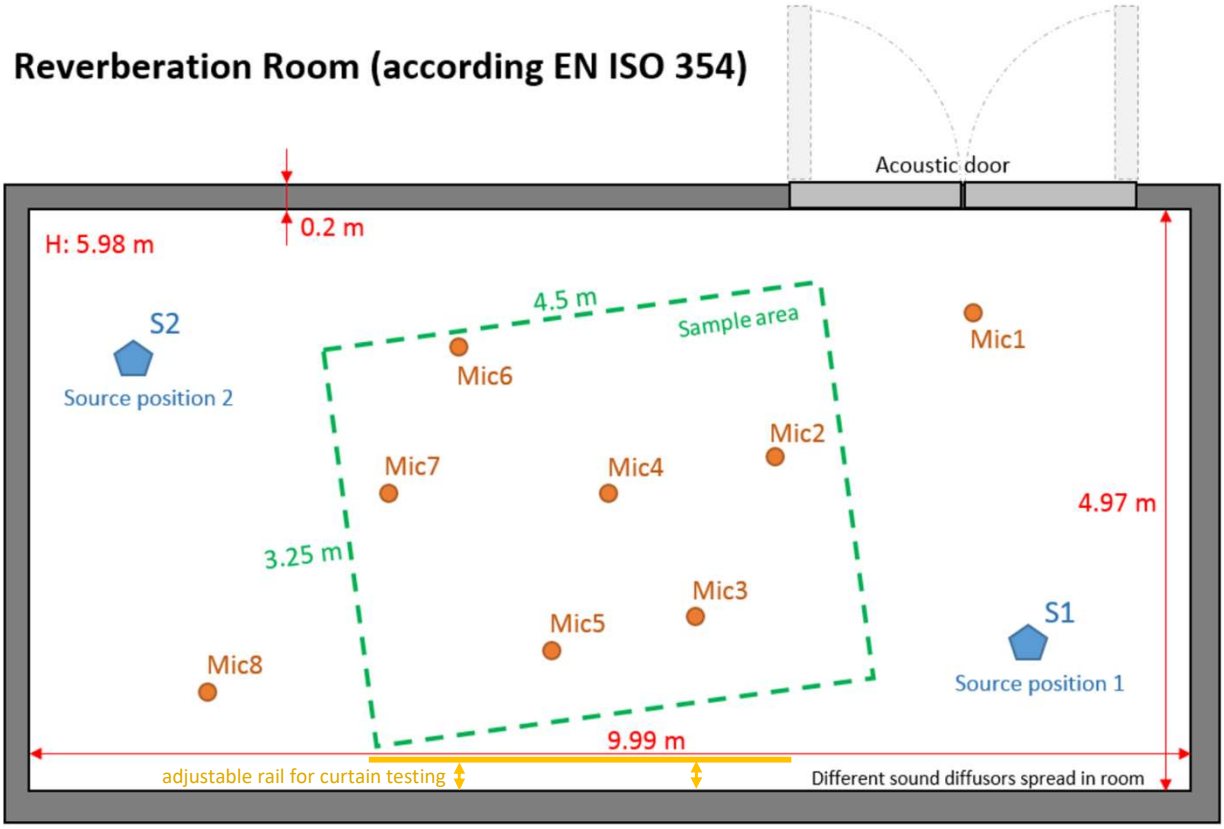
The test room was built and finished according ISO 354.



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Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
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TEST REPORT Number A-2022LAB-106-12-13-45104_E

Customer :	Texdecor Rue d'Hem, 2 59780 Willems France	
Contacts :	**Client :**	Max Olivier Loubert
	Noise lab :	Els Meulemans
Tests :	Measurement of sound absorption in the reverberation room	
Product name :	**SlimBox Baffles (1120 x 260 x 40 mm) - spacing of 250 mm and spacing of 500 mm**	

Normative references:

NBN EN ISO 354:2003	**Acoustics - Measurement of sound absorption in a reverberation room**
NBN EN ISO 11654:1997	Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
NBN ISO 9613-1:1996	Acoustics - Attenuation of sound during propagation outdoors - part 1 : Calculation of the absorption of sound by the atmosphere
ISO 12999-2:2020	Acoustics - Determination and application of measurement uncertainties in building acoustics Part 2: Sound absorption

To perform the above measurements, the laboratory of Daidalos Peutz is accredited by BELAC, "The Belgian Accreditation Body", under the certificate nr N°451-TEST. The activities covered by this accreditation certificate are covered by the EA MLA.
BELAC is a signatory of all existing multilateral agreements and recognition agreements of International Laboratory Accreditation Cooperation (ILAC). In this way, reports issued by BELAC accredited bodies are internationally accredited.

Date and reference of the request:	8/10/2022		2022LAB-106
Date of receipt of the specimen(s):	4/05/2023		
Date of construction:	27/06/2023	till	27/06/2023
Date of tests:	27/06/2023	till	27/06/2023
Date of preparation of the test report:	25/09/2023		

The measurements were carried out at Daidalos Peutz Laboratory for Acoustics at Hooglede, see appendix 1
This test report together with its annexes contains : 11 pages and must be multiplied only in its entirety

Technical Manager,

Paul Mees

Laboratory Engineer,

Els Meulemans

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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TEST REPORT Number A-2022LAB-106-12-13-45104_E

MEASURING EQUIPMENT

Signal
Brüel & Kjaer - 4292 : Omni Power Sound Source

Microphone system:
Brüel & Kjaer - 4189-L-001 : 1/2" free field microphone prepolarized, inclusive 2669L TEDS
Brüel & Kjaer - 4189 : 1/2" free field microphone, 6Hz to 20kHz, prepolarized
Brüel & Kjaer - 2669 : 1/2" microphone preamplifier
Brüel & Kjaer - 4231 : Sound calibrator 94&114dB SPL-1000Hz, Fulfils IEC 60942(2003)Class1

Number of source positions:	2	(Different sound source positions at least 3m apart.
Number of microphone positions for each source position:	8	The measurements shall be made with different microphone positions
Number of measured decays curves:	3	which are at least 1,5m apart, 2m from any sound source and 1m from
Total number of measurements with different positions for microphone & source:	16	any room surface and the test specimen.)

Signal processing
Brüel & Kjaer - 2716C : Power amplifier
Brüel & Kjaer - 3050-A-6/0: Signal generator, 6-ch. Inputmodule LAN-XI
Brüel & Kjaer - 3160-A-042: Signal generator, 4/2-ch. Input/output module LAN-XI
Brüel & Kjaer : PULSE Labshop Version 13.5
A PC with all necessary software

Reverberation room

Dimensions of the room:	Total volume :	298,3 m³
	Length:	9,99 m
	Width	4,97 m
	Height	5,98 m
	Volume door opening :	1,32 m³
	Total area:	279,9 m²
	l_{max} = 12,65 m < 1,9 $V^{⅓}$	

In order to improve the diffusivity, the use of diffusers is necessary
The test specimen shall have a maximum area of 15,62 m², which depends on the room volume

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TEST REPORT Number A-2022LAB-106-12-13-45104_E

TEST METHOD

The tests were conducted in accordance with the provisions of the test method EN ISO354:2003. A detailed description of the test set up has been given in the figures of annex 1 of this report.
The measurement method can be simply descibed as follows:

Essence of the test is in measuring of the reverberation time in the empty reflecting room and in the same room with the test sample inside it. The sound-absorption properties of a material depend on how the material is mounted during the test. Annex B of ISO 354:2003 specifies several different standard mountings that shall be used during a test for sound absorption. Normally a test specimen is tested using only one of the specified mountings.

From these reverberation times, the equivalent sound absorption area of the test specimen, is calculated by using Sabine's equation. Measurement is carried out in ranges of 1/3 octave and interval from 100Hz to 5000Hz.

The equivalent sound absorption area of the empty reverberation room, A1, in square metres, shall be calculated using the formula (1) :

$A_1 = 55{,}3\ V / (c_1 T_1) - 4Vm_1$ [m²] (1)

The equivalent sound absorption area of the reverberation room containing a test specimen, A2, in square metres, shall be calculated using the formula (2) :

$A_2 = 55{,}3\ V / (c_2 T_2) - 4Vm_2$ [m²] (2)

The equivalent sound absorption area of the test specimen, AT, in square metres, shall be calculated using the formula (3) :

$A_T = A_2 - A_1 = 55{,}3\ V\ (1/c_2T_2 - 1/c_1T_1) - 4V(m_2 - m_1)$ [m²] (3)

The sound absorption coefficient of a plane absorber or a specified array of test objects shall be calculated using the formula (4):

$\alpha_S = A_T / S$ (4)

NOTE *For discrete objects A_{obj} is used instead of α_s*
For a specific array of objects the result is given as α_s

The equivalent sound absorption area of discrete absorbers or individual objects shall be calculated using the formula (5):

$A_{obj} = A_T / n$ *where n is the number of tested objects* (5)

whereas:

A_1	=	*The equivalent sound absorption area of the empty reverberation room in square metres*
A_2	=	*The equivalent sound absorption area of the reverberation room containing a test specimen in square metres*
V	=	*volume , in cubic metres, of the empty reverberation room [m³]*
c_1, c_2	=	*the propagation speed of sound in air, in [m/s], calculated using the formula (in function of the temperature in the room during the test)* c=331 + 0,6 t with t = the air temperature in degrees Celsius for temperatures in the range of 15°C to 30°C
T_1	=	*the reverberation time, in seconds, of the empty reverberation room*
T_2	=	*the reverberation time, in seconds, of the reverberation room after the test specimen has been introduced*
m_1, m_2	=	*the power attenuation coefficient, in reciprocal metres, calculated according to ISO 9613-1:1993*
A_T	=	*The equivalent sound absorption area of the test specimen in square metres*
S	=	*the area, in square metres, covered by the test specimen*
α_s	=	*the sound absorption coefficient*
A_{obj}	=	*the equivalent sound absorption area per object*
n	=	*the number of tested discrete or individual objects*

SPECIAL MEASUREMENT CONDITIONS

-
-
-
-
-

n/a

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Vital Decosterstraat 67A – bus 1
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Belgium
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TEST REPORT Number A-2022LAB-106-12-13-45104_E

RATING OF SOUND ABSORPTION

A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

Frequency-dependent value of the sound absorption coefficient which is based on measurements on one-third-octave bands in accordance with ISO 354 and which is calculated in octave bands in accordance with the standard ISO 11654:1997.
The equivalent sound absorption area for each octave band i, is calculated from the arithmetic mean value of the three one-third octave sound absorption coefficients within the octave. In line with the standard ISO 354, the mean value is calculated to the first decimal.

α_w WEIGHTED SOUND ABSORPTION COEFFICIENT

The weighted sound absorption coefficient is determined as a single number value from the practical sound absorption coefficients from 250 Hz to 4000 Hz. The practical sound absorption coefficient is calculated according to ISO 11654:1997.
Single-number frequency-independent value which equals the value of the reference curve at 500 Hz after shifting is as specified in the standard ISO 11654:1997.

But an individual object is NOT evaluated with the standard ISO 11654, both in terms of the single-number value and the absorption class.

Test results related to tested object only. The test results should not be considered as material constants, the absorption depends not only on the material itself. The method of construction, the size of the material surface and its place in the room, affect the sound absorption characteristics of the test element.

ACCURACY

The accuracy of the absorption coefficients as calculated can be expressed in terms of repeatability of measured reverberation times (tests within one laboratory) and reproducibility (between various laboratories)

The relative standard deviation of the reverberation time T20, evaluated over a 20dB decay range, can be estimated by the following formula (see 8.2.2. van ISO 354:2003)
These relative standard deviations of the reverberation time T20 were calculated and illustrated in annex 1.

The reproducibility of absorption coefficient measurement is still under investigation

The specific value of uncertainty is available on request

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
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TEST REPORT Number A-2022LAB-106-12-13-45104_E

1. A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

EN ISO 354:2003 Acoustics - Measurement of sound absorption in a reverberation room
EN ISO 11654:1997 Acoustics - Sound absorbers for use in buildings - Rating of sound absorption

Identification number of test element: 12 **Test date:** 27/06/2023
Name of test institute : Daidalos Peutz Laboratory of Acoustics, Hooglede, Belgium

Reverberation room: V = 298,3 m³ S_{tot} = 279,9 m²

Room conditions during measurements:		Empty room	With testelement	
Temperature:	T =	22,6	22,6	°C
Atmospheric pressure:	p =	101,5	101,8	kPa
Relative humidity :	h_r =	68	65,7	%

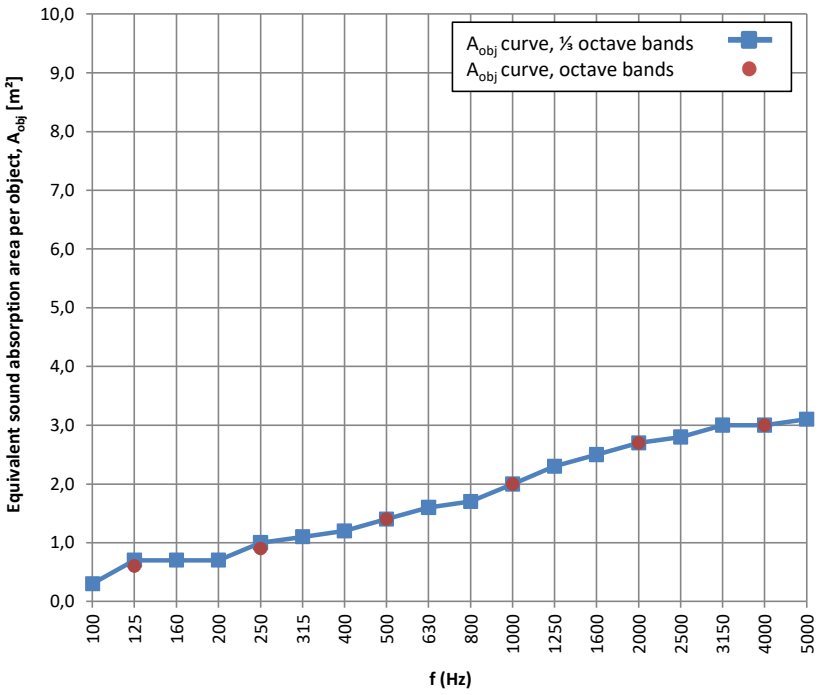
Type of test element: **Discrete object**
Construction characteristics:

Number of tested objects 2
Number of location setups in the reverberation room 2

Test setup: SlimBox Baffles - grille with 6 baffles - spacing of 250 mm - suspension height 200 mm
One object = 1 grille with 6 Slimbox Baffles (1120 x 260 x 40 mm) - spacing of 250 mm

f(Hz)	T_1 (s)	T_2 (s)	A_{obj} [m²]	*δ95 (Aobj)*
50				
63				
80				
100	9,75	8,68	0,3	*0,10*
125	**9,54**	**7,55**	**0,7**	*0,10*
160	8,44	6,83	0,7	*0,10*
200	9,05	7,05	0,7	*0,09*
250	**9,27**	**6,67**	**1,0**	*0,08*
315	9,12	6,40	1,1	*0,08*
400	8,83	6,09	1,2	*0,07*
500	**8,47**	**5,70**	**1,4**	*0,07*
630	8,39	5,38	1,6	*0,07*
800	7,90	5,08	1,7	*0,07*
1000	**8,00**	**4,82**	**2,0**	*0,06*
1250	7,72	4,46	2,3	*0,06*
1600	7,00	4,01	2,5	*0,06*
2000	**6,32**	**3,67**	**2,7**	*0,07*
2500	5,51	3,33	2,8	*0,07*
3150	4,73	2,96	3,0	*0,07*
4000	**3,92**	**2,61**	**3,0**	*0,08*
5000	3,24	2,25	3,1	*0,09*

f(Hz)	A_{obj} [m²]
125	0,6
250	0,9
500	1,4
1000	2,0
2000	2,7
4000	3,0



Note: an individual object is not evaluated according to ISO 11654 (α_w and class)

Requested by: Texdecor,Rue d'Hem, 2,59780 Willems
TESTELEMENT: (product name, for details see Annex 2)

SlimBox Baffles - grille with 6 baffles - spacing of 250 mm - suspension height 200 mm

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
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2. A_{obj} EQUIVALENT SOUND ABSORPTION AREA PER OBJECT

EN ISO 354:2003 Acoustics - Measurement of sound absorption in a reverberation room
EN ISO 11654:1997 Acoustics - Sound absorbers for use in buildings - Rating of sound absorption

Identification number of test element: **13** **Test date:** 27/06/2023
Name of test institute : Daidalos Peutz Laboratory of Acoustics, Hooglede, Belgium
Reverberation room: V = 298,3 m³ S_{tot} = 279,9 m²

Room conditions during measurements:		Empty room	With testelement	
Temperature:	T =	22,6	22,6	°C
Atmospheric pressure:	p =	101,5	101,8	kPa
Relative humidity :	h_r =	68	65,6	%

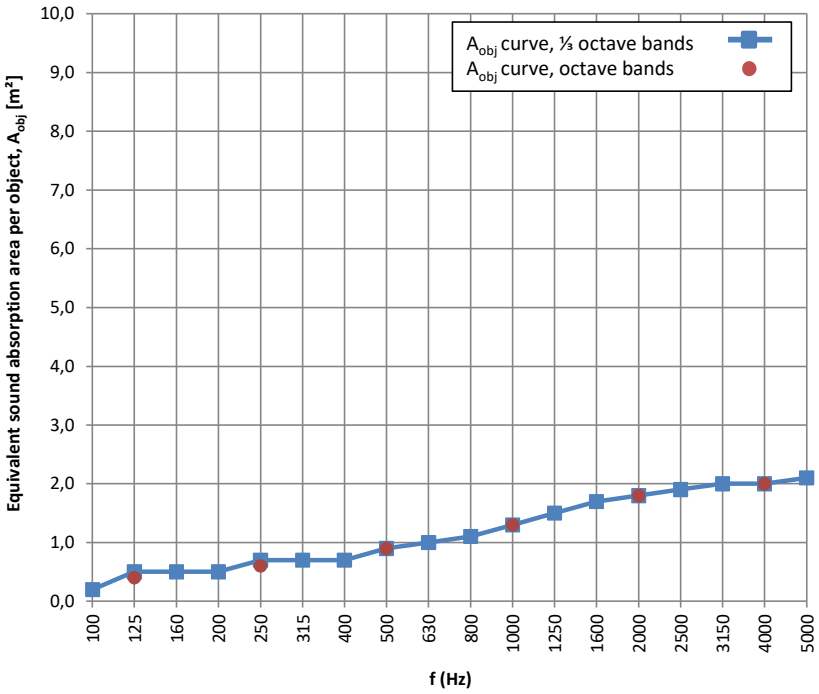
Type of test element: **Discrete object**
Construction characteristics:

Number of tested objects 2
Number of location setups in the reverberation room 2

Test setup: SlimBox Baffles - grille with 3 baffles - spacing of 500 mm - suspension height 200 mm
One object = 1 grille with 3 Slimbox Baffles (1120 x 260 x 40 mm) - spacing of 500 mm

f(Hz)	T_1 (s)	T_2 (s)	A_{obj} [m²]	*δ95 (Aobj)*
50				
63				
80				
100	9,75	9,09	0,2	*0,09*
125	**9,54**	**8,00**	**0,5**	*0,10*
160	8,44	7,28	0,5	*0,10*
200	9,05	7,66	0,5	*0,08*
250	**9,27**	**7,30**	**0,7**	*0,07*
315	9,12	7,18	0,7	*0,07*
400	8,83	6,93	0,7	*0,06*
500	**8,47**	**6,47**	**0,9**	*0,06*
630	8,39	6,13	1,0	*0,06*
800	7,90	5,74	1,1	*0,06*
1000	**8,00**	**5,52**	**1,3**	*0,05*
1250	7,72	5,18	1,5	*0,05*
1600	7,00	4,69	1,7	*0,05*
2000	**6,32**	**4,26**	**1,8**	*0,06*
2500	5,51	3,81	1,9	*0,06*
3150	4,73	3,36	2,0	*0,06*
4000	**3,92**	**2,92**	**2,0**	*0,07*
5000	3,24	2,50	2,1	*0,08*

f(Hz)	A_{obj} [m²]
125	0,4
250	0,6
500	0,9
1000	1,3
2000	1,8
4000	2,0



Note: an individual object is not evaluated according to ISO 11654 (α_w and class)

Requested by: Texdecor,Rue d'Hem, 2,59780 Willems
TESTELEMENT: (product name, for details see Annex 2)

SlimBox Baffles - grille with 3 baffles - spacing of 500 mm - suspension height 200 mm

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

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ANNEX 1 : PRECISION

The relative standard deviation of the reverberation time T20

ε_{20} = The relative standard deviation of the reverberation time T20, evaluated over a 20dB decay range, can be estimated by the following formula (see 8.2.2. van ISO 354:2003)

$$\varepsilon_{20}(T) = T\sqrt{\frac{2{,}42 + {}^{3{,}59}/_{N}}{f\,T}}$$

T_1 (s) = reverberation time of the empty room
T_2 (s) = reverberation time of the reverberation room after with the test specimen
f (Hz) = centre frequency of the one-third-octave band
N = number of decay curves evaluated

The relative standard deviation of the sound absorption coefficient

$\varepsilon(A_{obj})$ = The relative standard deviation of t The relative standard deviation of the sound absorption coefficient

$$\varepsilon(A_{obj}) = \frac{55{,}3\,V}{c\,S}\sqrt{\left(\frac{\varepsilon_{20}(T_2)}{T_2^2}\right)^2 + \left(\frac{\varepsilon_{20}(T_1)}{T_1^2}\right)^2}$$

$\delta_{95}(A_{obj})$ = 95% confidence interval 95% confidence interval

$$\delta_{95}(A_{obj}) = \frac{1{,}96\,\varepsilon(\alpha)}{\sqrt{N}}$$

T_1 (s) = reverberation time of the empty room
T_2 (s) = reverberation time of the reverberation room after with the test specimen
V = Volume of the reverberation room
c = the propagation speed of sound in air

N = number of decay curves evaluated
S = the area, in square metres, covered by the test specimen

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
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ANNEX 2: Description test items by manufacturer

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Texdecor - SlimBox Baffle
manufacturer: Texdecor
Type : acoustic baffle
application : ceiling
composition: Slimbox baffles are made of PET. (coating and acoustic fleece) 60% coming from recycled plastic bottles

The acoustic SlimBox Baffles are produced without frame, suspended on U-shaped rails and mounted vertically on the ceiling.
With a total thickness of 40 mm, the 9 mm PET on the surface combined with acoustic molleton (450 g/m², thickness +/- 22,5 mm)
dimensions of one baffle : 1120 x 260 x 40 mm
For test 12 : one object = 1 grille with 6 Slimbox Baffles suspended on U-shaped rails with a spacing of 250 mm between the centres (suspension points) of the baffles
For test 13 : one object = 1 grille with 3 Slimbox Baffles suspended on U-shaped rails with a spacing of 500 mm between the centres (suspension points) of the baffles

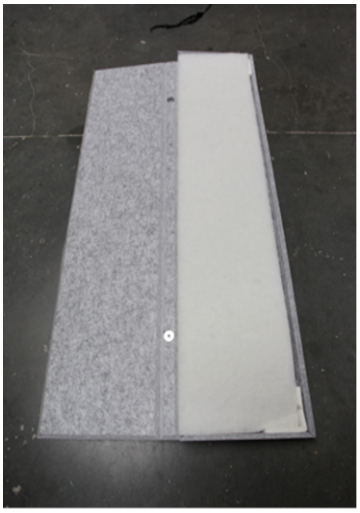
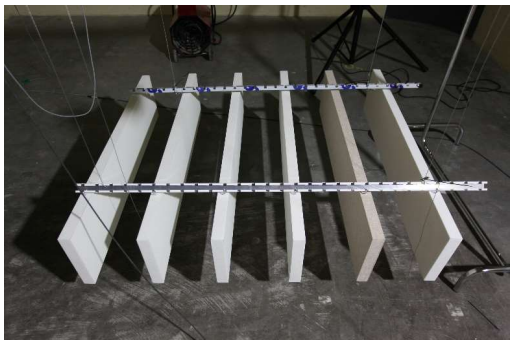


photo : interior of the SlimBox Baffle (1120 x 260 x 40 mm) with PE fleece (thickness +/- 22,5mm)



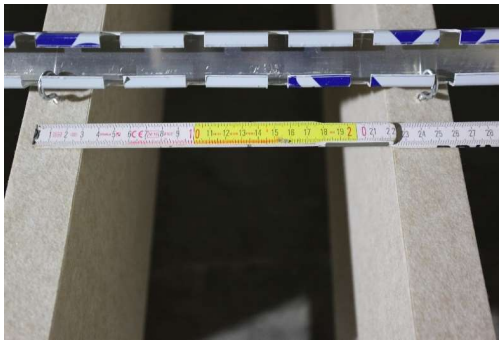
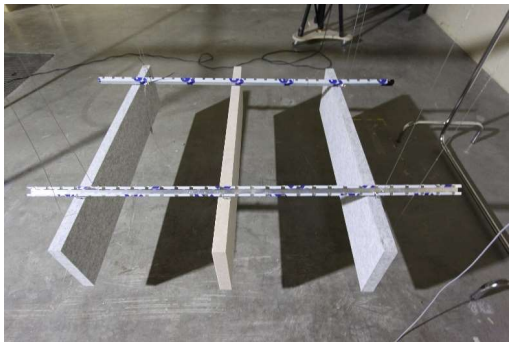


Photo Test n° 12 : one objet = 1 grid with 6 Slimbox Baffles suspended from U-shaped rails with 250 mm spacing between the centres (suspension points) of the baffles



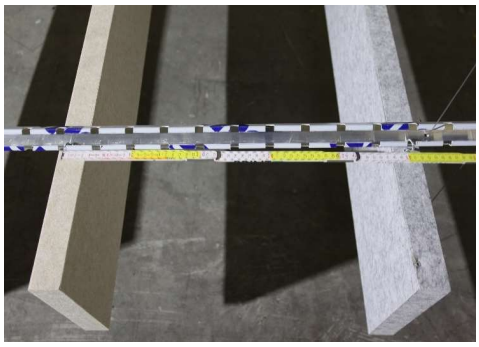


Photo Test n° 13 : one objet = 1 grid with 3 Slimbox Baffles suspended from U-shaped rails with 500 mm spacing between the centres (suspension points) of the baffles

Daidalos Peutz bouwfysisch ingenieursbureau
Vital Decosterstraat 67A – bus 1
B-3000 Leuven
Belgium
VAT: BE 0454.276.239
www.daidalospeutz.be

daidalos peutz
laboratory of acoustics

N° 451-TEST
NBN EN ISO 17025:2017
EA MLA signatory

NOISE LAB
TEST REPORT Number A-2022LAB-106-12-13-45104_E

ANNEX 3: Technical datasheet

The test sample description given by manufacturer is checked visually as good as possible by the laboratory.
The correspondence between the test element and the commercialized product is the sole responsibility of the manufacturer

Further information can be obtained directly from the manufacturer.

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ANNEX 4: photographs of the test element or the test arrangement

Description of the assembly or drawing or photo

Two grilles were tested as individual objects, arranged randomly in the reverberation room, spaced of at least 2m apart, in accordance with ISO 354.
In test number 12, one object = 1 grille with 6 Slimbox Baffles (1120 x 260 x 40 mm) - spacing of 250 mm
In test number 13, one object = 1 grille with 3 Slimbox Baffles (1120 x 260 x 40 mm) - spacing of 500 mm

For the first measurement 2 elements were randomly hung on a separate frame in the reverberation room on the first positions.
During the following measurement the 2 same elements hung on different random positions. The results were averaged.

Suspension height : 200 mm from the floor of the reverberation room and lower edge of the Slimbox Baffles

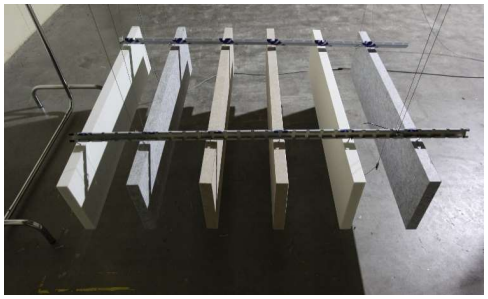

photo: Test n°12: 1 grille with 6 Slimbox Baffles

photo: Test n°13: 1 grille with 3 Slimbox Baffles

Photo : detail of the suspension height of 200 mm in test 12 and 13

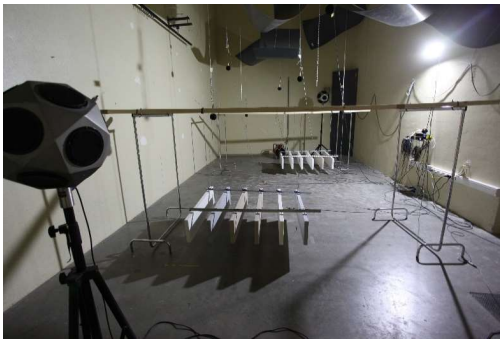

photo: Test n°12: test set-up on position 1

photo: Test n°13: test set-up on position 1

photo: Test n°12: test set-up on position 2

photo: Test n°13: test set-up on position 2

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ANNEX 5: Sketch of the test room

Daidalos Peutz Laboratory of Acoustics, Diksmuidesteenweg 17B/1, B-8830 Hooglede, Belgium

The test room was built and finished according ISO 354.