

CQSQUIS[®]

/ACOUSTIC CERTIFICATE

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SONORLAB
PROEFVERSLAG Nr. A-SON1420-1420_6/41061

α_s

GELUIDSABSORPTIECOEFFICIENT

EN ISO 354:2003
EN ISO 11654:1997

Acoustics - Measurement of sound absorption in a reverberation room
Acoustics - Sound absorbers for use in buildings - Rating of sound absorption

Date / Datum:

01/06/2012

Reverberation room / Nagalmruimte

V =

296,9 m³

S_{tot} = 278,2 m²

Temperature / Temperatuur:

T =

20,5

20,6

°C

Atmospheric pressure / Atmosferische luchtdruk:

p =

7,2

7,1

kPa

Relative humidity / Luchtvochtigheid:

h_r =

1014,9

1015,2

%

N° test sample / N° testelement :

SON1420_6

Construction characteristics / constructie gegevens:

Area of test element / Oppervlakte testelement

12,00 m²

Total thickness (mm) / totale dikte (mm):

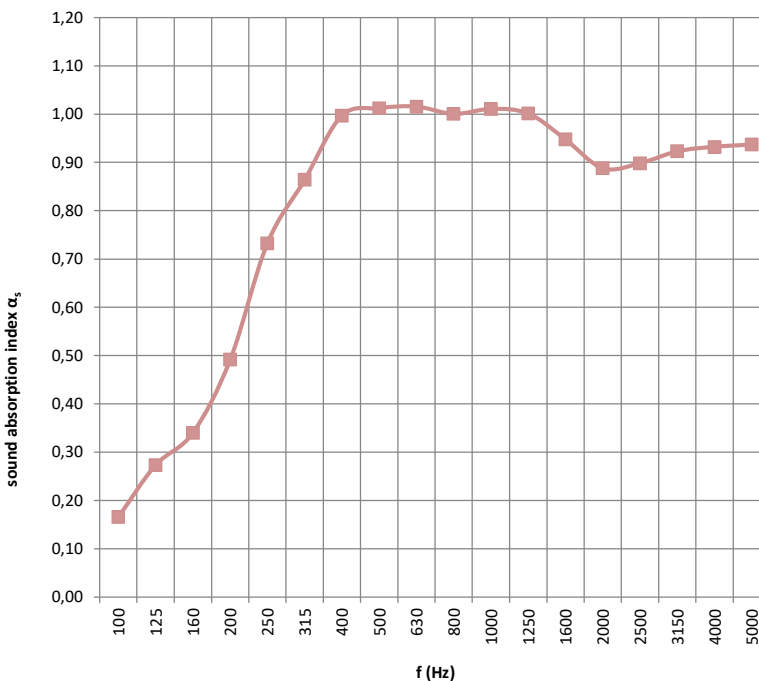
48 mm

number of layers, including air spaces / aantal lagen, luchtspouw inbegrepen:

2

connection of layers / binding van de lagen: /

f(Hz)	T1 (s)	T2 (s)	α_s
50			
63			
80			
100	15,79	9,53	0,17
125	14,24	7,20	0,27
160	11,86	5,89	0,34
200	12,70	4,95	0,49
250	11,64	3,71	0,73
315	11,71	3,31	0,86
400	11,03	2,93	1,00
500	10,70	2,87	1,01
630	11,15	2,89	1,02
800	10,90	2,91	1,00
1000	10,66	2,86	1,01
1250	9,88	2,81	1,00
1600	8,78	2,81	0,95
2000	7,82	2,80	0,89
2500	6,67	2,61	0,90
3150	5,49	2,36	0,92
4000	4,51	2,14	0,93
5000	3,59	1,89	0,94



f(Hz)	α_p
125	0,25
250	0,70
500	1,00
1000	1,00
2000	0,90
4000	0,95

$\alpha_w = 0,95$ ()
acoustical absorption class : A

Requested by / AANVRAGER :

Casalis, Stasegemsesteenweg 72, 8500 Kortrijk

TESTELEMENT / PROEFELEMENT:

(short description by the manufacturer, details: see Annex 1 / Beknopte beschrijving door het bedrijf, details: zie bijlage 1)

Absorptiekader van 40mm bekleed met 3D textiel en opgevuld met 48mm melamineschuim

LABORATORY MEASUREMENT OF THE SOUND ABSORPTION USING SOUND IMPEDANCE METHOD

P.V. 6577

June 2019

CLIENT Casalis

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CONTACT

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KUNDT IMPEDANCE TUBE AT ACOUSTIC LABORATORY, KU LEUVEN.

Measurements of the absorption coefficient α at normal sound incidence were performed in an impedance tube in accordance with the method described in ISO 10534-2 (transfer function method).

The method makes use of two microphones, the position of which is switched between two measurements. A frequency sweep is produced by a loudspeaker at the end of the tube. The transfer function between both microphones is determined for each case from the ratio of the two frequency spectra. The working frequency range is:

$$f_l < f < f_u$$

The lower frequency limit f_l of an impedance tube is dependent on the spacing between the microphones and the accuracy of the analysis system. A large spacing between the microphones enhances the accuracy of the measurements at low frequencies. The upper frequency limit f_u of an impedance tube is determined by the cross-dimension. The upper limit of the working frequency range is given by the existence of propagating higher modes. The condition for f_u is given by:

$$f_u \cdot d \leq 200$$

with d the inside diameter of the circular tube.

The inner diameter of the impedance tube is 44.6 ± 0.5 mm, resulting in an upper frequency limit f_u equal to 4484Hz.

MEASUREMENT SETUP

Measurements were done on 07-06-2019 and 14-06-2019

Three Casalis fabric types were tested. For each test, the fabric was placed over mineral wool with medium hardness at the open end of the tube (see Figure 1). A 1cm airgap separated the back of the absorption material and the rigid end of the tube. used in test, pictured from left to right: Cello, Leevn and Slumber

Table 1 gives an overview of the fabrics that were used.

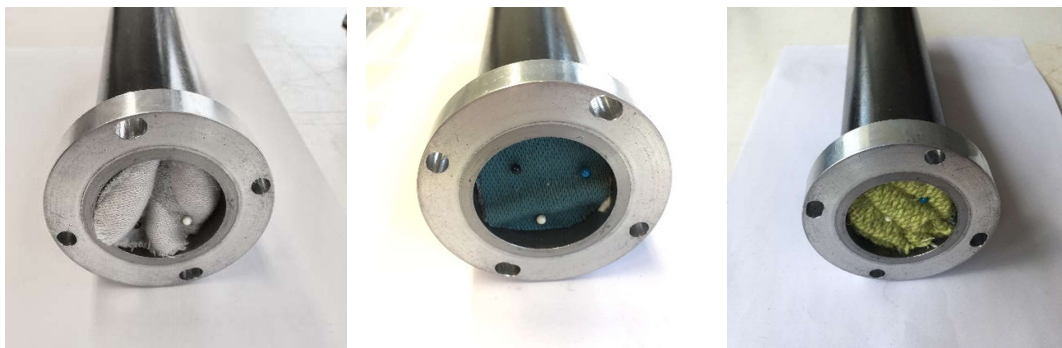


Figure 1 Casalis fabric used in test, pictured from left to right: Cello, Leevn and Slumber

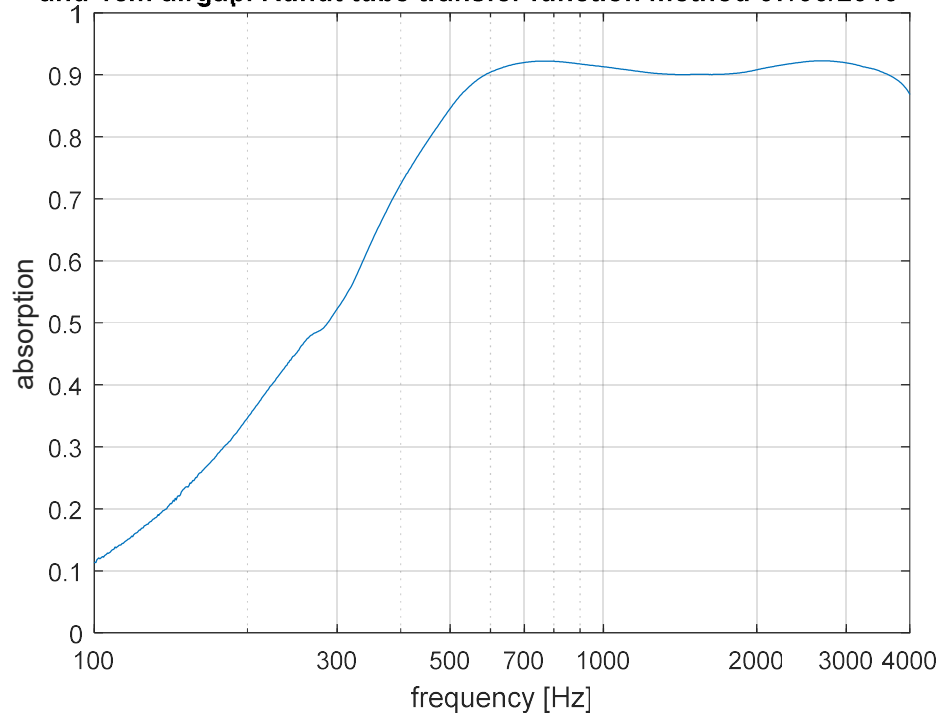
Table 1

	Casalis fabric	Colour
Test 1	Cello	Light grey
Test 2	Leevn	Blue
Test 3	Slumber	Green

TEST 1: MEASUREMENT OF ABSORPTION COEFFICIENT FOR CASALIS CELLO FABRIC WITH MINERAL WOOL MEDIUM HARDNESS AND 1CM AIRGAP

ISO 10534-2 Acoustics - Determination of sound absorption coefficient and impedance in impedance tubes -Part 2: Transfer-function method

absorption for Casalis Cello fabric with mineral wool medium hardness and 1cm airgap. Kundt tube transfer function method 07/06/2019



Absorption measured according to ISO 10534-2 (transfer function method).

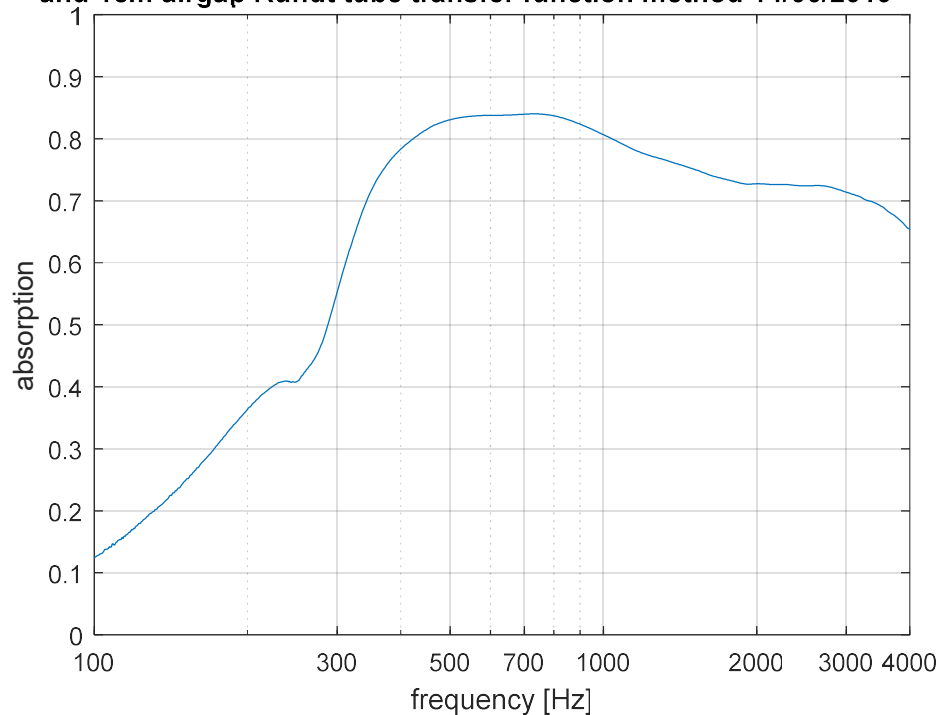
Position of sample in in tube: fabric (open end) – absorption material—airgap (closed end)

Inner diameter of impedance tube	44.6 ± 0.5 mm
Casalis Cello fabric thickness	10mm
Mineral wool medium sample thickness	46mm
Airgap at closed end	10mm
Temperature	24.8C
Atmospheric pressure	1005mBar

TEST 2: MEASUREMENT OF ABSORPTION COEFFICIENT FOR CASALIS LEEVN FABRIC WITH MINERAL WOOL MEDIUM HARDNESS AND 1CM AIRGAP

ISO 10534-2 Acoustics - Determination of sound absorption coefficient and impedance in impedance tubes -Part 2: Transfer-function method

absorption for Casalis Leevn fabric with mineral wool medium hardness and 1cm airgap Kundt tube transfer function method 14/06/2019



Absorption measured according to ISO 10534-2 (transfer function method).

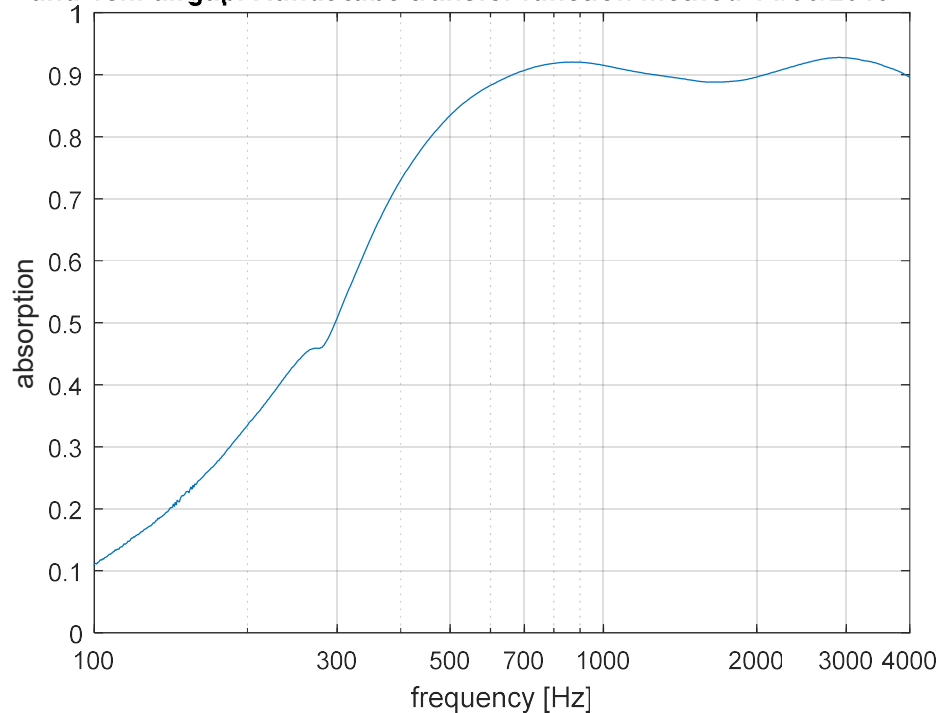
Position of sample in in tube: fabric (open end) – absorption material—airgap (closed end)

Inner diameter of impedance tube	44.6 ± 0.5 mm
Caslis Leevn fabric thickness	6mm
Mineral wool medium sample thickness	46mm
Airgap at closed end	10mm
Temperature	24.1C
Atmospheric pressure	1013mBar

TEST 3: MEASUREMENT OF ABSORPTION COEFFICIENT FOR CASALIS SLUMBER FABRIC WITH MINERAL WOOL MEDIUM HARDNESS AND 1CM AIRGAP

ISO 10534-2 Acoustics - Determination of sound absorption coefficient and impedance in impedance tubes -Part 2: Transfer-function method

absorption for Casalis Slumber fabric with mineral wool medium hardness and 1cm airgap. Kundt tube transfer function method 14/06/2019



Absorption measured according to ISO 10534-2 (transfer function method).

Position of sample in in tube: fabric (open end) – absorption material—airgap (closed end)

Inner diameter of impedance tube	44.6 ± 0.5 mm
Casalis Slumber fabric thickness	12mm
Mineral wool medium sample thickness	46mm
Airgap at closed end	10mm
Temperature	23.9C
Atmospheric pressure	1013mBar