RECTICEL - SID TEST REPORT

Attn of **Kristina De Temmerman**
Centexbel
Technologiepark 7
B - 9052 Zwijnaarde

Our offer from: december 2016
Your order: n° 34620
LIMS request number: 20-00140
Date: 30/01/2020

Sent Samples:

T 2001690

Requested Tests:

Determination of sound absorption in impedance tubes according to ISO 10534-2 (1998)

Enclosed you will find the test report n° 20_00140_EN

On date 28/01/2020 at your request, tests were performed analogous to the method ISO 10534-2 (1998). Additional, air flow resistance, thickness and density was measured.

We hereby confirm to you the following test results obtained.

Sincerely,

Paul De Roover
Development Engineer

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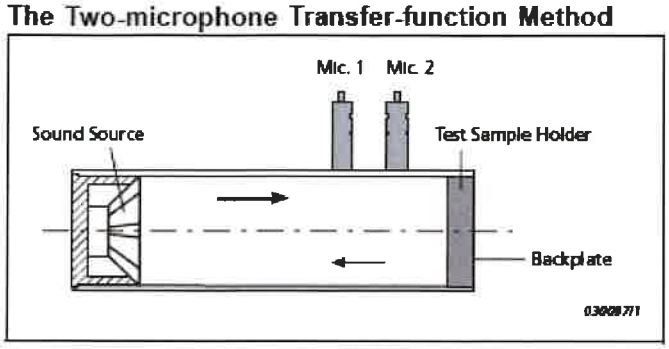
ISO 10534-2 (1998) : Acoustics - Determination of sound absorption coefficient and impedance in impedance tubes

1. Definition

Sound absorption coefficient at normal incidence α is the ratio of sound power entering the surface of the test object to the incident sound power for a plane wave at normal incidence

2. Method

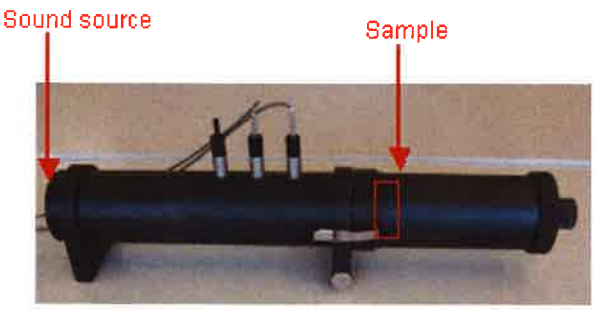
Fig. 1
Schematic diagram of the impedance tube for the two-microphone transfer-function method



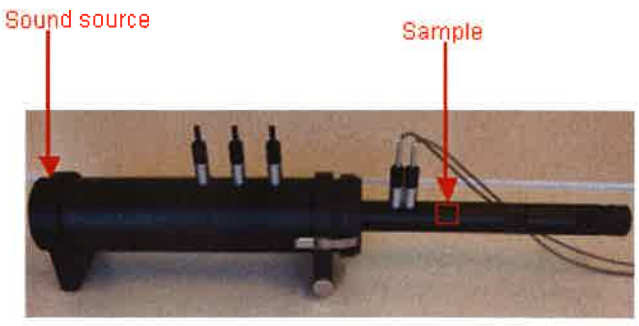
A sound source (loudspeaker) is mounted at one end of the impedance tube, and a sample of the material is placed at the other end (Fig. 1). The loudspeaker generates broadband, stationary random sound waves, which propagate as plane waves in the tube, hit the sample and reflect. The propagation, contact and reflection result in a standing-wave interference pattern due to the superposition of forward- and backward-travelling waves inside the tube. By measuring the sound pressure at two fixed locations and calculating the complex transfer function using a two-channel digital frequency analyzer, it is possible to determine the sound absorption and complex reflection coefficients and the normal acoustic impedance of the material. The usable frequency range depends on the diameter of the tube and the spacing between the microphone positions.

3. Impedance tube setup

Large tube : 100 mm sample
100 - 1600 Hz



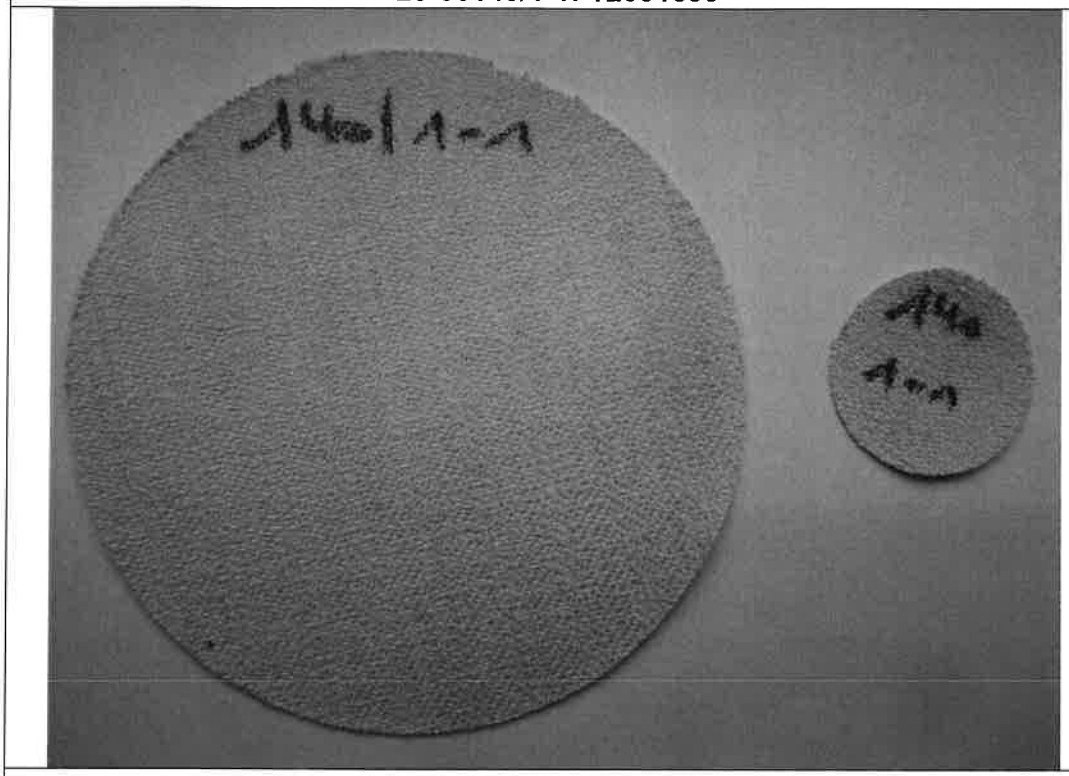
Small tube : 29 mm sample
1600 - 6400 Hz



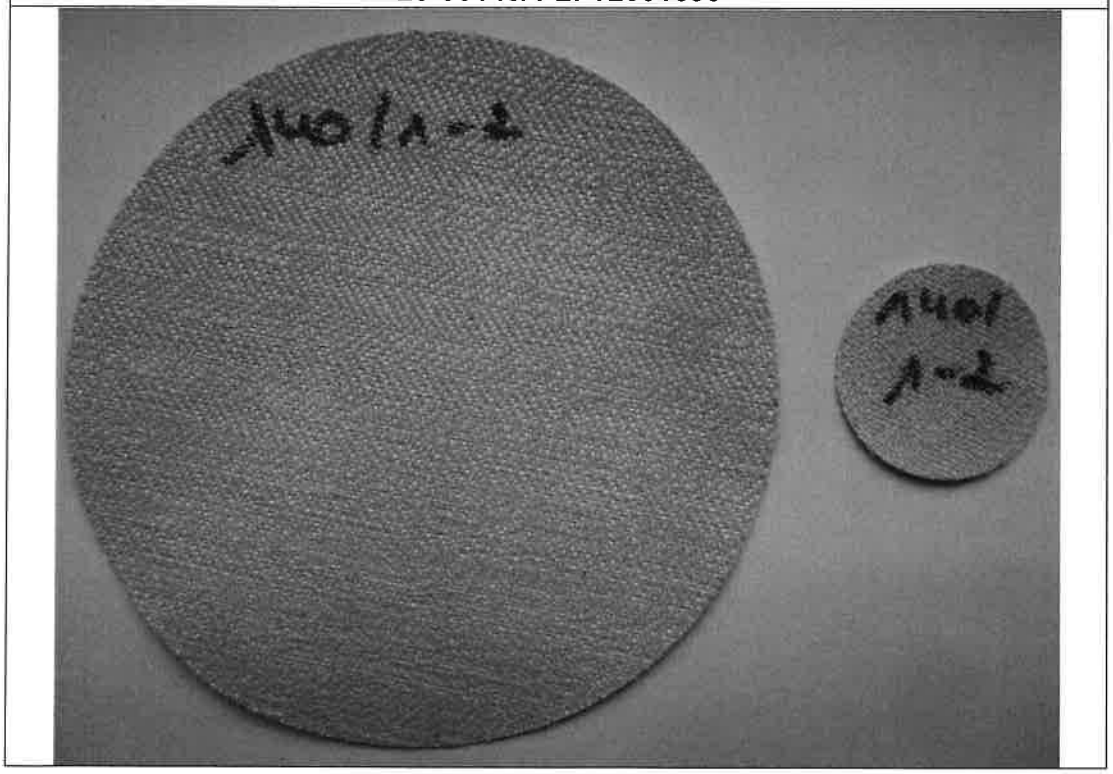
Sound source = pink noise

4. Test samples

20-00140/1-1: T2001690



20-00140/1-2: T2001690



5. Acoustical data & curves

5. 1 Sample 20-00140/1-1: T2001690

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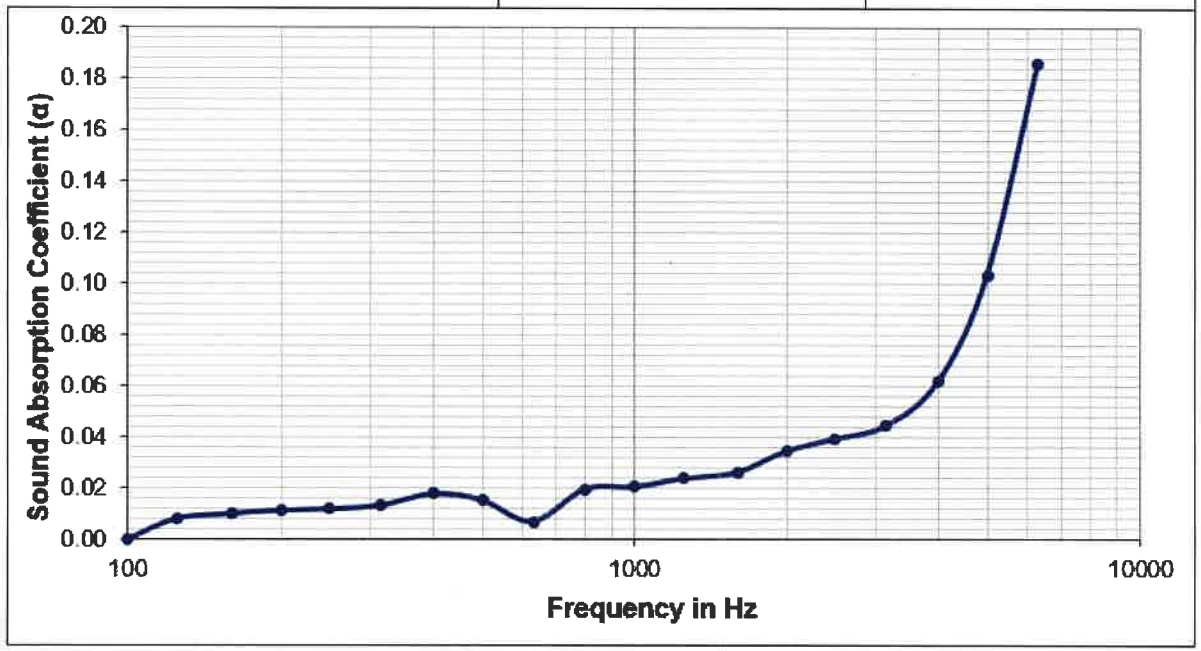
Sound Absorption Measurement in Impedance Tube (ISO 10534-2)

Sample info

Product:	T2001690
Facing:	NA
Material Type:	OTHER
Thickness:	0.55 mm
Density:	562.5 kg/m³
Airflow Resistance:	3020 Ns/m³ (ISO)
Sample Origin:	Centexbel

Complex: NO

Test conditions		Test date:	28/01/2020
Temperature:	23.2 °C	Ticket no.:	x
Relative Humidity:	36 %	Report no.:	20-00140/1-1
Atm. Pressure:	99260 Pa		



Frequency in Hz	Sound Absorption Coefficient α
100	0.000
125	0.008
160	0.010
200	0.011
250	0.012
315	0.013
400	0.018
500	0.015
630	0.007
800	0.020
1000	0.021
1250	0.024
1600	0.026
2000	0.035
2500	0.039
3150	0.045
4000	0.062
5000	0.103
6300	0.186
NRC in α	**0.021**

5. 2 **Sample 20-00140/1-2: T2001690**

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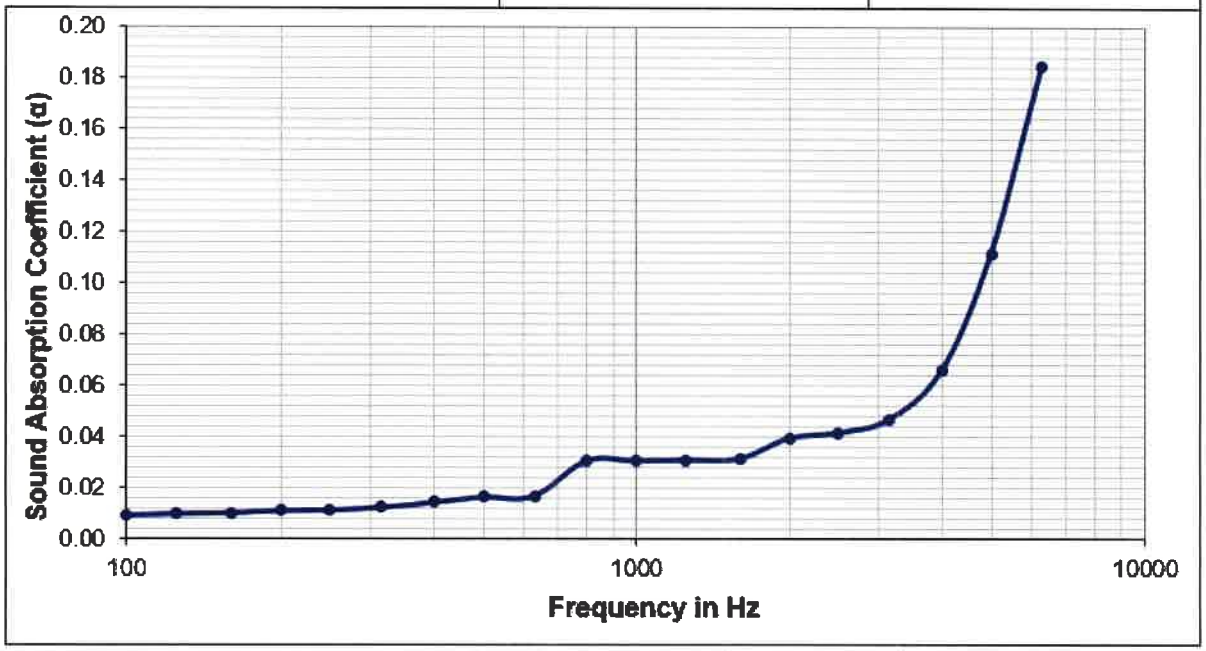
Sound Absorption Measurement in Impedance Tube (ISO 10534-2)

Sample info

Product:	T2001690
Facing:	NA
Material Type:	OTHER
Thickness:	0.57 mm
Density:	574.1 kg/m³
Airflow Resistance:	3440 Ns/m³ (ISO)
Sample Origin:	Centexbel

Complex: NO

Test conditions		Test date:	28/01/2020
Temperature:	23.2 °C	Ticket no.:	x
Relative Humidity:	36 %	Report no.:	20-00140/1-2
Atm. Pressure:	99260 Pa		



Frequency in Hz	Sound Absorption Coefficient α
100	0.010
125	0.010
160	0.010
200	0.011
250	0.012
315	0.012
400	0.014
500	0.017
630	0.017
800	0.031
1000	0.031
1250	0.031
1600	0.031
2000	0.040
2500	0.042
3150	0.047
4000	0.066
5000	0.111
6300	0.184
NRC in α	**0.025**