

# PHONIC AND AUDIBLE NOISE REDUCTION COEFFICIENT TEST REPORT

ISO 10534 Part 2 - *Determination of sound absorption coefficient and  
impedance in impedance tubes; Transfer-function method.*



# 1. Introduction

Basford Brands commissioned an Australian acoustic engineering firm to measure the normal incidence sound absorption coefficients of their Phonic and Audible curtain fabrics. A sample of the material was installed in an impedance tube, including a 100mm airgap behind it.

The sound absorption coefficients of the samples were determined using the transfer function of two microphones installed in an impedance tube in accordance with ISO 10534 Part 2 – *Determination of sound absorption coefficient and impedance in impedance tubes; Transfer-function method*.

## 2. Test Sample and Procedure

### 2.1 Test Apparatus

The following equipment was used in the test:

- Brüel & Kjær Power Amplifier Type 2716 (S/N 2571764)
- Brüel & Kjær Transmission Loss Tube Type 4206T
- Brüel & Kjær Pressure Field Microphone 1/4" Type 4187 (S/N 2496209)
- Brüel & Kjær Pressure Field Microphone 1/4" Type 4187 (S/N 2496210)
- Brüel & Kjær Pulse Software Interface

The environmental constants during the test were as follows:

- Atmospheric Pressure: 1013hPa
- Temperature: 26.2°C
- Relative Humidity: 52.1%

### 2.2 Test Sample

The sample tested was the Basford Brands Phonic & Audible curtain fabrics, with a 100mm air cavity behind the sample. The surface density of the material was measured as 285 g/m<sup>2</sup>.

### 2.3 Test Procedure

A circular impedance tube of diameter 100mm was used to calculate the absorption coefficient of the sample in the frequency range 0-1600Hz. A circular impedance tube of diameter 29mm was used to calculate the absorption coefficient of the sample in the frequency range 500-6400Hz.

In both cases the two microphone method was used to determine the transfer function. Full system calibration was performed immediately prior to the tests being carried out.

The sample was adhered to a support ring and installed in the impedance tube as shown in Figure 1, with a 100mm cavity behind the sample. The preparation of the sample and mounting of the sample relative to the sound source and microphones were in accordance with ISO 10534 Part 2.

### 3. Results

#### 3.1 Measured Sound Absorption Coefficients

The normal incidence absorption coefficients of the sample are presented in octave bands in Table 1. For coefficients in one third octave bands refer to the data sheet attached to the end of this report.

**Table 1 Measured sound absorption coefficients**

Frequency (Hz)					
125	250	500	1000	2000	4000
0.09	0.39	0.81	0.86	0.58	0.69

The normal incidence Noise Reduction Coefficient (NRC) of the sample is 0.66.

A detailed measurement data sheet is included in this report.

### 4. Photos



**Figure 1 Phonic & Audible samples installed in large tube**

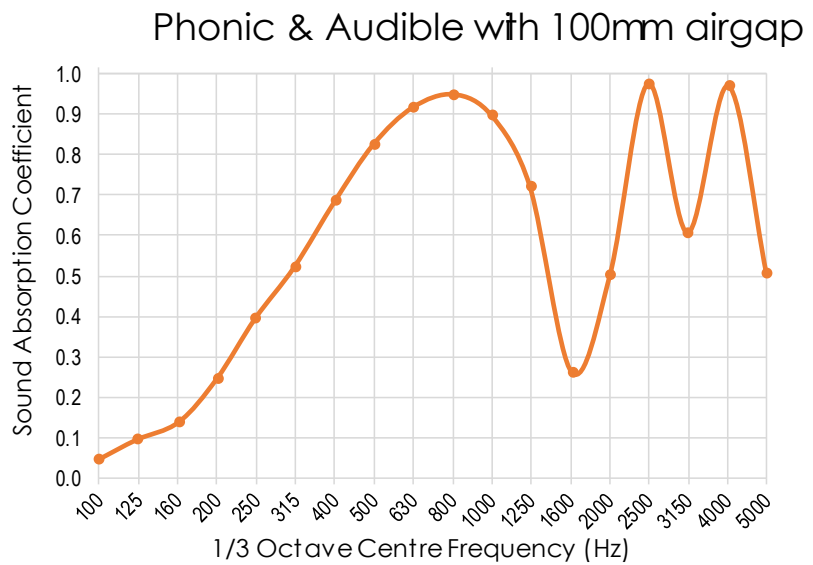
# 5. Test Report – Phonic & Audible

## SOUND ABSORPTION COEFFICIENT NORMAL INCIDENCE

**Client:** Basford Brands  
**Sample:** Phonic & Audible with 100mm air cavity  
**Tested to:** ISO 10534 Part 2

**Atmospheric Pressure:** 1013hPa  
**Temperature:** 26.2°C  
**Relative Humidity:** 52.1%

1/3 Octave Centre Frequency (Hz)	Sound Absorption Coefficient $\alpha$	Octave Centre Frequency (Hz)
100	0.05	
125	0.10	<b>0.09</b>
160	0.14	
200	0.25	
250	0.39	<b>0.39</b>
315	0.52	
400	0.69	
500	0.82	<b>0.81</b>
630	0.92	
800	0.95	
1000	0.90	<b>0.86</b>
1250	0.72	
1600	0.26	
2000	0.50	<b>0.58</b>
2500	0.98	
3150	0.61	
4000	0.97	<b>0.69</b>
5000	0.50	
<b>NRC</b>		<b>0.66</b>



**Noise Reduction Coefficient (NRC): 0.66**