

Avigliana: 10/04/2015

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WRITTEN BY: C. ANTENUCCI

Acoustic characterization measurements on materials for curtains

- sound absorption for random incidence (Alpha Cabine)

Customer: ENGLISCH DEKOR HandelsgmbH & Co KG

INTRODUCTION

The measurements has been performed in date April 9, 2015, in SCS-EUROACOUSTIC Avigliana (TO) laboratory.

The measures had the aim of characterizing a sample of material for curtains provided by you, as regards the random incidence sound absorption (Alpha cabins).

Sound absorption:

The samples has been tested to determinate the sound absorption for random incidence (Alpha cabin) as defined in FIAT 7R 7401 standard.

The Alpha cabin, used to determinate the sound absorption of the materials for automotive, has volume of 14.4 m³. The samples has area of 1.2 m².

The alpha measurement for random incidence is executed in an reverberant small room (α Cabin) using the impulse response method for measurement and the Backward Schroeder Integration for calculation of reverberation time. This method is show like indirect method in Standard ISO354.

The measurements can therefore be considered equivalent to the standardized reverberant room measurements with the limited range of frequency: 1/3 octave bands from 100Hz to 8000Hz.

INSTRUMENTATION

- Calibrator microphone 01dB-Stell Cal21 ;
- Microphone B&K Type 4165;
- Pre amplificator G.R.A.S. 26 AK;
- Software development / acquisition SCS – 9025.

TESTED MATERIALS

Below is a list of samples tested:

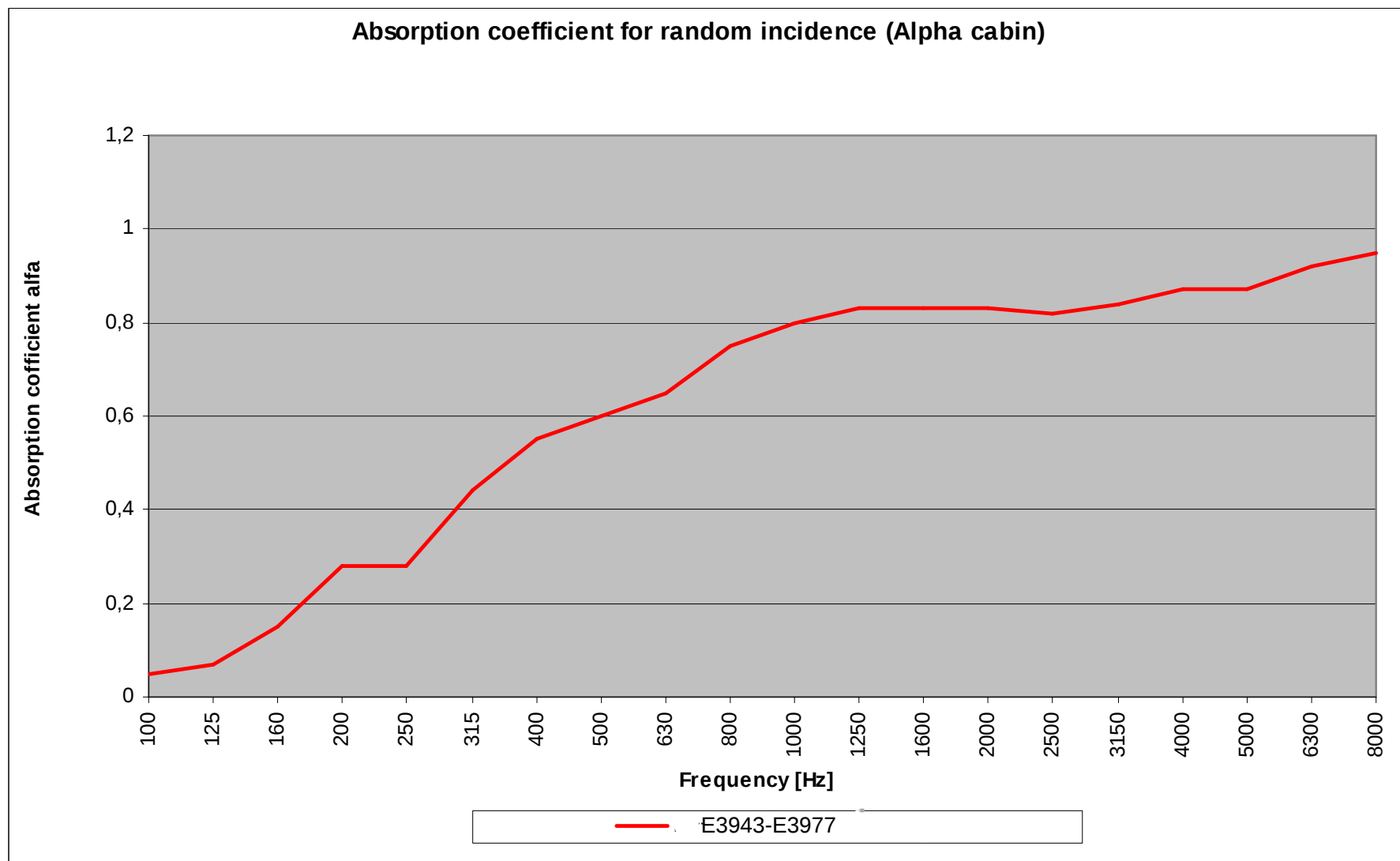
- E3943-E3977

The sample was vertically positioned 200 mm from the reflective wall, covering a measurement surface of 1.2 m² with an area of 2000 * 1200 mm (twice the surface covered).

RESULTS

- numeric table summarizes the values measured in 1/3 octave
- Absorption coefficient α 1/3 octave in graphical form
- Calculation of sound absorption class

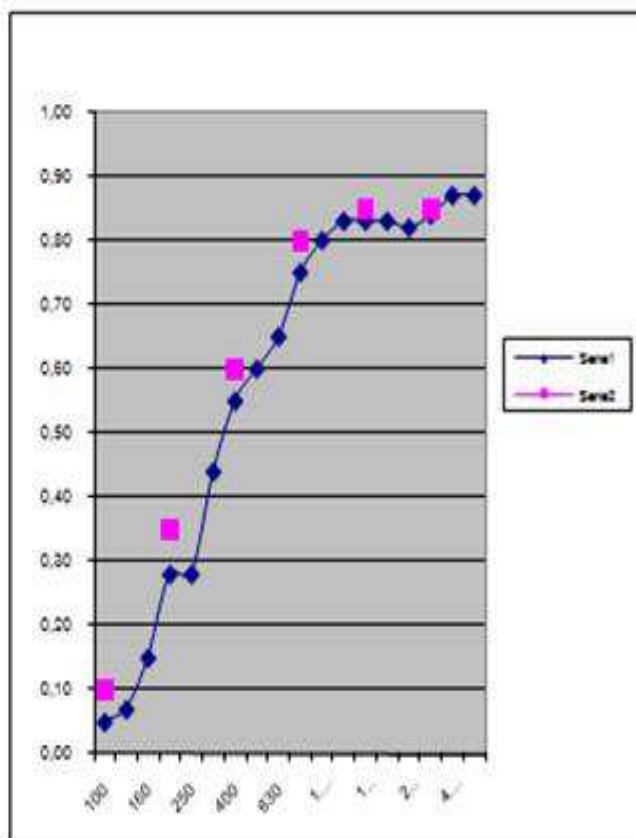
Frequency Hz	E3943-E3977
100	0,05
125	0,07
160	0,15
200	0,28
250	0,28
315	0,44
400	0,55
500	0,6
630	0,65
800	0,75
1000	0,8
1250	0,83
1600	0,83
2000	0,83
2500	0,82
3150	0,84
4000	0,87
5000	0,87
6300	0,92
8000	0,95



CALCULATING THE WEIGHTED ABSORPTION COEFFICIENT (PRACTICAL) α_w - ISO 11654

SPECTRUM ABSORPTION

Centre band	Absorption coefficient	Aritmetic average α_i
100	0,05	0,10
125	0,07	
160	0,15	
200	0,28	0,35
250	0,28	
315	0,44	
400	0,55	0,60
500	0,60	
630	0,65	
800	0,75	0,80
1.000	0,80	
1250	0,83	
1600	0,83	0,85
2.000	0,83	
2500	0,82	
3150	0,84	0,85
4.000	0,87	
5000	0,87	



Weighted sound absorption coefficient α_w =
Absorption class

