Test Report

Subtropical Architecture Institute

South China University of Technology

Test Specimen: 12mm Polyester Fiber Panel

Test project: Sound Absorption Coefficient

Organization: Foshan TianGe Acoustic and Decor Material Co., Ltd.

Tested by: LIU Peijie

Inspected by: ZHAO Yue zhe

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Date: 2022-7-8

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I、 Condition

1）Volume of reverberation room:200m^3;
2）Area of test Specimen:10.8m^2;
3）Sample size:1200mm×600mm×12mm;
4）Temperature:27°C, Relative humidity:72%;

II、 Method of Measurement

The measurements were carried out according to "Acoustics Measurement of sound absorption in a reverberation room (GB/T20247-2006/ISO354:2003)" in the acoustic laboratory of South China University of Technology. **The equivalent sound absorption area of the test specimen** A_T shall be calculated by the following formula

$$A_T = 55.3V\left(\frac{1}{c_2T_2}-\frac{1}{c_1T_1}\right)-4V(m_2-m_1) \quad (1)$$

Where
V is the volume of the empty reverberation room, m^3;
c_1 is the propagation speed of sound in air during measurement of T_1, m/s;
c_2 is the propagation speed of sound in air during measurement of T_2, m/s;
T_1 is the reverberation time of empty reverberation room, s;
T_2 is the reverberation time of reverberation room after the test specimen has been introduced, s;
m_1 is the power attenuation coefficient during measurement of T_1, m^{-1};
m_2 is the power attenuation coefficient during measurement of T_2, m^{-1}.

The sound absorption coefficient α_s shall be calculated by the following equation

$$\alpha_s = \frac{A_T}{S} \quad 2)$$

Where
S is the area of the test specimen, m^2;
A_T is the equivalent sound absorption area of the test specimen.

When the test specimen comprise several identical objects, the equivalent sound absorption area A_{obj} of an individual object is found by dividing A_{obj}, by the number of objects,n;

$$A_{obj} = \frac{A_T}{n} \quad (3)$$

III、Instrumentation

B&K 2270 Investigation
Power amplifier B&K 2716
Omni directional speaker B&K 4292
Microphone B&K 4189
and accessories.

IV、 Test Results:

Organization	Foshan TianGe Acoustic and Decor Material Co., Ltd.
Test Specimen	12mm Polyester Fiber Panel
Specifications	Sample size:1200mm×600mm×12mm.
Additional Description	12mm Polyester Fiber Panels were laid on a sub-frame with a 200mm airspace. This sound absorption structure (area:10.8 ㎡) was placed in the middle of the floor of the reverberation room and wrapped with 1mm steel panel.

Test Results

Frequency (Hz)	Sound Absorption Coefficient α
100	0.34
125	**0.68**
160	0.70
200	0.75
250	**0.85**
315	0.97
400	0.92
500	**0.84**
630	0.68
800	0.66
1000	**0.75**
1250	0.81
1600	0.79
2000	**0.81**
2500	0.84
3150	0.79
4000	**0.76**
5000	0.73

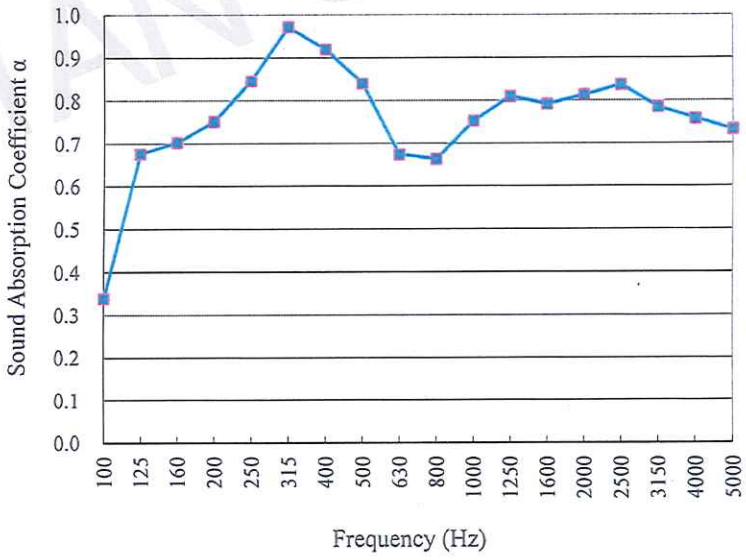
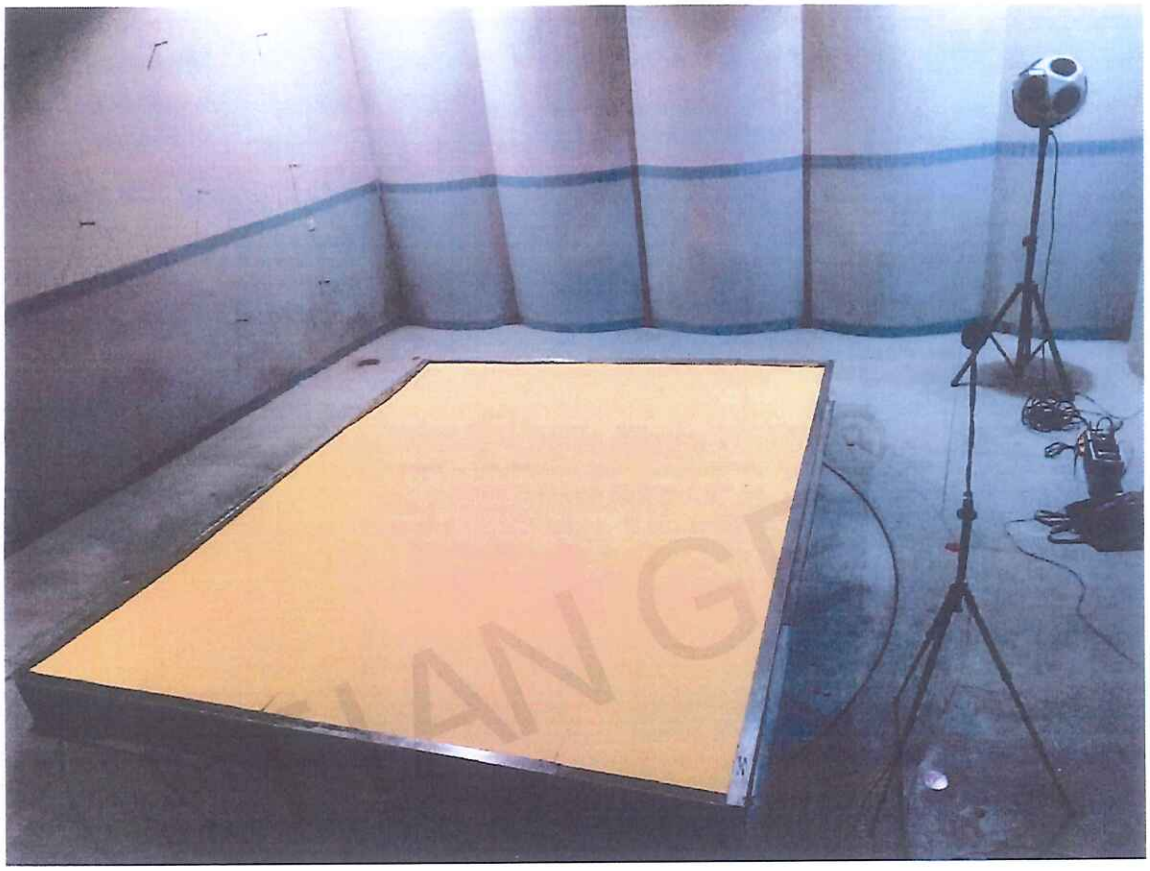


Figure 1. Sound Absorption Coefficient against Frequency

Ⅴ、 Photographic Records：



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