100% ANALYSIS+TESTING

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LAB N° 0699

Test report AMENDMENT n. 19RP02294 10/16/2019. THIS TEST REPORT REPLACES THE PREVIOUS NUMBER 19RP01941 FOR SAMPLE ORIGIN CORRECTION

Spett.
ABITEX SRL
Via E. Fermi 9/11, 35010
Cadoneghe (PD)

Sample description	**"Terawall S1" cell tufted, a fabric layer filled with silica-based inert material (deferrizated sand), total thickness: 5 mm; mass per unit area: 5 kg/m^2**
Origin	**Production plant: Castello di Godego (TV)**
Kind of sample	**Panel**
Sampling by	**Client**
Sampling date	**n.d.**
Sampler	**Client**
Receiving sample date	**09/18/2019**
Acceptance date	**09/18/2019**
Test started on	**09/18/2019**
Test ended on	**10/02/2019**
Object	**UNI EN ISO 10140-1:2016 + UNI EN ISO 10140-2:2010 + UNI EN ISO 10140-4:2010 + UNI EN ISO 717-1:2013** **Laboratory measurement airborne sound insulation of building elements**

Acoustic sector Director
Ing. Antonio Scofano

Digitally signed document made under the current legislation

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LABORATORY MEASUREMENT AIRBORNE SOUND INSULATION OF BUILDING ELEMENTS (STANDARD SERIES ISO 10140)

1. SAMPLE DESCRIPTION*

Panel model name "Terawall S1" cell tufted, a fabric layer filled with silica-based inert material (deferrizated sand)

Total thickness: 5 mm
Mass per unit area: 5 kg/m^2

Sealing of perimeter made with putty.

Specimen mounted by client.

Photos:

(*)nominal data provided by the client

2. REFERENCESTANDARDS

For the technical methods of measurement and determination of the indices that define the performance of building elements must be referred to the following ISO standards:

- ISO10140-1:2016Acoustics. Laboratory measurement of sound insulation of building elements. Part 1: Application rules for specific products.
- ISO10140-2:2010Acoustics. Laboratory measurement of sound insulation of building elements. Part 2: Measurement of airborne sound insulation.
- ISO10140-4:2010Acoustics. Laboratory measurement of sound insulation of building elements. Part 4: Measurement procedures and requirements.
- ISO 10140-5:2014 Acoustics. Laboratory measurement of sound insulation of building elements. Part 5: Requirements for test facilities and equipment.
- ISO 717-1:2013 Acoustics. Rating of sound insulation in buildings and of building elements. Part 1: Airborne sound insulation.

3. EQUIPMENT

The measurements were performed using the following instruments:

- Sound level meter Bruel&Kjaer model 2250 (serial number 3011945), preamplifier Bruel&Kjare ZC-0032 (serial number 26331),microphone Bruel&Kjaer 4189 (serial number 3100355)
- Calibrator Bruel&Kjaer 4231 (serial number 4231);
- Omnidirectional source LookLine Kit103 (serial number AM14019);
- Tape measure Stanley Powerlock Classic 10 m / mod. 33-442 (Serial Number Mta-7144);
- Thermohygrometer Oregon ICE ALERT (Serial Number 09A14);
- Barometer HD 9908 T-BARO (Serial Number 05020942);

All the equipment and the measurement chain is to meet the requirements in class 1 of EN, we proceeded to the calibration of equipment before and after each series of measurements.

4. TEST ROOMS

The test environment consists of a source room that contains the noise source and a receiving room characterized acoustically by the equivalent sound absorption area.

Atthesourceroomwasproduced"pinknoise"andwererecordedsoundpressurelevelsatvariousfrequenciesforbands1/3octaveintherangebetween 100 and 5000 Hz in both the source room and in the receiving room.

At the receiving room were measured levels of residual noise and we proceeded to evaluate the acoustic characteristics of the room reverberation.

The measurements were made with reference to the procedure and test modes defined by the set of rules ISO 10140.

5. RESULTS

The sound reduction index is evaluated from:

$R = L_1 - L_2 + 10\lg(S/A)$ [dB]

where:
c is the sound speed in the receiving room = $331+0{,}6t$ [m/s];
t is the average temperature in the receiving room [°C];
L_1 is the average sound pressure level in the source room [dB];
L_2 is the average sound pressure level in the receiving room [dB];
S is the area of the free test opening in which the test specimen is installed [m^2];
A is the equivalent sound absorption area in the receiving room = $(55{,}3/c)(V/T)$ [m^2];
V is the receiving room volume [m^3];
T is the reverberation time in the receiving room [s];

The evaluation index of the sound reduction index R_w is calculated according to the ISO 717-1.
C e C_{tr} are the spectrum adaptation terms according to ISO 717-1.

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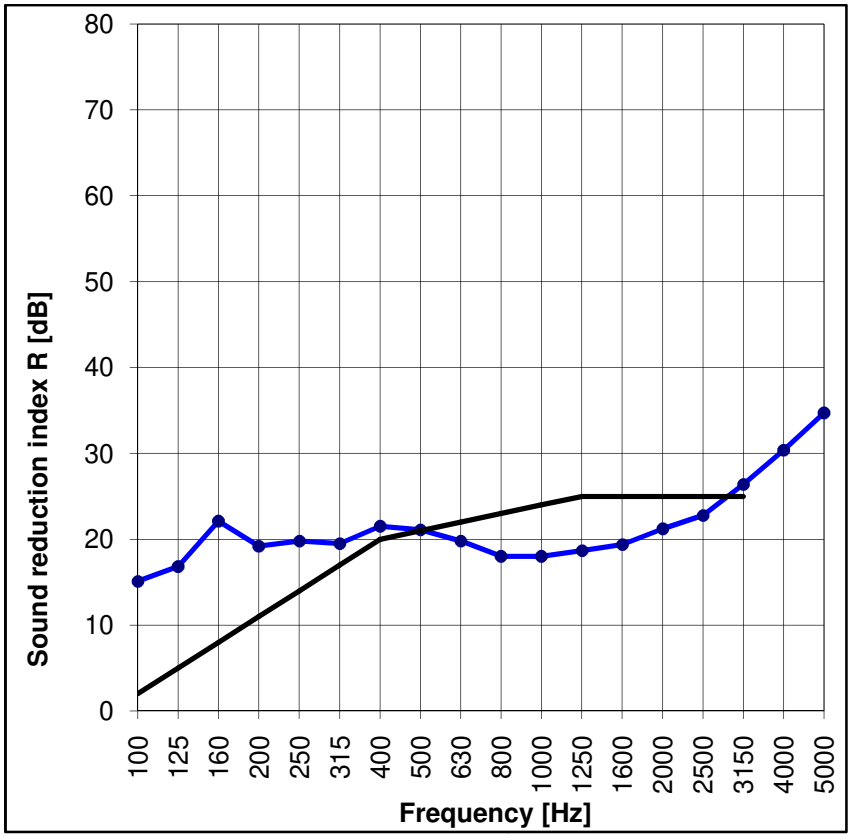
Area of test specimen = 1.76 m^2
Transmitting test room temperature = 20.6 °C ± 0,4 °C. Receiving test room temperature = 20.4 °C ± 0,4 °C.
Transmitting test room relative humidity =63 % ± 2 %. Receiving test room relative humidity = 63 % ± 2 %.
Static pressure = 100.1 kPa ± 0.06 kPa
Transmitting room volume = 77,1 m^3
Receiving room volume = 66,4 m^3

Frequency *f* [Hz]	*R* 1/3 octave band [dB]
100	15,1
125	16,8
160	22,1
200	19,2
250	19,8
315	19,5
400	21,5
500	21,1
630	19,8
800	18,0
1000	18,0
1250	18,7
1600	19,4
2000	21,2
2500	22,8
3150	26,4
4000	30,4
5000	34,7



Evaluation according to ISO 717-1:

$R_w (C;C_{tr})$ = 21 (-1;-2) dB

$C_{100\text{-}5000}$ = 0 dB

Evaluation based on laboratory measurement results obtained by an engineering method.

$C_{tr,100\text{-}5000}$ = -2 dB

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