TEST REPORT No. 118746-2

CLIENT:	**ISINAC ACOUSTIC WORLD, S.L.** Av. de Ramón Nieto, 125-bajo, 36205 Vigo (Pontevedra)
AIM:	**Laboratory measurement of airborne sound insulation**
STANDARD:	**EN ISO 10140-2:2021**
TEST SPECIMEN:	**Curtain *Ref. ISINAC CURTAIN ILUCS 8 layers***
ISSUE DATE:	**26/09/2025**

Technical Consultant
Susana Lopez de Aretxaga

The technical ownership of the ENAC Accreditation No. 4/LE456 falls to FUNDACIÓN TECNALIA R&I, the same way as the technical signatures of this report. The test is performed by personnel of TECNALIA (Construction Lab_services Area).
Facilities where the measurements are carried out belong to the Acoustics Area of the Building Quality Control Laboratory of the Basque Government, located in Agirrelanda, 10, 01013 VITORIA-GASTEIZ (Spain) operated by TECNALIA.

- The results of the current report concern only and exclusively the test specimen.
- This report shall not be reproduced, except in full, without the express authorization of FUNDACIÓN TECNALIA R&I.
- Uncertainty related to the tests is available to the client, if required.
- Test specimen reference provided by the client.
- TECNALIA is not responsible for the information provided by the client. This information is not accredited.

ENSAYO ISO 17025 Nº4 / LE456

1. TEST SPECIMEN DESCRIPTION

The test specimen consists of a curtain, with the following description and test arrangement, according to the information provided by the client:

Description of the curtain:

Reference: ISINAC CURTAIN ILUCS 8 layers

Manufacturer: ISINAC ACOUSTIC WORLD, S.L

Composition: The curtain is formed by the following 8 layers:

1. ILUCS FABRIC - 100% POLYESTER TREVIRA CS [~0,5 mm thick and 265 gr/m^2]
2. PX210 FABRIC - 100% CARBON FIBER [~2,1 mm thick and 210 gr/m^2]
3. FV450 - FIBERGLASS [~4,5 mm thick and 450 gr/m^2]
4. SFV600 - FIBERGLASS + SILICONE ON BOTH SIDES [~1,2 mm thick and 600 gr/m^2]
5. FV450 - FIBERGLASS [~4,5 mm thick and 450 gr/m^2]
6. SFV600 - FIBERGLASS + SILICONE ON BOTH SIDES [~1,2 mm thick and 600 gr/m^2]
7. PX210 FABRIC - 100% CARBON FIBER [~2,1 mm thick and 210 gr/m^2]
8. ILUCS FABRIC - 100% POLYESTER TREVIRA CS [~0,5 mm thick and 265 gr/m^2]

Test specimen thickness: ~17 mm.

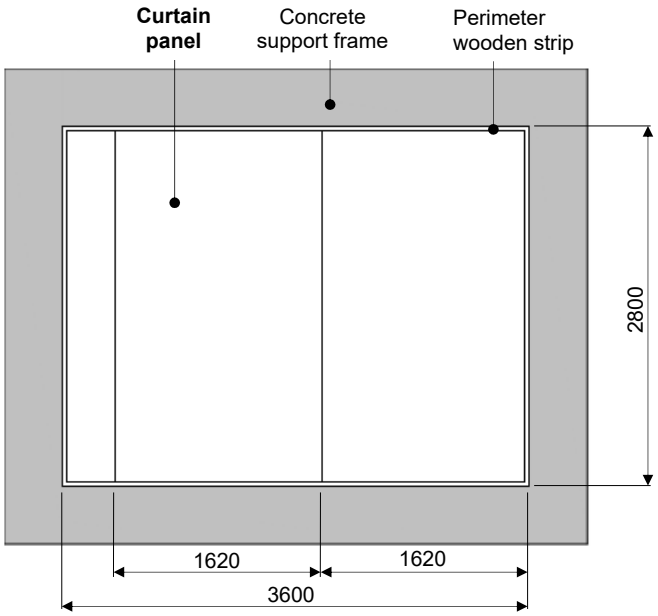
Arrangement of test specimen:

The test specimen is made of:

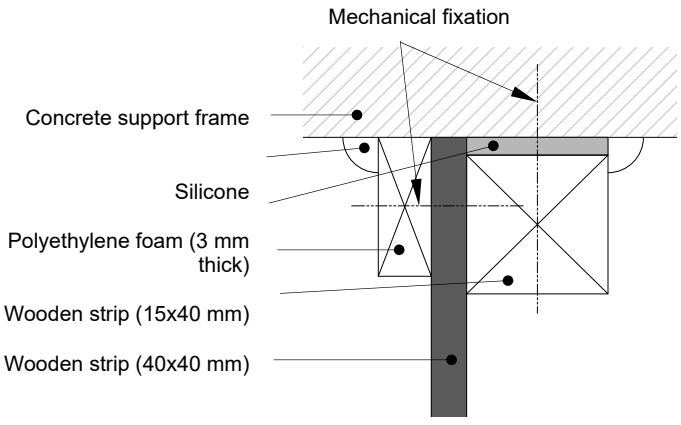
- Layers ‘1’, ‘2’, ‘3’, ‘5’, ‘7’ and ‘8’: 2 panels of ~1620 mm wide x 2800 mm high each one and 1 panel of ~360 mm wide x 2800 mm high.
- Layers ‘4’ and ‘6’: 3 panels of ~1030 mm wide x 2800 mm high each one and 1 panel of ~870 mm wide x 2800 mm high.
- Panels formed by double layer ‘1’+’2’ joined by zipper. Panels of layer ’3’ butt against each other. Panels of layer ‘4’, with a 120 mm overlap between them. Panels of layer ’5’ butt against each other. Panels of layer ‘6’, with a 120 mm overlap between them. Panels formed by double layer ‘7’+’8’ joined by zipper.

Test specimen dimensions: 3600 mm wide x 2800 mm high.

The sample was installed according to the following sketches:



Elevation



Perimeter section

Sketches of test specimen (118746-2). Cotes in mm

Photos of test specimen in the test rooms

Test specimen selected and delivered by: client

Mounting of test specimen in the test opening:

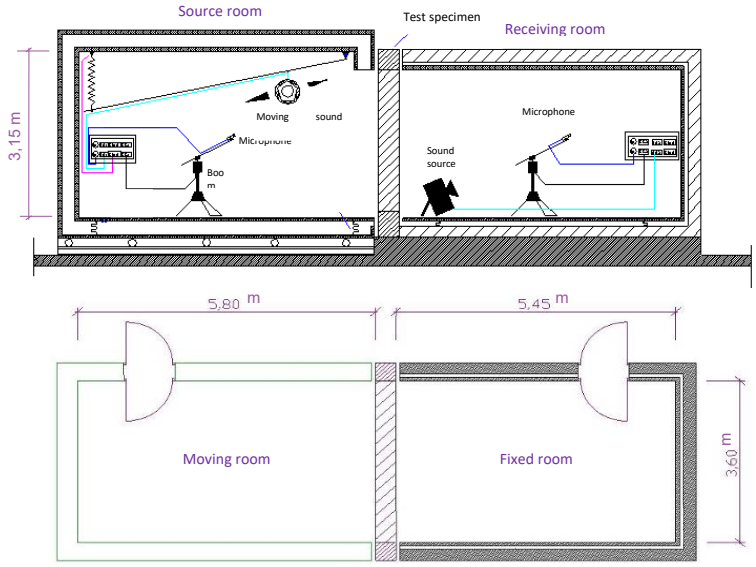
The test specimen was installed stapled to the 40x40 mm wooden strips with closed cell polyethylene foam band adhered. These strips were mechanically fixed to a prefabricated concrete frame 30 cm thick and interior dimensions of 2,8 m high x 3,6 m long. Layer '8' oriented to the source test room.

Assembly performed by: Tecnalia

Date of end of mounting: 28th July 2025

2. LABORATORY TEST FACILITIES

The test is performed in the horizontal transmission rooms, composed of a source and a receiving room. The receiving room is formed by a concrete outer enclosure 20 cm thick and a concrete inner enclosure 10 cm thick, both acoustically disconnected. The source room, 40 cm thick, id formed by a double enclosure of metal profile and gypsum board, both acoustically disconnected. The mobility of the source room allows the assembly of the test specimens outside and its later movement into the test room. The rooms comply with the requirements of EN ISO 10140-5:2021.



Sketch of horizontal transmission rooms

3. EQUIPMENT AND TEST CONDITIONS

Microphones	Brüel&Kjær 4943; Serial No. 3188436	Brüel&Kjær 4943; Serial No. 3188435
Preamplifiers	Brüel&Kjær 2669; Serial No. 2025848	Brüel&Kjær 2669; Serial No. 2025844
Sound sources	Brüel&Kjær 4296; Serial No. 071420	CERWIN VEGA; Serial No. 012446
Booms	Brüel&Kjær 3923; Serial No. 036584	Brüel&Kjær 3923; Serial No. 2036591
Analyzer	Nor850-MF1; Serial No. 8501186	
Amplifier	LAB 300; Serial No. 970-967	
Equalizer	Sony, SRP-E100; Serial No. 400238	
Calibrator	Brüel&Kjær 4231; Serial No.2061476	
Atmospheric conditions meter	Source room: Rotronic BL-1D; Serial No. A21050029 Uncertainty: T (± 1,1 ºC), H (±4 %), P (±6 mbar)	Receiving room: Rotronic BL-1D; Serial No. A19060062 Uncertainty: T (± 0,7 ºC), H (±4 %), P (±5 mbar)

T: air temperature; H: relative humidity; P: static pressure

Climatic conditions:	Source room	Receiving room
Air temperature (ºC)	20,9	21,4
Relative humidity (%)	62	62
Static pressure (mbar)	965	965

4. TEST PROCEDURE AND EVALUATION

The sound reduction index, R, for the one-third frequency octave band from 100 Hz to 5 KHz is calculated according to EN ISO 10140-2:2021 using the following formula:

$$R=L_1-L_2+10*\text{Log } S/A$$

- L_1: Average sound pressure level in the source room
- L_2: Average sound pressure level in the receiving room
- S: Test specimen area
- A: Equivalent sound absorption area in the receiving room

The measurement of the average sound pressure levels, L_1 and L_2, is performed by emitting an equalized white noise using a moving omnidirectional sound source. The sound field in the source and receiving rooms is sampled using a moving microphone with a sweep radius of 1 m and a traverse period of 16 s/cycle during 32 s. of measure. Background noise in the receiving room is measured according to the same measurement process of sound field in the receiving room.

The equivalent sound absorption area is evaluated from the reverberation time measured in the receiving room, using Sabine's formula:

$$A=0,16*V/T$$

- A: Equivalent sound absorption area in the receiving room
- T: Reverberation time in the receiving room
- V: Receiving room volume

Reverberation time in the receiving room is determined by using two positions of the sound source and three fixed microphone positions for each source position distributed at 120º in the microphone path.

Measuring chain is verified just before and after the execution of the test.

The guidelines indicated in the applicable internal procedures have been followed:

- PE.CM-AA-61-E: “Procedure for the determination of the airborne sound insulation into the horizontal and vertical transmission rooms”.
- PE.MC-AA-06-M: “Procedure to manage the test specimens for acoustic tests in laboratory”.

5. RESULTS

The following results are presented for the test specimen in the last page of this report:

- Sound reduction index, R, for the one-third octave frequency band from 100 to 5000 Hz, in table and graph.
- Weighted sound reduction index, R_w, calculated according to EN ISO 717-1:2020, from the sound reduction index, R.
- Spectrum adaptation terms from 100 to 3150 Hz, C and C_{tr}, calculated according to EN ISO 717-1:2020, which are the values, expressed in decibels, to be added to the global magnitude value R_w to consider the characteristics of the pink noise spectrum (C) and traffic noise spectrum (C_{tr}), respectively.
- A-weighted sound reduction index, R_A, from 100 to 5000 Hz, expressed to one decimal place, calculated according to the expression of *Documento Básico “DB-HR Protección frente al ruido” - Código Técnico de la Edificación (CTE),* from the sound reduction index, R, obtained by laboratory measurement.

Sound Insulation according to EN ISO 10140-2:2021
Laboratory Measurements

CLIENT: ISINAC ACOUSTIC WORLD, S.L.

TEST DATE: 29/07/2025

RESULT No.: 118746-2

TEST SPECIMEN: **Curtain *Ref. ISINAC CURTAIN ILUCS 8 layers***.

Description: Curtain formed by 8 layers:

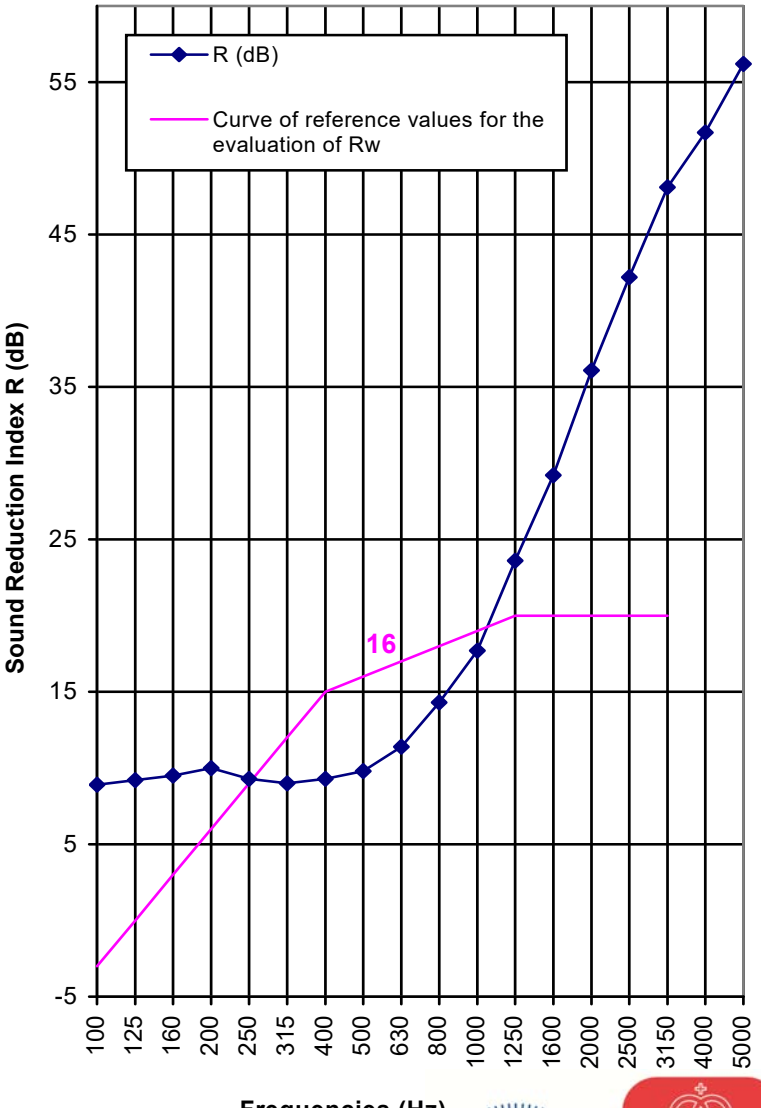
1. ILUCS FABRIC - 100% POLYESTER TREVIRA CS [265 gr/m^2]
2. PX210 FABRIC - 100% CARBON FIBER [210 gr/m^2]
3. FV450 - FIBERGLASS [450 gr/m^2]
4. SFV600 - FIBERGLASS + SILICONE ON BOTH SIDES [600 gr/m^2]
5. FV450 - FIBERGLASS [450 gr/m^2]
6. SFV600 - FIBERGLASS + SILICONE ON BOTH SIDES [600 gr/m^2]
7. PX210 FABRIC - 100% CARBON FIBER [210 gr/m^2]
8. ILUCS FABRIC - 100% POLYESTER TREVIRA CS [265 gr/m^2]

Test arrangement: Panels stapled to a perimeter wooden strip, with perimeter joint sealed by silicone.

Estimated superficial mass: 3,1 kg/m^2
Test specimen area: 10,08 m^2

Source room volume: 66,9 m^3
Reception room volume: 56 m^3

f (Hz)	R (dB)
100	8,9
125	9,2
160	9,5
200	10,0
250	9,3
315	9,0
400	9,3
500	9,8
630	11,4
800	14,3
1000	17,7
1250	23,6
1600	29,2
2000	36,1
2500	42,2
3150	48,1
4000	51,7
5000	56,2



Rating according to EN ISO 717-1:2021:	R_w (C;C_{tr}):	**16 (0; -2) dB**
Rating according to:	R_A:	**17,0 dBA**

Evaluation based on laboratory measurement obtained by an engineering method

ENAC ENSAYO ISO 17025 Nº4 / LE456