

LABORATORY ACOUSTIC TEST REPORT

**SUSPENSIONES ELÁSTICAS DEL NORTE S.L. SENOR,
SOPREMA IBERIA S.L.U,
URSA IBÉRICA AISLANTES, S.A.**

**System: DIRECT ACOUSTIC WALL LINING —
URSA + SOPREMA + SENOR**

Minimum-profile acoustic wall lining comprising: 47 mm and 60 mm KNAUF channel profiles + SE-BEC 8x80 acoustic strip (SENOR) + SE-MONT-BICAPA 40 decoupling strip (SENOR) + SE-FTD NIVEL 47 and SE-FTD NIVEL 60 acoustic isolators (SENOR) + URSA TERRA PLUS 32 T0003 mineral wool (50 mm) + TEC SOUND SY 50 synthetic polymeric insulating membrane (SOPREMA) + double 12.5 mm standard gypsum wallboard (KNAUF).

Load-bearing element: Heavy Basic Wall 359.5 kg/m².

Ref: CAM25070023-3/MEJ_AER

Issue Date:

September 28, 2026



Report test

TEST LOCATION

**CÁMARAS DE ENSAYO NORMALIZADAS DE
AUDIOTEC C/JUANELO TURRIANO, 4. BOECILLO
TECHNOLOGY PARK. BOECILLO (VALLADOLID) SPAIN**

TEST

Laboratory measurement of airborne sound insulation
of a vertical building element.

SAMPLE

**System: DIRECT ACOUSTIC WALL LINING — URSA +
SOPREMA + SENOR.**

Minimum-profile acoustic wall lining comprising: 47 mm and 60 mm KNAUF channel profiles + SE-BEC 8x80 acoustic strip (SENOR) + SE-MONT-BICAPA 40 decoupling strip (SENOR) + SE-FTD NIVEL 47 and SE-FTD NIVEL 60 acoustic isolators (SENOR) + URSA TERRA PLUS 32 T0003 mineral wool (50 mm) + TEC SOUND SY 50 synthetic polymeric insulating membrane (SOPREMA) + double 12,5 mm standard gypsum wallboard (KNAUF).

Load-bearing element: Heavy Basic Wall 359,5 kg/m².

METHOD TEST

**UNE EN ISO 10140-2:2022 and Annex G of standard UNE-
EN ISO 10140-1:2022**

CLIENT

**SUSPENSIONES ELÁSTICAS DEL NORTE S.L SENOR.
SOPREMA IBERIA S.L.U
URSA IBÉRICA AISLANTES, S.A**

TEST DATE:

17 November 2025

Performed by



Firmado digitalmente por
ALVARADO HUERFANO JOHN
FREDY - Z0132565K
Nombre de reconocimiento (DN):
c=ES, serialNumber=IDCES-
Z0132565K, givenName=JOHN
FREDY, sn=ALVARADO HUERFANO,
cn=ALVARADO HUERFANO JOHN
FREDY - Z0132565K
Fecha: 2026.09.30 12:39:36 +02'00'

Signed.: John Alvarado Huerfano
Laboratory Technician

Reviewed by:



Firmado digitalmente por
ARENZ GOMBAU ANGEL
MARIA - 11954820H
Nombre de reconocimiento
(DN): c=ES,
serialNumber=IDCES-11954820
H, givenName=ANGEL MARIA,
sn=ARENZ GOMBAU,
cn=ARENZ GOMBAU ANGEL
MARIA - 11954820H

Signed.: Ángel Arenaz Gombau
Technical Director of the Laboratory

CONTENTS

1.- Report Purpose

2.- Test Procedure

2.1.- Procedures and Standards Applied

2.2.- Methodology and Test Parameters

2.3.- Instrumentation Used

2.4.- Product Identification

2.5.- Sample Installation Process

2.6.- Test Characteristics and Conditions

2.7.- Photographic Documentation of the Assembly

3.- Airborne Sound Insulation Test Results

1.- REPORT PURPOSE

Evaluation in standardized test chambers of the acoustic reduction improvement index, ΔR , of a supplementary finish.

Identification of the construction system: Vertical system comprising

TRASDOSADO ACÚSTICO DIRECTO URSA + SOPREMA + SENOR

Minimum-profile acoustic wall lining comprising: 47 mm and 60 mm KNAUF channel profiles + SE-BEC 8x80 acoustic strip (SENIOR) + SE-MONT-BICAPA 40 decoupling strip (SENIOR) + SE-FTD NIVEL 47 and SE-FTD NIVEL 60 acoustic isolators (SENIOR) + URSA TERRA PLUS 32 T0003 mineral wool (50 mm) + TECSOUND SY 50 synthetic polymeric insulating membrane (SOPREMA) + double 12.5 mm standard gypsum wallboard (KNAUF).

Load-bearing element: Heavy Basic Wall 359,5 kg/m² (concrete brick + 15 mm cement render on source face + 15 mm gypsum plaster on receiving face).

Approximate surface mass: 384,20 kg/m² (Heavy Basic Wall 359,5 kg/m² (concrete brick + 15 mm cement render on source face + 15 mm gypsum plaster on receiving face) + 24,7 kg/m² of the system).

Approximate thickness: 273 mm (195 mm heavy basic wall + 78 mm system)

The test was carried out in the standardized test chambers of AUDIOTEC, located at the Boecillo Technology Park (Valladolid, Spain).

Notes:

- The sample was installed by the client's own operatives and by operatives contracted by AUDIOTEC, under the supervision of AUDIOTEC's laboratory technicians.
- Thickness descriptions and material data were supplied by the client. The weight and thickness of the bricks, gypsum board and mineral wool were independently verified by AUDIOTEC.
- Audiotec Ingeniería Acústica SA accepts no liability for variations that such values may subsequently undergo.
- AUDIOTEC is not responsible for information recorded in this report that has been provided or stated by the client. Client-supplied information is not covered by accreditation.

2.- TEST PROCEDURE

2.1.- Procedures and Standards Applied

The test was carried out in accordance with the following standards and laboratory procedures:

- *UNE-EN ISO 10140-2:2022 Acoustics. Laboratory measurement of airborne sound insulation of building elements.*
- *Annex G of standard UNE-EN ISO 10140-1:2022 (Acoustic finishes. Improvement of airborne sound insulation).*
- *Annex B of standard UNE-EN ISO 10140-5:2022 (Standardized basic elements for measuring the improvement of airborne sound insulation by means of finishes).*
- *Measurement procedures and calculations are set out in AUDIOTEC Acoustic Laboratory Specific Test Procedure PE-36.*

2.2.- Methodology and Test Parameters

The test chambers comply with the provisions and requirements of standard UNE EN ISO 10140-5:2022. The chambers are horizontally adjacent. One of them — the left-hand (receiving) chamber — is fixed, while the other — the right-hand (source) chamber — is mobile. Both have the shape of a six-faced irregular prism with no parallel edges. The walls of the fixed (receiving) chamber consist of a 300 mm reinforced concrete structure with internal acoustic linings, while the walls of the mobile (source) chamber consist of a 150 mm external metal sandwich structure reinforced with insulating and sound-absorbing materials, together with an internal acoustic lining.

First, the background noise level in the receiving chamber was measured with the sound source switched off. Pink noise was then generated at 2 source positions in the source chamber (mobile chamber), located at least 0,7 m from the enclosing walls, mounted on a tripod at two different heights.

For each source position, three measurements were taken using a rotating microphone in the diffuse-field zone of the source chamber. The microphone was always kept at a minimum distance of 0.7 m from the lateral walls, 1 m from the sound source and 1 m

from the sample under test. The microphone's sweep radius was 1 m, with a minimum inclination of 10°.

Likewise, for each source position, three measurements were taken using a rotating microphone in the diffuse-field zone of the receiving chamber. The microphone was always kept at a minimum distance of 0,7 m from the lateral walls and 1 m from the sample under test. The microphone's sweep radius was 1 m.

The background noise level in the receiving chamber was then measured again with the sound source switched off, to verify whether any variation in the ambient background noise had occurred.

Each measurement had a duration of 48 seconds (3 complete sweeps), sufficient for the signal to stabilize. Measurements were taken in each one-third-octave band between 100 Hz and 5,000 Hz. To measure the reverberation time, 2 source positions in the receiving chamber were used, separated by more than 3 m.

For each source position, 3 microphone positions in the receiving chamber were used for reverberation measurement. All positions were more than 1 m from the lateral walls, at least 1.8 m apart from one another and at least 2 m from the sound source. Two measurements were taken at each position, and the respective averages were computed. The TR20 was measured.

2.3.- Instrumentation Used

The instrumentation used in the test was as follows:

Equipment Type	Make / Model	Serial No.
Class 1 Calibrator/Verifier	Brüel&Kjaer Type 4231	2136530
PULSE Analyzer	Brüel&Kjaer 3560-B-030	2538701
Omnidirectional Sound Source	Brüel&Kjaer Type 4292	004007
Thermo-anemometer / Hygrometer	Barigo Model 525	156
Equalizer	BEHRINGER DEQ2496.	
Amplifier	PHONIC MAX 860	ABA2GBA171
Microphone	B&K 4189	2534182
Preamplifier	B&K 2669	2532870
Microphone	B&K 4189	2345614
Preamplifier	B&K 2669	2532823
Tripods and auxiliary equipment		

2.4.- Product Identification

WALL PARTITION ASSEMBLY				
PRODUCT	DIMENSIONS	BRAND / MODEL	ESSENTIAL PROPERTY	
Concrete brick block	(300x165x100) mm (length x width x height)	--	Thickness	165 mm
			Unit mass	161,6 Kg/m ²
Acoustic isolator	--	SEÑOR / SE-FTD NIVEL 47 / SE-FTD NIVEL 60	Load range	3 kg to 25 kg
Metal Stud (Track)	-	KNAUF / F47/17/06	Thickness	47 mm
Metal Stud (Track)	--	KNAUF / 60/27/06	Thickness	60 mm

PRODUCT	DIMENSIONS	BRAND / MODEL	ESSENTIAL PROPERTY	
Acoustic strip	--	SENOR / SE-BEC 8x80	Thickness	8 mm
Mineral wool	--	URSA TERRA PLUS 32 T0003	Thickness	50 mm
Decoupling strip		SENOR / SE-MONT-BICAPA-40	Thickness	5,5 mm
Gypsum wallboard (GWB)	--	KNAUF / Standard	Thickness	12,5 mm
TECSOUND membrane	--	SOPREMA / Tecsound SY 50	Thickness	2,5 mm
Joint compound	--	--	--	--

2.5.- Sample Installation Process

The heavy basic wall was installed by subcontractors hired by Audiotec. Cement mortar was applied to the bottom of the sample holder for the first row of (300x165x100) mm concrete acoustic bricks, ensuring proper alignment. The first row of bricks was then installed, and this process was repeated until the partition wall was complete. A 15 mm layer of plaster was then applied to one side and a 15 mm layer of mortar to the other. The remaining assembly was installed by the client's own operatives as follows.

Perimeter Decoupling:

The SE-BEC acoustic strip (SENOR) was applied along the entire perimeter to prevent acoustic bridging, ensuring that the lining has no direct contact with the floor, ceiling or lateral walls.

Load-Bearing Frame and Resilient Mounting System:

The SE-FTD NIVEL 47 and/or SE-FTD NIVEL 60 acoustic isolators (SENOR) were laid out and fixed to the base wall in a modular grid. These resilient elements decouple the metal frame from the original wall, interrupting the direct transmission of vibrations. The 47 mm and/or 60 mm KNAUF metal profiles are then clipped into the isolators, forming a leveled, decoupled load-bearing frame.

Profile-to-Board Contact Optimization:

Prior to installation of the gypsum boards, the SE-MONT-BICAPA-40 decoupling strip (SENOR) was applied to the contact face of the metal profile. This strip improves the acoustic performance of the system by damping contact between the metal profile and the gypsum boards.

Absorbent Core in Air Cavity:

URSA TERRA PLUS 32 T0003 mineral wool was placed inside the air cavity formed by the metal frame. This material acts as an acoustic absorber within the cavity, reducing chamber resonance and improving the overall system performance.

First Board Layer and Mass Addition:

The first 12,5 mm KNAUF gypsum board was mechanically fixed to the frame. The TECSOUND SY 50 synthetic polymeric membrane (SOPREMA) was then bonded to this board. This high-density membrane adds mass to the system and contributes to damping the resonant frequencies of the assembly.

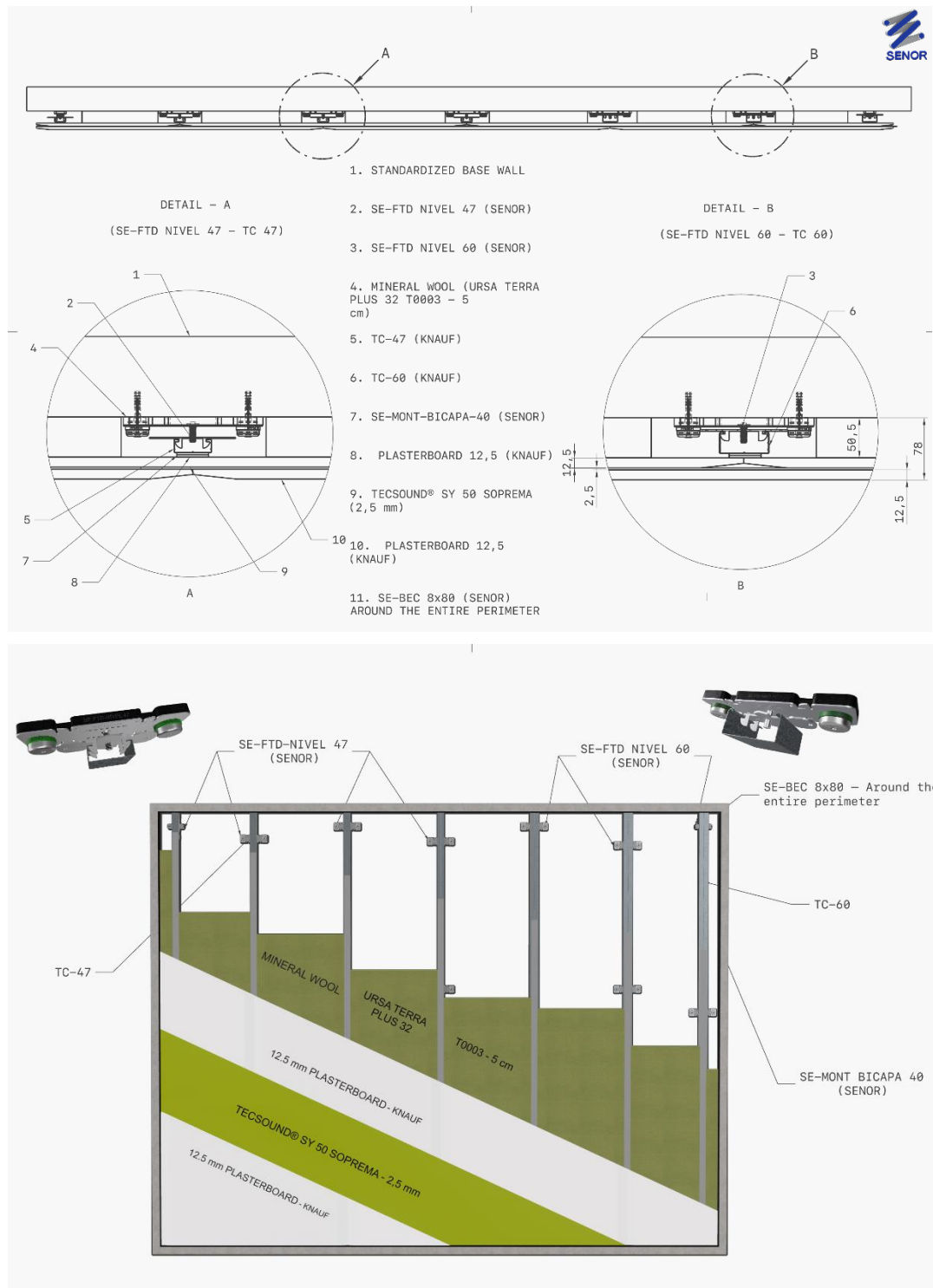
System Closure and Airtightness:

Finally, the second 12,5 mm KNAUF gypsum board was installed with staggered joints relative to the first layer, ensuring continuity of the enclosure and improving system airtightness, thereby maximizing airborne sound insulation.

Joint Treatment and System Sealing:

All board joints on both the first and second gypsum layers were treated. Likewise, the perimeter joints between the gypsum boards and all surrounding surfaces (floor, ceiling, and lateral walls) were sealed to guarantee system airtightness and to prevent sound transmission through potential acoustic leaks.

Assembly Diagrams



Assembly diagrams provided by the client

2.6.- Test Characteristics and Conditions

Once the sample had dried and was ready for testing, it was moved to the corresponding test chambers.

The approximate nominal thickness of the system was 273 mm (195 mm heavy basic wall + 78 mm of the system), and its approximate surface mass was 384,20 kg/m². Heavy Basic Wall 359.5 kg/m² (concrete brick + 15 mm cement render on source face + 15 mm gypsum plaster on receiving face) + 24,70 kg/m² of the system.

The dimensions of the test opening were 3,6 m wide by 2,8 m high. The total area of the sample was 10,08 m². The volume of the source chamber was 60,61 m³ and that of the receiving chamber was 50,76 m³.

The sample evaluated was installed by the client's own operatives and by operatives contracted by AUDIOTEC, under the supervision of AUDIOTEC's laboratory technicians.

Environmental conditions — Reference element test:

Chamber	Temperature (°C)		Relative Humidity (%)		Atmospheric Pressure (mbar)	
	Initial	Final	Initial	Final	Initial	Final
Source	15,2	15,3	51	51	1020	1020
Receiving	15,2	15,4	51	51		

Environmental conditions — complete system test:

Chamber	Temperature (°C)		Relative Humidity (%)		Atmospheric Pressure (mbar)	
	Initial	Final	Initial	Final	Initial	Final
Source	12,5	12,6	55	55	1022	1022
Receiving	12,5	12,6	55	55		

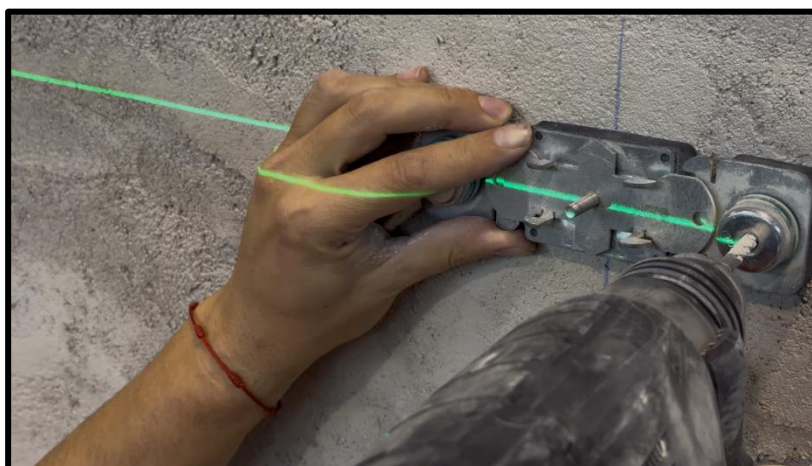
2.7.- Photographic Documentation of the Assembly

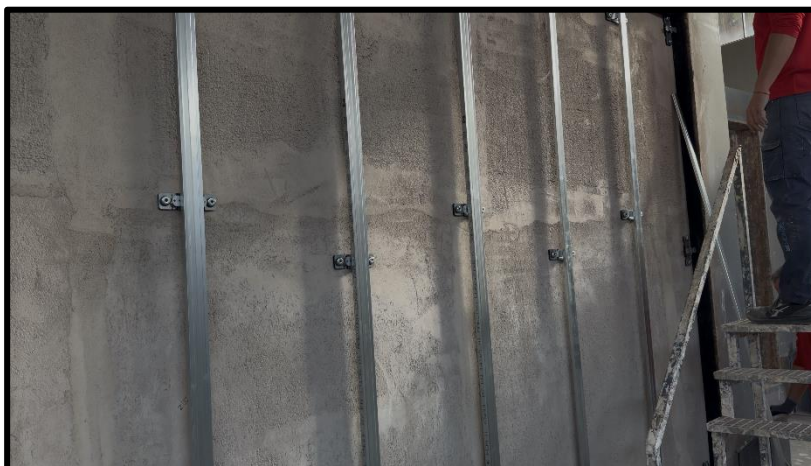
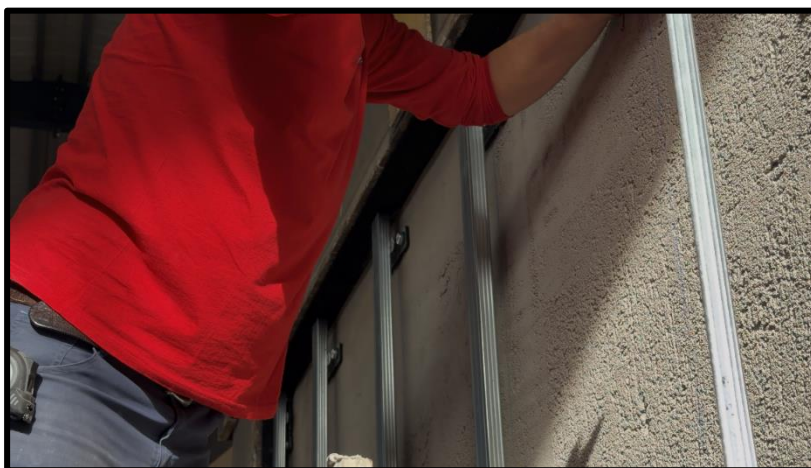
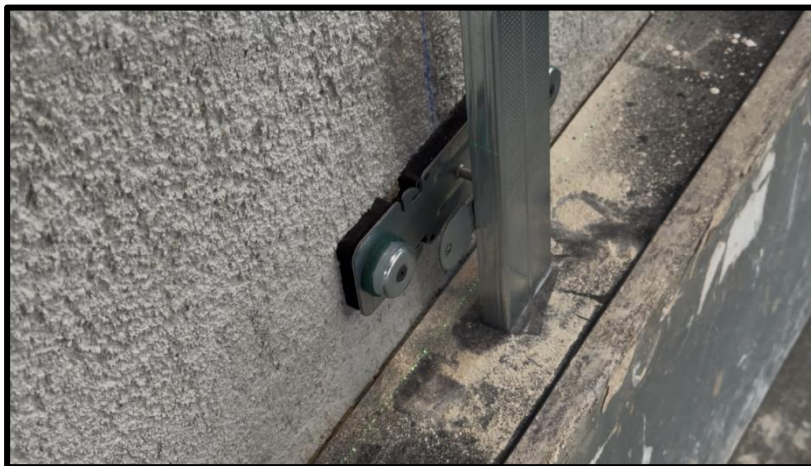


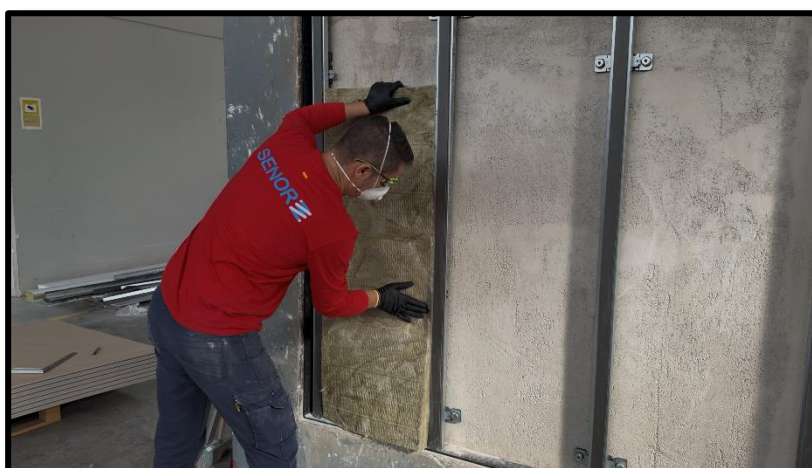


















3.- AIRBORNE SOUND INSULATION TEST RESULTS

The following section presents the results obtained, including a brief description of the sample evaluated and a table showing the sound insulation values for each frequency band in dB, as well as a table with the values of the acoustic reduction index for each frequency band in dB and the corresponding graph.

The values of R_w for the reference element, R_w for the complete system, R_{with} , $R_{without}$, and ΔR as specified in clause G.1 of standard ISO 10140-1:2022, together with the values of $R_w(C, C_{tr})_{without}$ and $R_w(C, C_{tr})_{with}$.

For standardized basic elements in accordance with clauses B.2, B.3, and B.4 of standard ISO 10140-5:2022: ΔR_w , $\Delta(R_w+C)$ and $\Delta(R_w+C_{tr})$ as specified in standard ISO 717-1, with an index indicating the reference basic element used.

Notes:

- ♦ The results of this test relate solely to the items submitted for testing and apply to the specific time and conditions under which the measurements were carried out.
- ♦ Measurement uncertainty is available to the client at the AUDIOTEC Acoustic Laboratory.
- ♦ This report may not be reproduced by any means unless it is reproduced in its entirety and with the written authorization of the AUDIOTEC S.A. Acoustic Laboratory.

CUSTOMERS: SUSPENSIONES ELÁSTICAS DEL NORTE S.L. SENOR, SOPREMA IBERIA S.L.U, URSA IBÉRICA AISLANTES S.A.

TEST DATE: 17/11/2025

METHOD TEST: UNE EN ISO 10140-2:2022 and Annex G of standard UNE-EN ISO 10140-1:2022

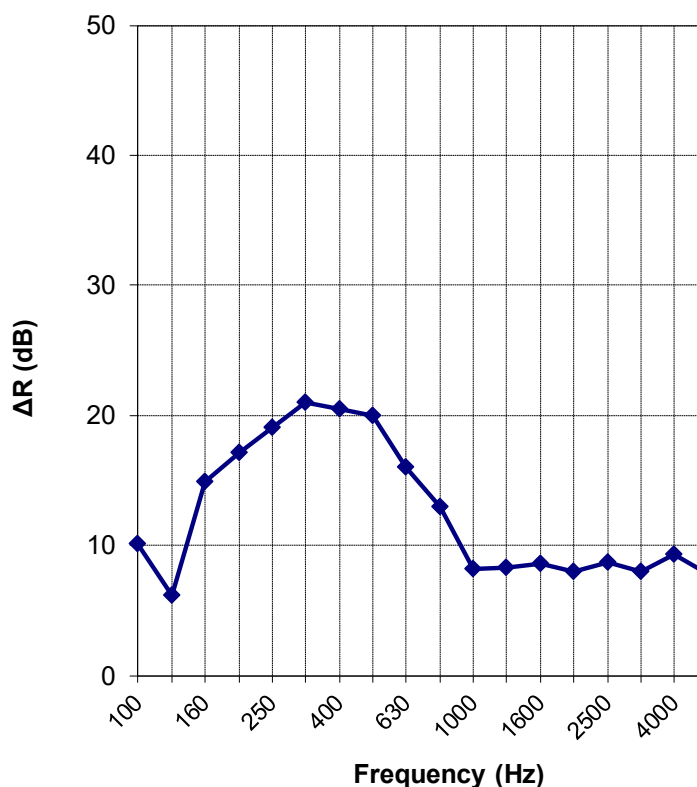
SAMPLE: System: DIRECT ACOUSTIC WALL LINING — URSA + SOPREMA + SENOR

Minimum-profile acoustic wall lining comprising: 47 mm and 60 mm KNAUF channel profiles + SE-BEC 8x80 acoustic strip (SENOR) + SE-MONT-BICAPA40 decoupling strip (SENOR) + SE-FTD NIVEL 47 and SE-FTD NIVEL 60 acoustic isolators (SENOR) + URSA TERRA PLUS 32 T0003 mineral wool (50 mm) + TECSOUND SY 50 synthetic polymeric insulating membrane (SOPREMA) + double 12.5 mm standard gypsum wallboard (KNAUF).

Load-bearing element: Heavy Basic Wall 359.5 kg/m²

Approximate surface mass: 384,20 kg/m² **Approximate thickness:** 273 mm

f Hz	R _{with} dB	R _{without} dB	ΔR dB
100	58,4	48,3	10,1
125	54,8	48,6	6,2
160	63,0	48,1	14,9
200	59,2	42,1	17,1
250	65,9	46,8	19,1
315	70,0	49,0	21,0
400	71,3	50,8	20,5
500	73,0	53,0	20,0
630	72,0	56,0	16,0
800	70,1	57,1	13,0
1000	68,9	60,7	8,2
1250	71,7	63,4	8,3
1600	73,9	65,3	8,6
2000	75,1	67,1	8,0
2500	75,9	67,2	8,7
3150	75,2	67,2	8,0
4000	76,9	67,6	9,3
5000	74,7	66,9	7,8
R _w	72	57	



ΔR_w, Heavy = 15 dB

R_{w,ref} (C; C_{tr})_{without} = 53 (0;-5) dB

R_{w,ref} (C; C_{tr})_{with} = 68 (-1;-6) dB

Δ(R_w + C) Heavy 14 dB

Δ(R_w + C_{tr}) Heavy 14 dB

ΔR(A) (DB-HR) = 14 dBA



Prepared by:

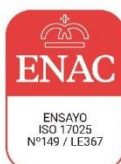


Signed: John Alvarado

Reviewed by:



Signed: Ángel Arenaz



Audiotec Ingeniería Acústica S.A.
Inscrita en el Registro Mercantil de Valladolid.
Asiento 1.515. Folio 143 del Diario 12º C.I.F. A-47237516



902 37 37 99

www.audiotec.es

info@audiotec.es

mediciones@audiotec.es

