

Test Report

Report nº: ACL 291/13Date: 2013/09/16

Requested by:

Name: VISOUND ACÚSTICA, LDAAddress: Avenida do Polo, 3, nº 159, Paços de Ferreira, 4590 - 137 CarvalhosaContact: Fax.: _____ Phone: 255093565 e-mail: jorge@vicoustic.com

Manufacturer and test specimen identification:

Name*: VISOUND ACÚSTICA, LDATest specimen*: Flexi Wave

Test data:

Test: Laboratory measurement of sound absorption (in a reverberation room) (Ref. ACL.02)Date: 2013/09/10

Empty reverberation room:

Reverberation room with test specimen:

Temperature (°C): 23.3Temperature (°C): 23.6Relative Humidity (%): 55.2Relative Humidity (%): 54.3Standard: NP EN ISO 354:2007Operator(s): Igor CastroReport author(s): Igor Castro / Julieta António

Test specimen description:

Area of the test specimen (m²): 10.9

Panels with reference "Flexi Wave" composed by MDF wood with painted veneer with a flat lower surface and a waved upper surface filled with polyurethane foam and laterally lined with fabric, with 150mm maximum thickness (our reference ACL236A/13). The panels were disposed side by side and distributed forming an alternate rows pattern over the reflector pavement of the reverberation room, corresponding to an assembly classified as type "A", in agreement with the standard NP EN ISO 354. The collocation of the sample in the reverberation room followed the indications of standard NP EN ISO 354, defining a total area of 10.9 m².

Reverberation room description:

Volume of the reverberation room (m³): 204.0

The reverberation room has a rectangular shape, in plant, with approximately 5,85m x 5,85m and a ceiling height of 5,85m. In order to comply with NP EN ISO 354:2007, 15 polycarbonate diffusing elements were used, with 30 m² of total area and different concave and convex geometries, randomly placed on the ceiling of the reverberation room, helping to create a diffuse field and to comply with the specified maximum absorption areas. The total surface area of the room (walls, floor and ceiling) is 211,65 m² and the volume of the reverberation room is 203,98 m³.

Test equipment:

Acoustic chambers at ITeCons; "Bruel & Kjaer" Pulse multianalyser system, PUL02, model 3560-C-T46, with five acquisition channels; "Bruel & Kjaer" rotating microphone boom, type 3923, GIR01, with "Bruel & Kjaer" 1/2" microphone, type 4190, MIC06; sound level meter calibrator, type 4231, from "Bruel & Kjaer", CLS04; omnidirectional sound source OMNIPower 4292, from "Bruel & Kjaer", FSO03; thermohygrometer THR10.

Additional information related with the test:

Number of microphone positions: 3 Number of source positions: 4Number of decays per microphone/source combination: 3Evaluation method of reverberation time: based on decay curvesMeasurement in bands of: One-third-octave

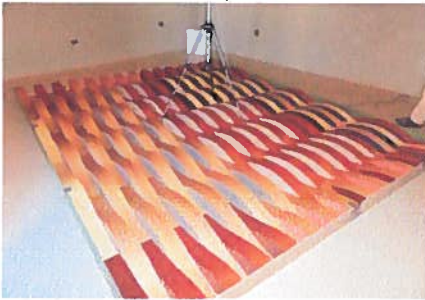
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The results are valid exclusively for the tested specimens.

Data reported with * supplied by customer.



Picture of the test specimen:



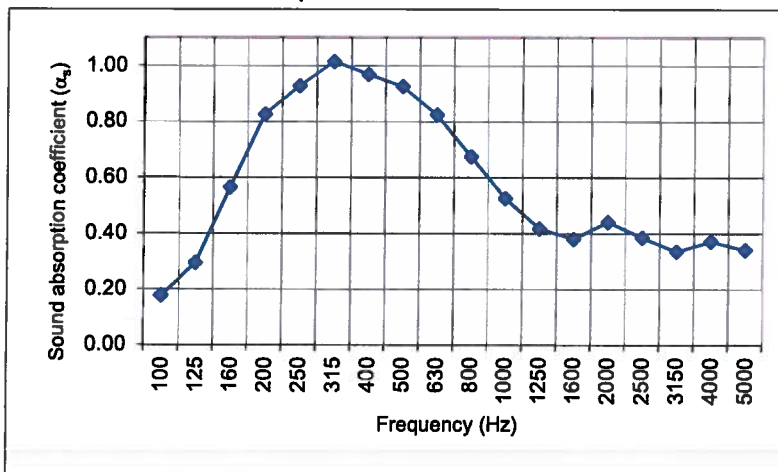
Average reverberation times (T1 - empty reverberation room; T2 - reverberation room with test specimen):

Freq. (Hz)	100	125	160	200	250	315	400	500	630
T1 (s)	20.18	12.82	11.47	9.69	8.04	7.87	9.43	10.42	9.68
T2 (s)	9.21	5.66	3.63	2.64	2.31	2.15	2.33	2.47	2.64
Freq. (Hz)	800	1000	1250	1600	2000	2500	3150	4000	5000
T1 (s)	9.04	8.49	7.86	6.82	6.06	4.68	3.95	3.39	2.67
T2 (s)	2.98	3.41	3.76	3.66	3.20	2.92	2.74	2.39	2.05

Sound absorption coefficient (α_s):

Freq. (Hz)	100	125	160	200	250	315	400	500	630
α_s	0.18	0.30	0.57	0.83	0.93	1.02	0.97	0.93	0.83
Freq. (Hz)	800	1000	1250	1600	2000	2500	3150	4000	5000
α_s	0.67	0.53	0.42	0.38	0.44	0.39	0.34	0.37	0.34

Graphical presentation of the sound absorption coefficient:



Remarks:

Empty box for remarks.

Technical responsibility

Paulo Amado Mendes

(Paulo Amado Mendes, Technical and Scientific Supervisor)

Administration

[Signature]

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