CHARACTERIZATION OF ACOUSTIC ABSORPTION OF **UNDERTONE** & **BUZZER** ACOUSTIC PANELS

REQUESTED BY: **MURATTO**

Testing of small samples, following the procedures included in ISO 10534-2, and solutions installed in reverberant chamber, in accordance with the NP ISO 354 standard.

AUTHOR: Paulo Amado Mendes, Luís M. C. Godinho
ACIV / DEC-FCTUC

ACOUSTIC REPORT - ACOUSTIC PANELS **UNDERTONE** & **BUZZER**

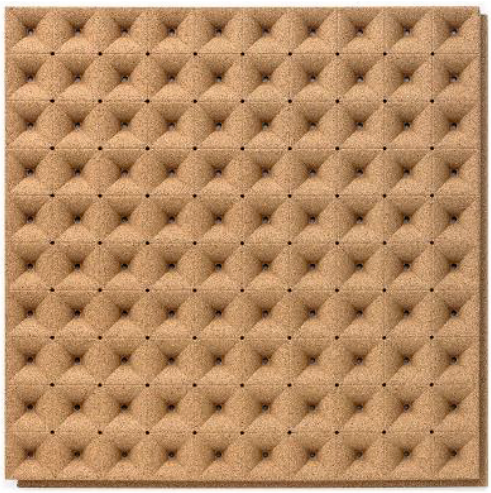
This report documents a study requested by Muratto in order to better understand the acoustic behavior of cork wall covering panels developed, produced and marketed by the company, namely perforated panels, under the trade name Undertone, and grooved panels , under the trade name Buzzer.

TESTS Evaluation of the sound absorption in reverberant chamber, according to the norm NP EN ISO 354

MANUFACTURER Muratto

1. PRODUCT Acoustic Panel **UNDERTONE**

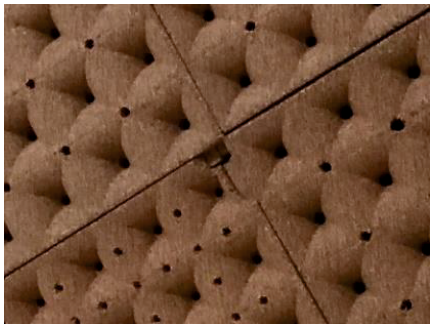
Undertone-type cladding panels are manufactured in high density cork agglomerate and have a three dimensional design with curvilinear forms, obtained by molding. These panels have a nominal thickness, areas of greater thickness, about 30mm, and a set of holes with nominal diameter of 8 and 6mm, totaling a drilling area of approximately 4.96%. The geometry of Undertone cork panels, as well as their acoustic properties which may prove to be very interesting from the point of view of absorption and diffusion.



MOUNTING CONDITIONS Undertone modified coating, cork and the base area average drilling of 4.96%, installed on structure in metallic profiles, creating an air box with a thickness of about 70mm partially filled with mineral wool with thickness nominal of 40mm.

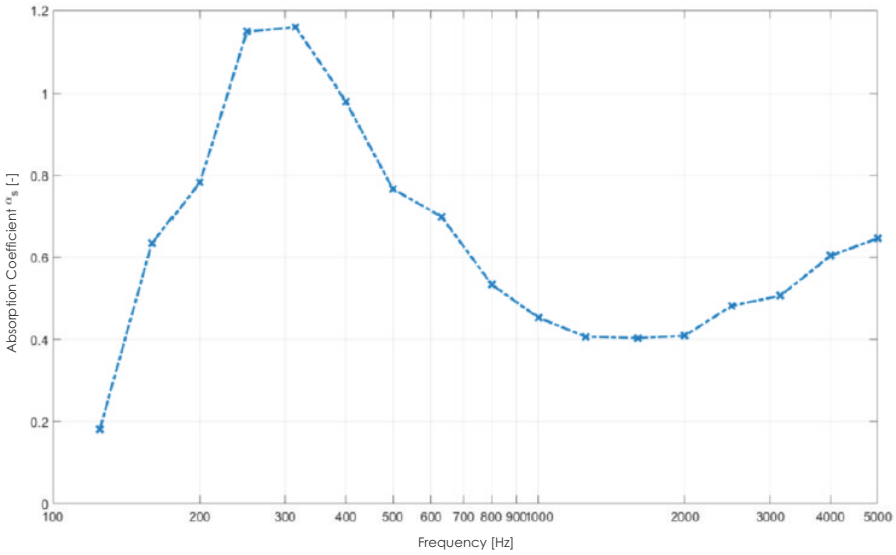
SAMPLE AREA 9m2

TEST DATE 07/11/2018



COEFFICIENT OF SOUND ABSORPTION, α_S :

Freq (Hz)		125	160	200	250	320.0000	400	500	630
α_S		0.18	0.63	0.78	1.15	1.16	0.98	0.77	0.70
Freq (Hz)	800	1000	1250	1600	2000	2500	3200	4000	5000
α_S	0.53	0.45	0.41	0.40	0.41	0.48	0.51	0.60	0.65



Weighted Absorption Coefficient (α_w)	Sound Absorption Class	Coef. NRC	Coef. SAA
(by the norm *EN ISO 11654*)		(by the norm *ASTM C 423*)	
0.50 (LM)	**D**	**0.70**	**0.69**

α_w - Weighted Absorption Coefficient (norm *EN ISO 11654*)

NRC – Coefficient of Sound Reduction ; *SAA* – Average Sound Absorption (norm *ASTM C 423*)

2. PRODUCT Acoustic Panel **BUZZER**

Panels made from cork agglomerate of high density. These panels feature a three-dimensional design with concentric rectangles with different levels of depth (pyramid-shaped) and a number of grooves running through the entire thickness of the panel. At dimensions of these panels are approximately 60x60cm2 each, in plan, and one maximum thickness of 30mm, being possible the connection between adjacent panels by on the side surfaces of the panels.

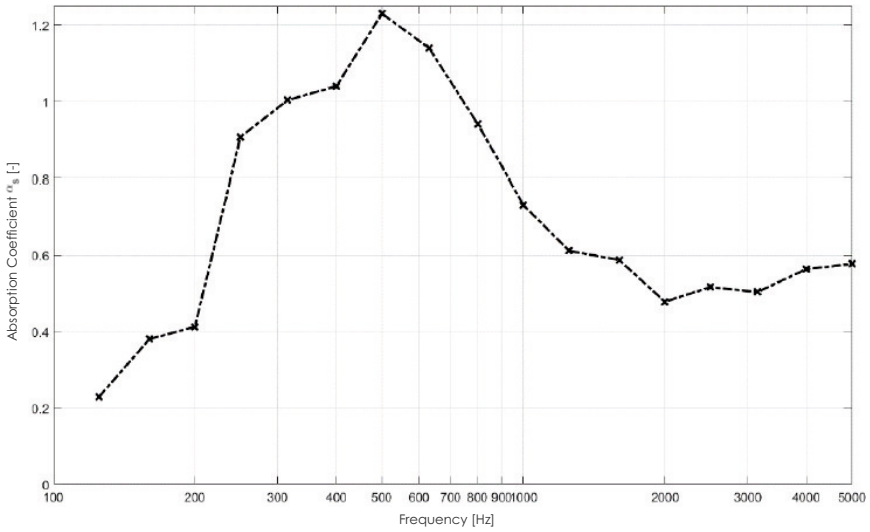
MOUNTING CONDITIONS Buzzer coating, cork-based with ribs / grooves, installed on structure in metal profiles, creating an air box with a thickness of about 70mmpartially filled with mineral wool with nominal thickness of 40mm.

SAMPLE AREA 9.1m2

TEST DATE 07/11/2018

COEFFICIENT OF SOUND ABSORPTION, α_S :

Freq (Hz)		125	160	200	250	320.0000	400	500	630
α_S		0.23	0.38	0.41	0.91	1.00	1.04	1.23	1.14
Freq (Hz)	800	1000	1250	1600	2000	2500	3200	4000	5000
α_S	0.94	0.73	0.61	0.59	0.48	0.52	0.50	0.56	0.58



Weighted Absorption Coefficient (α_w)	Sound Absorption Class	Coef. NRC	Coef. SAA
(by the norm *EN ISO 11654*)		(by the norm *ASTM C 423*)	
0.65 (LM)	**C**	**0.80**	**0.80**

α_w - Weighted Absorption Coefficient (norm *EN ISO 11654*)

NRC – Coefficient of Sound Reduction ; *SAA* – Average Sound Absorption (norm *ASTM C 423*)