Acoustical Performance Test Report

Rendered to:

RPG Acoustical Systems, LLC
99 South Street, Passaic NJ 07055

Chesapeake Acoustics Research Institute, LLC
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Report No: RPGA03162018
Test Date: March, 18, 2015
Report Date: March 16, 2018

Test Sample Identification:
Model: Perfecto 16_16_8
Panel Sizes: ((3) 2'x8' panels and (1) 1'x8' panels
placed side by side
Overall Test Size: 7' x 8'

Project Summary:
CARI, LLC was contracted by RPG Acoustical Systems, LLC to conduct a sound absorption test on Perfecto 16_16_8 backed with 1", 2", 3" and 4" 6 pcf fiberglass. A summary of the results is listed in the Results section of this report. The sample was provided by the client.

Test Method:
The acoustical test was conducted in accordance with ISO 354.

Tests were carried out by Dr. Peter D'Antonio

Peter D'Antonio

Test Procedure: The reverberation chamber has a volume of 75 cubic meters, with fixed suspended diffusors creating a diffuse sound field. The sound absorption of the empty reverberation chamber, T1, was measured before the test specimen was installed. For the sample test, T2, the test specimen, consisting of an (3) 2'x 8' panels and (1) 1'x8' panel placed side by side on 1", 2", 3or 4" fiberglass panels. The perimeter of the test area was covered with ¾" plywood panels with a height comparable to the height of the test sample. The joint between the test sample and the perimeter was taped.

For the empty room and sample tests, a total of 18 impulse responses were measured, using a 262,143 point MLS excitation of length of 5.46 seconds, with 4 averages. 6 microphones and three speakers were used. For each speaker excitation, 6 impulse responses were recorded from the 6 distributed microphones. This was repeated for the second and third loudspeakers. Two loudspeakers are mounted in diagonally opposite corners (top photo) and one is located midway in height in a dihedral corner (bottom photo). The sound absorption test was recorded in 1/3 octave band frequencies between 80 and 5000 Hz. The air temperature and relative humidity conditions were monitored and recorded during the empty and full room measurements.

Sample Description:
The samples with a ¾” perimeter frame, covered an overall sample area of 8’x7’. The photos below show the samples in test position on the chamber floor with fiberglass backing..

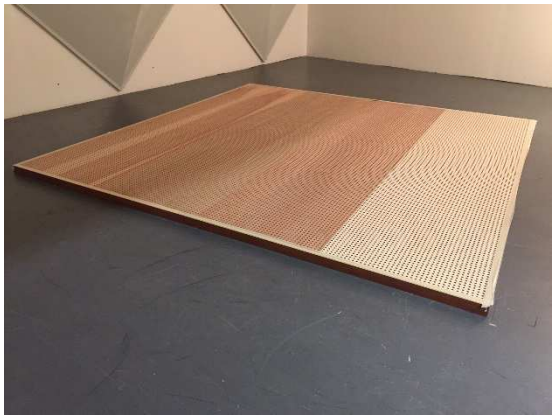


Figure 2. Perfecto 16_16_8 backed with 1" Fiberglass

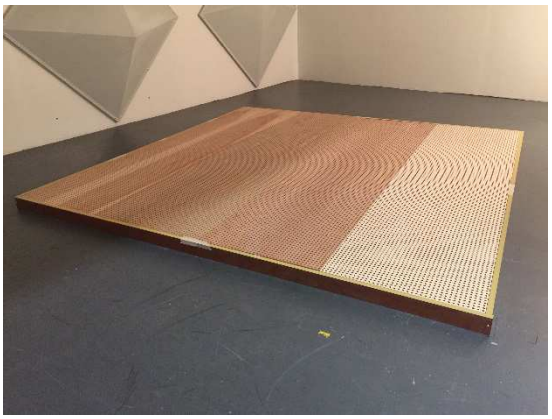


Figure 21. Perfecto 16_16_8 backed with 2" Fiberglass

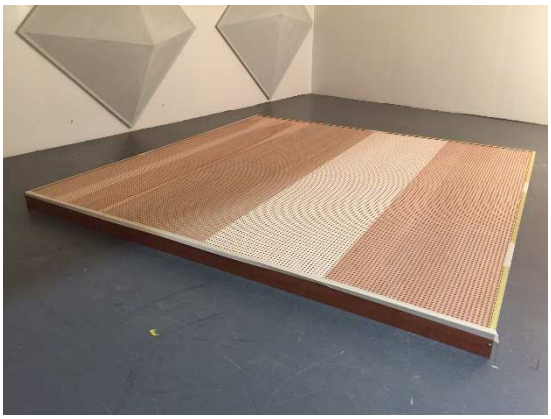


Figure 3. Perfecto 16_16_8 backed with 3" Fiberglass

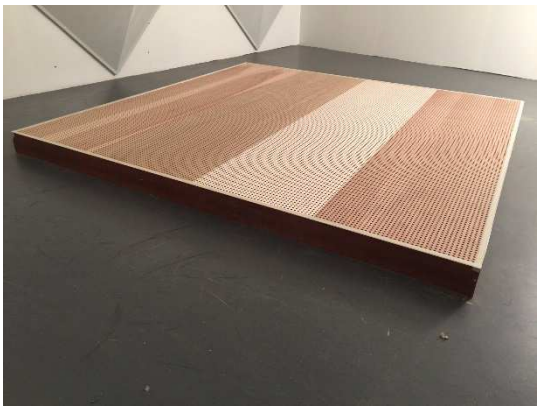
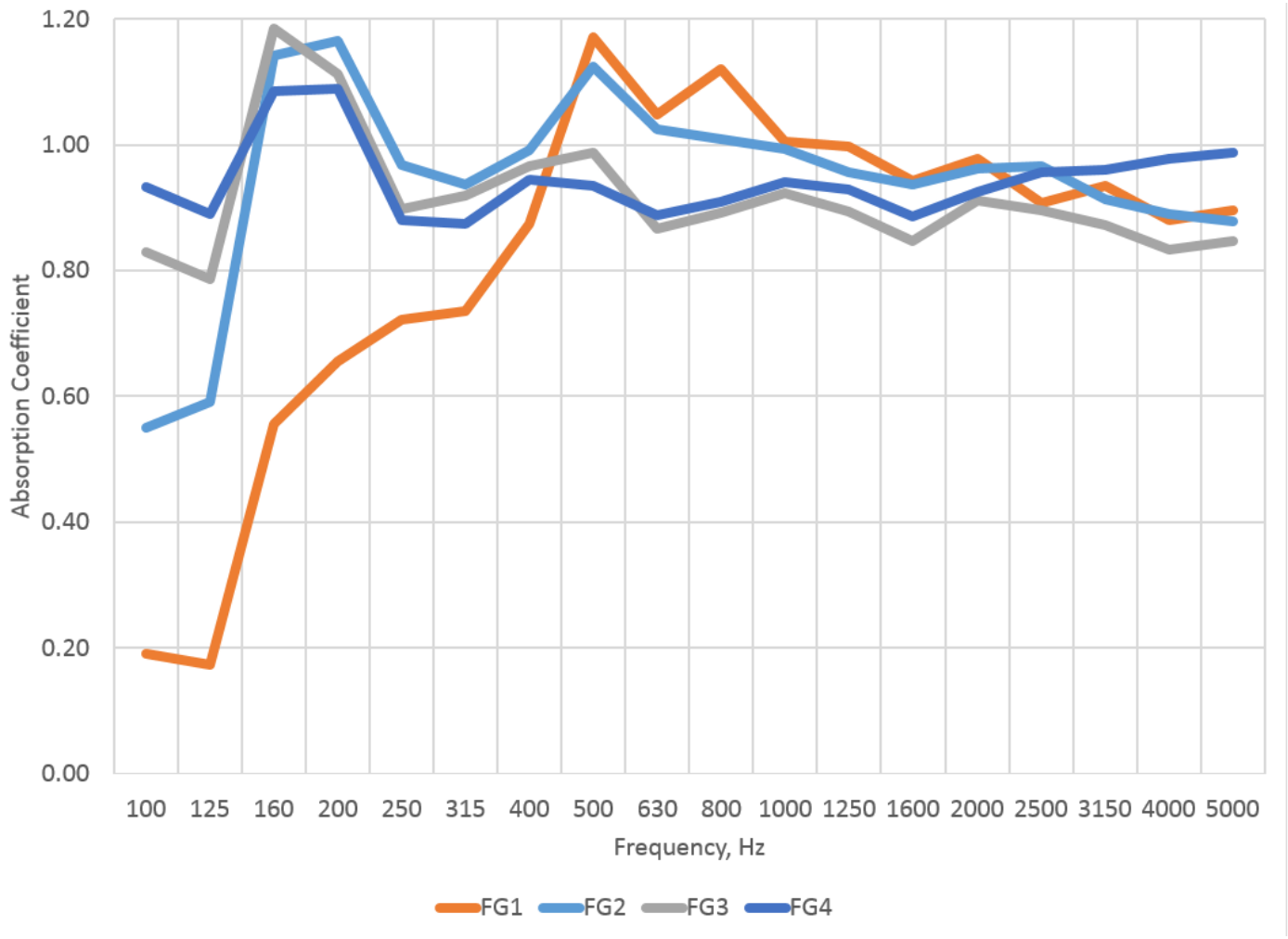
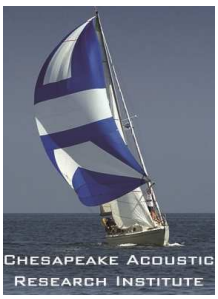


Figure 4. Perfecto 16_16_8 backed with 4" Fiberglass

Results: Third Octave Absorption Coefficients and Graph

	FG1	FG2	FG3	FG3B	FG4
100	0.19	0.55	0.83	0.77	0.93
125	0.17	0.59	0.79	0.83	0.89
160	0.56	1.14	1.18	1.08	1.08
200	0.65	1.17	1.11	1.01	1.09
250	0.72	0.97	0.90	0.86	0.88
315	0.74	0.94	0.92	0.84	0.87
400	0.87	0.99	0.97	0.90	0.94
500	1.17	1.12	0.99	0.94	0.93
630	1.05	1.03	0.87	0.88	0.89
800	1.12	1.01	0.89	0.92	0.91
1000	1.01	0.99	0.92	0.92	0.94
1250	1.00	0.96	0.89	0.89	0.93
1600	0.94	0.94	0.85	0.86	0.89
2000	0.98	0.96	0.91	0.91	0.93
2500	0.91	0.97	0.90	0.90	0.96
3150	0.94	0.91	0.87	0.86	0.96
4000	0.88	0.89	0.83	0.86	0.98
5000	0.90	0.88	0.85	0.87	0.99
NRC	0.90	1.00	0.90	0.90	0.90
SAA	0.93	1.00	0.93	0.90	0.93


1.20
1.00
0.80
0.60
0.40
0.20
0.00
Absorption Coefficient
100 125 160 200 250 315 400 500 630 800 1000 1250 1600 2000 2500 3150 4000 5000
Frequency, Hz
FG1
FG2
FG3
FG4



The Chesapeake Acoustic Research Institute, LLC was established in 2007 by Dr. Peter D'Antonio to provide the architectural acoustics community with continuing acoustical education, experimentation/proof-of performance testing and exploration of more effective room designs, with the ultimate goal of improving the acoustics of the built environment.

Dr. D'Antonio was born in Brooklyn, New York, in 1941. He received his B.S. degree from St. John's University in 1963 and his Ph.D. from the Polytechnic Institute of Brooklyn, in 1967. In 1974, he developed a widely used design for modern recording studios at Underground Sound, Largo, Maryland, utilizing a temporal reflection free zone and reflection phase grating diffusors. Dr. D'Antonio is founder and president of RPG Diffusor Systems, Inc., established in 1983. Dr. D'Antonio pioneered the sound diffusion industry and has significantly expanded the acoustical palette by creating and implementing a wide range of novel number-theoretic, fractal and optimized diffusing and absorbing surfaces, for which he holds many trademarks and patents. He has lectured extensively, published numerous scientific articles in technical journals and magazines and is the co-author with Prof. Trevor J. Cox at Salford University, of the reference book Acoustic Absorbers and Diffusers: Theory, Design and Application, Spon Press 2004 and 2nd Edition published by Taylor & Francis 2009. He served as Chairman of the AES Subcommittee on Acoustics Working Group SC04-02, which published AES-4id-2001; is a member of the ISO/TC 43/SC 2/WG25 Working Group, which published ISO standard 174971:2004; and has served as adjunct professor of acoustics at the Cleveland Institute of Music, since 1991. He is a Fellow of the Acoustical Society of America and the Audio Engineering Society and a professional affiliate of the American Institute of Architects.