



Sound Absorption Test

Test Date: 05/07/2021
For: Turf
2000 Fox Ln
Elgin, IL 60123

Report Issued: 08/02/2021

Specimen Designation: Turf Arbor Baffle System - Capped

The test method conforms explicitly to the requirements of ASTM C423-17 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method and ASTM E795-05 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests except as noted in the Comment section. The Armstrong Acoustics Laboratory is accredited by NVLAP of the Department of Commerce as having the competence to perform this test in accordance with the prescribed test method. Descriptions of the facility and measuring technique are available separately.

Material Description: 9 mm polyester (PET) felt - black

Unit Construction: Each unit consisted of four (4) baffles spaced 4.0 in. on center. Each baffle measured 96.00 by 2.00 by 2.00 in, with a 0.25" tab at the back of each baffle. The baffles were secured together by a 95.00 by 16.00 by 0.375 in thick felt support, with two paired fasteners 16 in. on center, and 7.00 and 5.50 in. from each end. The felt support extended 1.00 in past each end baffle for a total width of 16.00 in. See photos of material below.

Physical Unit Size: 406 by 2438 by 50.8 mm (16.00 by 96.00 by 2.00 in.).

Weight per Unit: 3.90 kg (8.60 lb)

Specimen Size: 5.95 m² (64.0 ft²) consisting of four full units arranged in a 2.44 by 2.44 m (96.00 by 96.00 in.) contiguous array.

Conditioning: The test was performed in a test room at 21.9°C (71.4°F), 55.9% RH and 998.0 hPa. The conditions during the bare room test were 21.8°C (71.2°F), 56.4% RH and 998.0 hPa. The sample was conditioned at least 16 hours at 21 ± 3°C (70 ± 5°F) and 50 ± 5% RH.

Specimen Installation: The specimen was mounted using the E-400 mounting technique according to ASTM E795.

Significance: The coefficients measured by this test method should be used with caution because not only are the areas encountered in practical usage usually larger than the test specimen, but also the sound field is rarely diffuse. Both of these factors will influence the absorption in practical usage. Regardless of the differences and the necessity for judgment, the coefficients measured by this test method have been used successfully by architects and consultants in the acoustical design of architectural spaces.

Traceability: These test results are traceable to NIST.

Comments: None



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Reverberation Room

Size: 8.18 by 6.22 by 5.23 m (26.83 by 20.40 by 17.17 ft) with 2.44 by 2.44 by 0.29 m (8 by 8 by 0.95 ft) recess in ceiling and 4.04 by 0.70 by 1.11 m (13.25 by 2.31 by 3.65 ft) box for collapsed test frame.

Volume: 264.7 m³ (9347 ft³).

Surface Area: 255.2 m² (2747 ft²).

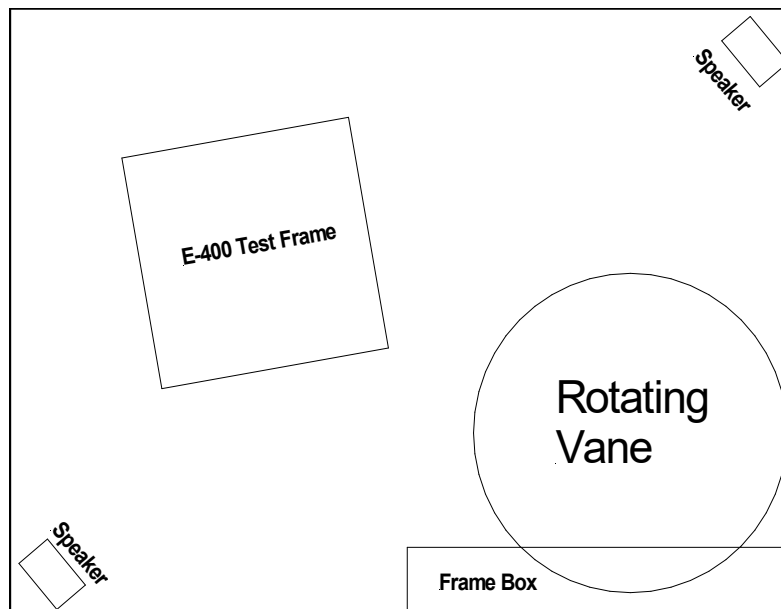
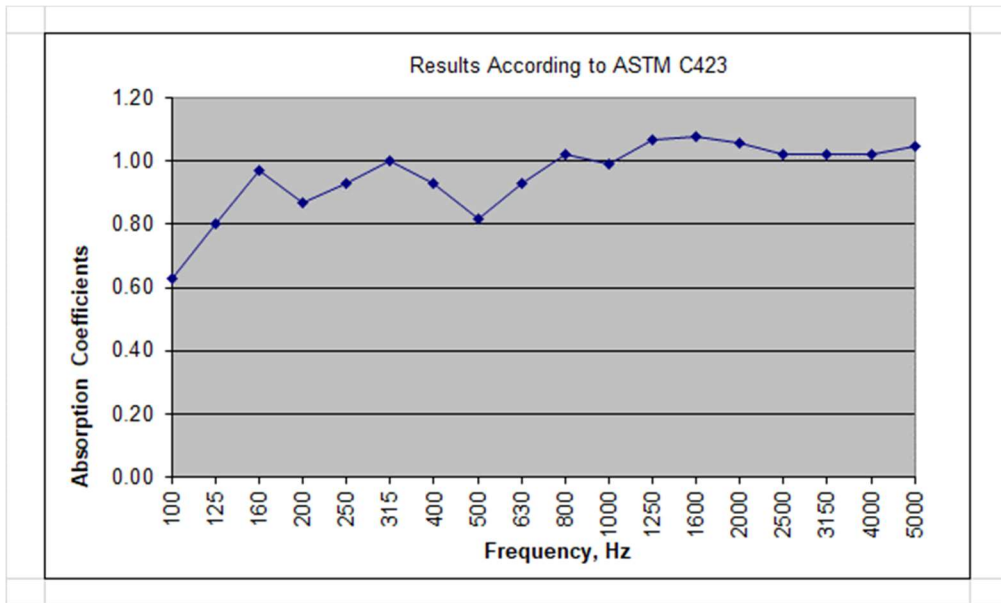
Diffuser Configuration: One rotating diffuser system which consists of a conical section extending from the floor to ceiling and 3 flat diffusers mounted about the axis of the cone. The area of the diffuser is 42.9 m² (462 ft²).

Microphone Positions: 6

Noise Source: Two speaker cabinets in opposite upper trihedral corners broadcasting broadband pink noise (50 - 10,000 Hz).



Sound Absorption Test



Room Layout and Sample Position



Sound Absorption Test





Sound Absorption Test





Sound Absorption Test

Results According to ASTM C423

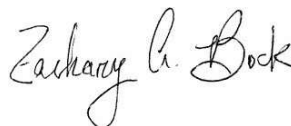
| Frequency Hz | Absorption Coefficient | Absorption Coefficient For E-400 Frame | |
|-----------------|---------------------------|---|---------------|
| | | Reproducibility | Repeatability |
| 100 | 0.63 | 0.49 | 0.23 |
| 125 | 0.80 | 0.33 | 0.16 |
| 160 | 0.97 | 0.27 | 0.11 |
| 200 | 0.87 | 0.14 | 0.08 |
| 250 | 0.93 | 0.17 | 0.07 |
| 315 | 1.00 | 0.12 | 0.07 |
| 400 | 0.93 | 0.08 | 0.05 |
| 500 | 0.82 | 0.09 | 0.06 |
| 630 | 0.93 | 0.08 | 0.06 |
| 800 | 1.02 | 0.09 | 0.04 |
| 1000 | 0.99 | 0.09 | 0.03 |
| 1250 | 1.07 | 0.11 | 0.05 |
| 1600 | 1.08 | 0.13 | 0.04 |
| 2000 | 1.06 | 0.11 | 0.05 |
| 2500 | 1.02 | 0.09 | 0.04 |
| 3150 | 1.02 | 0.10 | 0.04 |
| 4000 | 1.02 | 0.10 | 0.07 |
| 5000 | 1.05 | 0.13 | 0.09 |

SSA 0.98

NRC 0.95

The reproducibility and repeatability are from the Precision and Bias section of ASTM C423-17. The Sound Absorption Average (SAA) is the average of coefficients between 200 and 2500 Hz, expressed to the nearest integral multiple of 0.01. The noise reduction coefficient (NRC) is the average of coefficients at 250, 500, 1000, and 2000 Hz expressed to the nearest integral multiple of 0.05.

Approved by:



Zachary A Bock

Facility Manager