

TEST REPORT

FOR: Consolidated Systems Inc.
Columbia, SC

Sound Absorption Test
RAL™-A03-197

ON: Deep-Dek™ DA 4.5, 18 Acoustical Metal Roof Deck

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CONDUCTED: 18 November 2003

TEST METHOD

The test method conformed explicitly with the requirements of the ASTM Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method: ASTM C423-02a and E795-00. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure. A description of the measuring procedure and room qualifications is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Deep-Dek™ DA 4.5, 18 acoustical metal roof deck. The overall nominal dimensions of the specimen as measured were 2.46 m (97 in.) wide by 2.74 m (108 in.) long and 165 mm (6.5 in.) thick. The specimen consisted of eight steel deck sections and two full pieces of rigid polyisocyanurate insulation board and one partial. Each steel deck section measured nominally out to out 318 mm (12.5 in.) wide (includes the nominal 13 mm (0.5 in.) lap joint) by 2.74 m (108 in.) long and 114 mm (4.5 in.) thick. Each full piece of rigid insulation was 1.22 m (48 in.) wide by 2.44 m (96 in.) long and 51 mm (2 in.) thick. The partial piece was 305 mm (12 in.) wide by 2.44 m (96 in.) long and 51 mm (2 in.) thick. The specimen was tested in the laboratory's 292 m³ (10,311 ft³) test chamber.

A description of the specimen material is as follows: 18 gauge galvanized steel with a single rib per panel. The rib on the face of the panel was perforated and tapered and measured 216 mm (8.5 in.) wide at the face and 194 mm (7.625 in.) at the bottom of the taper. Perforations on the sides of the ribs consisted of 4 mm (5/32 in.) holes on 9.5 mm (0.375 in.) staggered centers. The cavity behind the joint formed by adjoining panels contained 102 mm (4 in.) thick by 76 mm (3 in.) wide 3 pcf density fiberglass batt insulation with a notch for the joint.

The weight of the entire specimen as measured was 142 kg (312.75 lbs), an average of 21 kg/m² (4.3 lbs/ft²). The area used in the calculations was 6.7 m² (72.8 ft²). The room temperature at the time of the test was 21°C (70°F) and 61% relative humidity.

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MOUNTING A

The test specimen was laid directly against the test surface. The perimeter was sealed using wood and metal framing.

TEST RESULTS

1/3 Octave Center Frequency (Hz)	Absorption Coefficient	Total Absorption In Sabins
100	0.21	15.07
** 125	0.34	24.54
160	0.29	20.93
200	0.39	28.70
** 250	0.52	37.57
315	0.74	54.09
400	0.86	62.33
** 500	0.94	68.50
630	0.92	66.94
800	0.83	60.23
** 1000	0.76	55.29
1250	0.66	48.13
1600	0.56	40.80
** 2000	0.48	35.08
2500	0.49	35.42
3150	0.46	33.25
** 4000	0.46	33.16
5000	0.42	30.79

SAA = 0.68

NRC = 0.70

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TEST RESULTS (Continued)

The sound absorption average (SAA) is defined as a single number rating, the average, rounded to the nearest 0.01, of the sound absorption coefficient of a material for the twelve one-third octave bands from 200 through 2500 Hz, inclusive.

The noise reduction coefficient (NRC) is defined from previous versions of this same test method as the average of the coefficients at 250, 500, 1000, and 2000 Hz, expressed to the nearest integral multiple of 0.05.

Tested by *Marc Sciaky* Approved by *David L. Moyer*
Marc Sciaky David L. Moyer
Senior Technician Laboratory Manager

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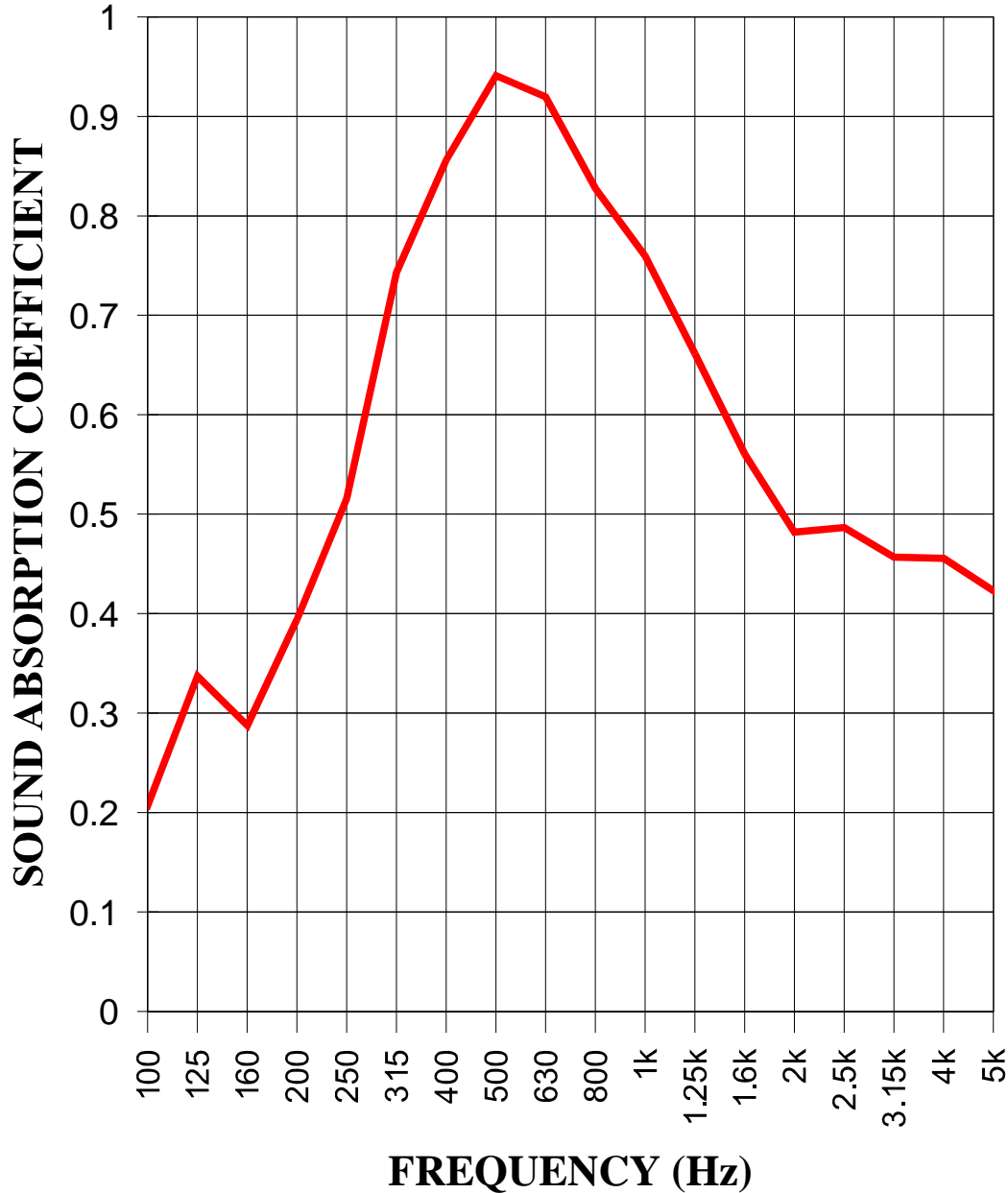
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NVLAP Lab Code 100227-0

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