



Corporate Innovation Center
Construction Systems Lab
700 North Highway 45
Libertyville, IL 60048

USG Testing Services TEST REPORT

ASTM C423-17

Standard Test Method for Sound Absorption and
Sound Absorption Coefficients by the Reverberation Method

Prepared for:

Will Zhou
1 Knauf Drive
Shelbyville, IN 46176
*Attn: Director, Product
Innovation*

Project No: USGTS-KINAXX

Report No: NRC -220303

Date Submitted: 3/04/2022

Date Tested: 3/04/2022

Introduction

This document contains ASTM C423-17 test results of KINA Acoustical Panels

Prepared By:

David Moyer
Principal Researcher

Authorized By:

James Ullett
Program Manager
Innovation Services

Summary of Results

Summary of Test Results		
Test Number	Specimen	NRC
NRC-220303	KINA gray high density wall panels	0.85

This report contains seven (7) pages. Any additions to, alterations of, or unauthorized use of excerpts from this report are expressly forbidden.

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1. TITLE

ASTM C423-17 Sound Absorption and Sound Absorption Coefficients by the Reverberation Method testing of KINA Acoustical Panels.

2. OBJECTIVE

To determine the Noise Reduction Coefficient (NRC) and the frequency specific Sound Absorption Coefficients of KINA grey high density wall panels.

3. TESTED FOR

Knauf Insulation North America
1 Knauf Drive
Shelbyville, IN 46176

4. TESTING ORGANIZATION

USG Testing Services
USG CORPORATION
Corporate Innovation Center
700 N US Highway 45
Libertyville, IL 60048-1268

5. TESTING PERSONNEL

Laboratory Manager: James Ullett
Test Conducted By: Austin Phillips

6. REFERENCE STANDARDS

ASTM C423-17 Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Method.

ASTM E795-16 Standard Practice for Mounting Test Specimens During Sound Absorption Tests.

7. CALIBRATED TEST EQUIPMENT

Microphone: Bruel & Kjaer Type 4942 C 1 SN: 2741255

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8. TEST SPECIMEN

The test specimen was designated by the client as KINA high density wall panel. The test specimen consisted of sixteen (16) full size panels each measuring 27.9 mm (1.1 in.) thick by 613 mm (24.13 in.) wide by 613 (24.13 in.) long panels to complete the test area. The panels consisted of fiberglass insulation core and a fabric face wrapped about sides to the back of the panel. The panel had square edges and were butted together to form the specimen. Total weight of the specimen was 20.0 kg (44.0 lbs.), an average of 3.32 kg/m² (0.68 lbs/ft²). The absorption area used in the calculations was 6.0 m² (64.7 ft²). Additional details and photos regarding the test specimen and environmental conditions are provided in the appendix. .

9. TEST SPECIMEN CONSTRUCTION

All specimens were prepared and installed by USG staff.

10. TEST SPECIMEN CONDITIONING

The test specimens were conditioned in the laboratory prior to testing. Average environmental conditions of the lab are 65 degrees F and 50 % RH.

11. TEST SETUP

The sample was placed directly on the floor of the laboratory's reverberation room with the perforations facing the sound source (up). Type A mounting: The sample was placed directly on the floor of the 200.6 m³ (7083 ft³) reverberation chamber.

12. TEST PROCEDURE

The measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations C423-17 and E795-16, as well as other pertinent standards. The USG Acoustical Testing Facility 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 (NVLAP Lab Code: 200132-0). A full description of the measurement procedure is available separately.

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13. TEST RESULTS

Summary of Test Results		
Test Number	Specimen	NRC
NRC-220303	KINA gray high density wall panels	0.85

14. CONCLUSION

Based on the data obtained from this test, an NRC of 0.85 can be obtained from a ceiling system per Section 8 of this report.

15. TEST DATA

Test data has been attached to this report in the form of an appendix.

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DATA REPORT

Sound Absorption
ASTM C 423

Test Date:	3/4/2022
Test Number:	NRC - 220303
Client:	Knauf Insulation North America - Will Zhou
Project:	KINA USG Testing Services
Test Operator:	Austin Phillips
Sample ID:	Sample #1_High Density
Sample Description:	KINA gray high density wall panel

Sample Physical Details (Single Panel)			
Thickness:	1.10 in	Length:	24.13 in
Weight:	2.74 lb	Width:	24.13 in

Specimen Physical Details Mounted	
Specimen Area:	64.69 sq. ft

Test Specimen Description

The test specimen was designated by the client as KINA high density wall panel. The test specimen consisted of sixteen (16) full size panels each measuring 27.9 mm (1.1 in.) thick by 613 mm (24.13 in.) wide by 613 (24.13 in.) long panels to complete the test area. The panels consisted of fiberglass insulation core and a fabric face wrapped about sides to the back of the panel. The panel had square edges and were butted together to form the specimen. Total weight of the specimen was 20.0 kg (44.0 lbs.).

Room Conditions

Temperature:	71.1 °F	21.7 °C
Microphone:	B&K Type 4942 C 1 SN: 2741255	

Relative Humidity:	61.5 %
Barometric Pressure:	1017 hPa

This data report consisting of a cover, measured data and accompanying graph contain the instantaneous raw data as provided to the client after testing of the specimen. This data, although accurate, is incomplete without the full specimen description, mounting details and signature pages. The full report referenced by the USG test number above should be consulted for further information regarding these results.

Data Page 1 of 2

Filename: NRC-220303 -874 (KINA Gray High Density Finished Acoustical Wall Panel) Sample 1.xls



NVLAP LAB CODE 200132-0

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NRC-220303-874 (KINA Gray High Density Finished Acoustical Wall Panel) Sample 1 data pages

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Corporate Innovation Center

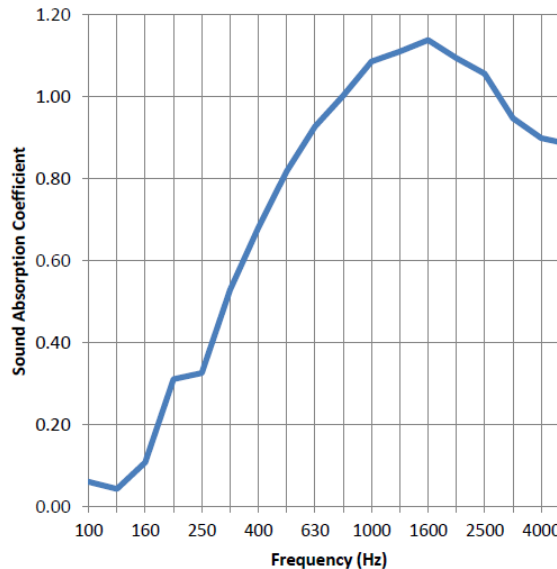
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DATA REPORT

Sound Absorption
ASTM C 423

Test Date:	3/4/2022
Test Number:	NRC - 220303
Client:	Knauf Insulation North America - Will Zhou

Frequency (Hz)	Sound Absorption Coefficient
50	0.00
63	-0.01
80	0.04
100	0.06
125	0.04
160	0.11
200	0.31
250	0.33
315	0.53
400	0.68
500	0.82
630	0.93
800	1.00
1000	1.09
1250	1.11
1600	1.14
2000	1.09
2500	1.06
3150	0.95
4000	0.90
5000	0.88
6300	0.86
8000	0.83



Noise Reduction Coefficient (NRC): 0.85

Average (250,500,1000,2000 Hz): 0.8305

Sound Absorption Average (SAA): 0.84

Average of sound absorption coefficients for 1/3-octave bands from 200 - 2500 Hz.

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Data Page 2 of 2 Filename: NRC-220303-874 (KINA Gray High Density Finished Acoustical Wall Panel) Sample 1.xls



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