CONFIDENTIAL

TEST REPORT ON DETERMINATION OF RANDOM INCIDENCE SOUND ABSORPTION COEFFICIENT OF ACOUSTICAL PERFORATED GYPSUM BOARD PANEL

NO. NVH/4831/2014-15/590(V-2)-1 **DATE: 06.10.2014**

1.0 CUSTOMER NAME : Gyptech Systems
C-17, Miraj Apartments, Near Natubhai Centre
Race Course (W), Vadodara-390007

2.0 LETTER REF. : E-mail dated 11th September 2014

3.0 TEST COMPONENT DETAILS : Acoustical perforated gypsum board panel of 12.5 mm with following details given by customer:

- Hole Size : 10 mm
- Perforation Rate : 18 %
- Perforation Style & pattern : Square style and Matrix pattern
- Size of one panel : Acoustical perforated gypsum board panel of 595 mm X 595 mm
- Absorbing material : 40 GSM Non-woven fabric
- Type of mounting : Type E mounting with 300 mm air gap

4.0 TEST REQUIREMENTS :

Measurement of Random incidence sound absorption coefficient on above mentioned Acoustical perforated gypsum board panel with 300 mm air gap as per ASTM C-423 in reverberation chamber.

5.0 TEST PROCEDURE :

The Random incidence sound absorption coefficient measurement was carried out on Acoustical perforated gypsum board panel with 300 mm air gap as per ASTM C-423 in reverberation chamber. The test sample was mounted on the floor with Type E mounting. Please refer figure 1 for test set up and test component details. The measurement was carried out at temperature 25^{0}C +/- 1^{0}C and humidity 70%.

6.0 DATE OF EVALUATION :

The Random incidence sound absorption coefficient measurement was carried out on above mentioned Acoustical perforated gypsum board panel on 27th September 2014.

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Website : www.araiindia.com

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7.0 INSTRUMENTATION :

Sr. No	Instrument Name	Type / Model No	Make	Calibrated on	Calibration due on
1	Multi-channel Data Acquisition System	3560 D	Bruel & Kjaer, Denmark	30-Jul-14	30-Jul-15
2	½" Random Incidence Microphone	378B20 (Sr. No. 109015)	PCB, USA	10-Jun-14	10-Jun-15
3	Power Amplifier	2716	Bruel & Kjaer, Denmark	-	-
4	Omni directionnel sound source	Omni power 4296	Bruel & Kjaer, Denmark	-	-
5	Reverberation room	110 m^3	-	-	-

8.0 TEST RESULTS :

8.1 Table 1 shows the average values for random incidence sound absorption coefficient of Acoustical perforated gypsum board panel along with 300 mm air gap in the frequency range of 125 Hz to 5000 Hz.

8.2 Figure 2 shows the plot for random incidence sound absorption coefficient of Acoustical perforated gypsum board panel along with 300 mm air gap in the frequency range of 125 Hz to 5000 Hz.

9.0 CONCLUSIONS :

The Noise Reduction Coefficient (NRC) and Sound Absorption Average(SAA) is calculated as per ASTM C- 423	
Noise Reduction Coefficient (NRC)	**0.63**
Sound Absorption Average(SAA)	**0.59**

REPORT PREPARED BY:	REVIEWED BY:	APPROVED BY:
MS. M. P. JOSHI	S. K. JAIN	N. V. KARANTH
DY. MANAGER	MANAGER	SR. DEPUTY DIRECTOR & HOD

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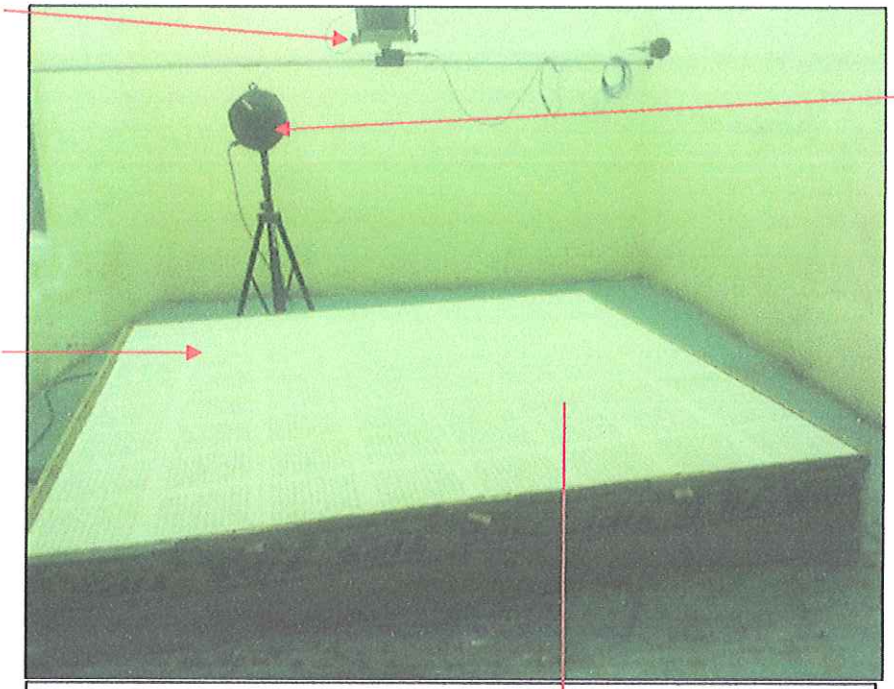
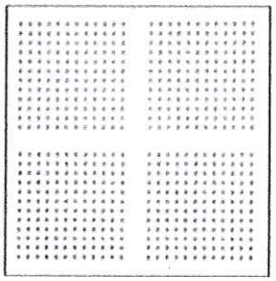
Microphone with rotating boom

Omni directional source

Acoustical perforated gypsum board panel with square style and matrix pattern



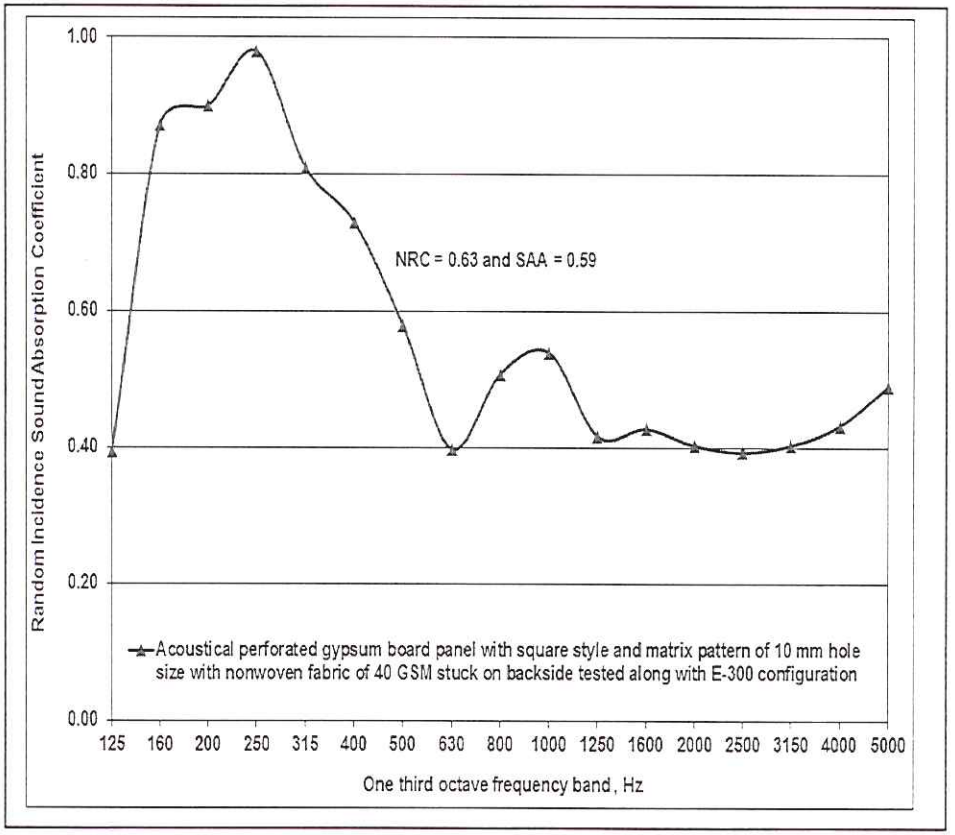


PRODUCT DATA	
Product	Accoustical Perforated Gypsum Board Panel
Perforation Style	Square
Pattern	Matrix
Hole Size	10 mm
Size	595mm X 595 mm
Perforation Rate	18 %
Center	20.80 mm
Thickness	12.5 mm
Surface Finish Visible	Paper Base
Core	Gypsum Plaster
Edge Profile	Square
Backing	40 GSM Non Woven Fabric

Figure 1: Test set up for mounting and testing of Acoustical perforated gypsum board panel in reverberation chamber

Table 1 and Figure 2: Values and Plot for Random incidence sound absorption coefficient of Acoustical perforated gypsum board panel with nonwoven fabric of 40 GSM stuck on backside tested along with E-300 configuration

One third octave frequency, Hz	Random Incidence Sound Absorption Coefficient
125	0.39
160	0.87
200	0.90
250	0.98
315	0.81
400	0.73
500	0.55
630	0.40
800	0.51
1000	0.54
1250	0.42
1600	0.43
2000	0.40
2500	0.39
3150	0.40
4000	0.43
5000	0.49



Note: (*Measurement uncertainty for Random incidence sound absorption coefficient evaluation is ±7% at 95.45% confidence level and k = 2 in the frequency range 125 Hz to 5000 Hz)

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