



**CONFIDENTIAL**

**TEST REPORT ON DETERMINATION OF  
RANDOM INCIDENCE SOUND ABSORPTION COEFFICIENT OF  
CARA-CB SAMPLE OF 12 MM THICKNESS**

**ULR-TC508524050000195F**  
**NVH/3100021196/2024-25/0195**

**17<sup>th</sup> July 2024**

- 1.0 CUSTOMER NAME :** SENSES AKUSTIK PRIVATE LIMITED  
Plot No.102, New GIDC,  
Gundlav, Valsad, Gujarat - 396035
- 2.0 LETTER REF. :** E-mail dated 17<sup>th</sup> June 2024
- 3.0 TEST COMPONENT DETAILS :** Test sample details given by customer is as follows:
- 3.1 Sample Name :** Cara-CB sample
- 3.2 Sample Composition :** Base - Polyester foam + Finish - Fabrics
- 3.3 Total GSM :** 3000 GSM (Measured at ARAI)
- 3.4 Total Thickness :** 12 mm
- 3.5 Size of one sample :** 1200 mm X 900 mm
- 3.6 Total sample received and tested :** 5 Nos.
- 3.7 Date of receipt of sample :** 12<sup>th</sup> July 2024
- 4.0 TEST REQUIREMENTS :**
- Measurement of random incidence sound absorption coefficient on above mentioned test sample as per ASTM C-423 / ISO 354 in reverberation chamber.
- 5.0 TEST PROCEDURE :**
- The random incidence sound absorption coefficient measurement was carried out on above mentioned test sample as per ASTM C-423 / ISO 354 in reverberation chamber. The test sample of size 2.4 m x 2.25 m was directly placed on the floor with type A mounting. Please refer figure 1 for test set up and test component details. The random incidence sound absorption coefficient test was carried out three times on same sample in reverberation chamber and average value reported. The measurement was carried out at temperature 25°C ± 1°C, humidity 54% and barometric pressure 938 mbar.
- 6.0 DATE OF EVALUATION :**
- The random incidence sound absorption coefficient measurement was carried out on above mentioned test samples on 16<sup>th</sup> July 2024.

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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	04-Aug-23	04-Aug-24
2	½" Random Incidence Microphone	378C20	PCB, USA	04-Aug-23	04-Aug-24
3	Power Amplifier	2716	Bruel & Kjaer, Denmark	Does not require separate calibration as it is driven by data acquisition system	
4	Omni directionnel sound source	Omni power 4296	Bruel & Kjaer, Denmark		
5	Reverberation room	80 m <sup>3</sup> and 110 m <sup>3</sup>	-	-	-

**8.0 TEST RESULTS :**

Table 1 and figure 2 shows the average values and plot for random incidence sound absorption coefficient of Cara-CB sample consist of Base - Polyester foam + Finish - Fabrics, total 3000 GSM and 12 mm thickness in the frequency range of 100 Hz to 5000 Hz.

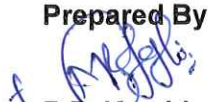
**9.0 CONCLUSIONS :**

The Noise Reduction Coefficient (NRC) is given by the average value of sound absorption coefficient at 250 Hz, 500 Hz, 1000 Hz and 2000 Hz is calculated as per ASTM C- 423.

The weighted sound absorption coefficient ( $\alpha_w$ ) and sound absorption class are calculated as per ISO 11654 are given below:

Cara-CB sample consist of Base - Polyester foam + Finish - Fabrics, total 3000 GSM and 12 mm thickness	
Noise Reduction Coefficient (NRC)	0.50
Weighted Sound Absorption Coefficient ( $\alpha_w$ )	0.35
Sound Absorption Class	Class D

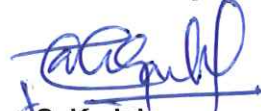
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Sr. Dy. Director & HOD

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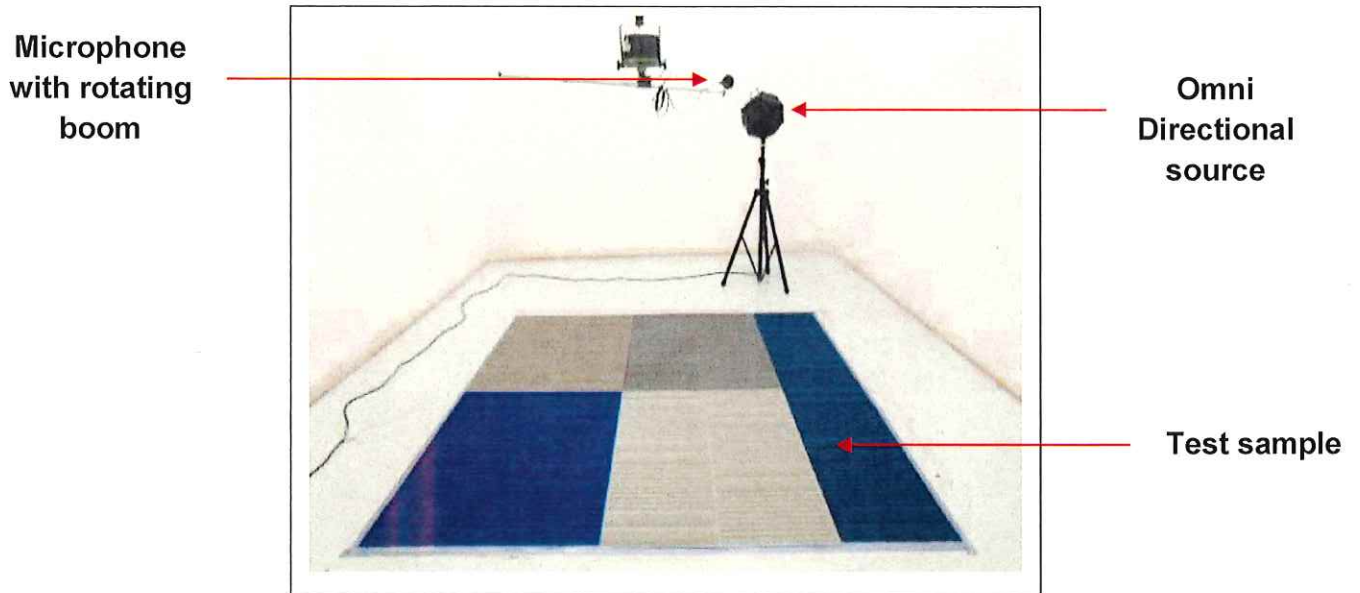


Figure 1: Test set up for mounting and testing of Cara-CB sample of 12 mm thickness in reverberation chamber



17<sup>th</sup> July 2024

Table 1 and Figure 2: Values and plot for random incidence sound absorption coefficient of Cara-CB sample consist of Base - Polyester foam + Finish - Fabrics, total 3000 GSM and 12 mm thickness tested at one third octave frequencies

One third octave frequency, Hz	Random Incidence Sound Absorption Coefficient (-)	Standard Deviation
100	0.01	0.00
125	0.01	0.01
160	0.02	0.01
200	0.08	0.02
250	0.10	0.00
315	0.17	0.03
400	0.24	0.01
500	0.35	0.01
630	0.45	0.02
800	0.57	0.01
1000	0.68	0.03
1250	0.75	0.02
1600	0.79	0.03
2000	0.81	0.01
2500	0.82	0.02
3150	0.79	0.01
4000	0.76	0.01
5000	0.75	0.00

