



सी एस आई आर – राष्ट्रीय भौतिक प्रयोगशाला CSIR-NATIONAL PHYSICAL LABORATORY

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्)

(Council of Scientific and Industrial Research)

(राष्ट्रीय मापकी संस्थान (एनएमआई), सदस्य बीआईपीएस एवं हस्ताक्षरकर्ता सीआईपीएम – एमआरए)

(National Metrology Institute (NMI), Member BIPM and Signatory CIPM - MRA)

डॉ. के. एस. कृष्णन् मार्ग, नई दिल्ली-110012, भारत

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परीक्षण रिपोर्ट TEST REPORT

Sound Absorbing Material

दिनांक/ Date	रिपोर्ट संख्या / Report No.	पृष्ठ / Page	पृष्ठों की संख्या / No. of Pages
11-06-2025	25050210/D1.07/T-017	1	2

- Tested for : M/s 4Mann Industries Pvt. Ltd.,
EPIP, Kartholi, Bari Brahmana,
Jammu-181133
Customer Ref. No.: NIL;
Dated: 26/05/2025
- Description and identification of items : 4 mm thick Aluminium Composite Panel – 4FR-B1
Comprises of front aluminium panel coated with 0.50 mm with PVDF coating and back aluminium panel coated with 0.50 mm with PE coating; infilled with Mineral core (Size: 12 m²)
- Environmental conditions : Temperature : (23.0 ± 5.0) °C
Relative Humidity : (50.0 ± 20.0) %
- Standards used with associated measurement uncertainty : Dual channel Acoustic Analyzer with Working Standard Microphone
±0.4 dB to 0.6 dB (k = 2)
- Metrological traceability of standards used : The standards used for test are traceable to National Standards which realize the units of quantities according to the International System of Units (SI).
- Principle/Methodology of test and test procedure number : Sound absorbing coefficient by diffuse field method: ISO 11654-1997/ IS: 8225-2018 “Measurement of Sound Absorption Coefficient in Reverberation Room” (Equivalent to ISO: 354-2003, ASTM C423-23)
Sub-Div # 1.07/Doc. 3/ TP # 01
- Results:
As requested by the customer, the material was tested only for its sound absorption coefficient by reverberation method as per IS: 8225–2018 under existing environmental conditions in a reverberation chamber of volume 273 m³, surface area 253 m² and average reverberation time of 6 sec. The chamber was of irregular shape and adequate diffusion was obtained by using suspended stationary diffusers.

परीक्षणकर्ता:

Tested by:

(Dr. Chitra Gautam)

जाँचकर्ता:

Checked by:

(Dr. Naveen Garg)

प्रभारी वैज्ञानिक:

Scientist-in-charge:

(Dr. Naveen Garg)

जारीकर्ता:

Issued by:

डॉ. श्रीनिवास राव रागम

Dr. Srinivasa Rao Ragam



28/6



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A loudspeaker with uniform spherical radiation was used as the source of sound suspended at a height of 2.5 m above the floor in one corner while the microphone was kept in different locations near the other corners of the room and at least 1 m away from any surface. The material was kept on **100 mm backing** so as to get an exposed sample area of 12.0 m².

Measurements were made by using 1/3-octave bands of random noise and several decay rates were determined for each of the microphone and loudspeaker positions. The sound absorption coefficient was calculated and the correction for boundary absorption was applied. The results were:

Frequency (Hz)	Sound Absorption Coefficient (α)	NRC
125	0.36	0.15
250	0.23	
500	0.10	
1000	0.12	
2000	0.14	
4000	0.27	

The reported uncertainty in measurement is $\pm 5\%$ which is at a coverage factor $k = 2$, which corresponds to a coverage probability of approximately 95% for normal distribution.

8. Date of Testing : 10-06-2025

9. Remarks : NIL

परीक्षणकर्ता:

Tested by:

(Dr. Chitra Gautam)

जाँचकर्ता:

Checked by:

(Dr. Naveen Garg)

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