



# राष्ट्रीय भौतिक प्रयोगशाला

(वैज्ञानिक एवं औद्योगिक अनुसंधान परिषद्)

## NATIONAL PHYSICAL LABORATORY

(Council of Scientific and Industrial Research)

Dr. K. S. Krishnan Marg, New Delhi - 110 012, INDIA

Phone : 91 - 11 - 4560 8441, 8589, 8610, 9447

Fax : 91 - 11 - 45608448

E - mail: cfct@nplindia.org

Website: www.nplindia.org



## TEST REPORT ON

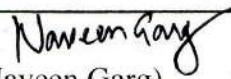
### SOUND ABSORBING MATERIAL

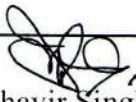
Date	Test Report No.	Page	No. of Pages
09-07-2013	13031564/D5.07/A/T-016	1	2


1. Tested for : M/s. Classic Gypsum  
Manglam, 1/1774, Khaki Bava Street,  
Nanpura, Surat-395 001  
Customer's Reference : Nil  
dated 19.03.2013
2. Description and Identification of Items : **12 mm thick 'Gpsonic' Fully perforated GRG Ceiling Panel (Glass Fibre Reinforced Gypsum)**
3. Environmental Conditions : Room Temperature : 28 °C  
Relative Humidity : 65% RH
4. Standard Used and Associated Uncertainty : Working Standard Microphone;  
**± 0.2 dB**
5. Traceability of Standards Used : The standards used are traceable to National Standards
6. Methodology of test and Test Procedure No. : Sound absorption coefficient by diffuse field method;  
**IS: 8225-1987 "Measurement of Sound Absorption Coefficient in Reverberation Room"**  
(Equivalent to ISO: 354-1985 and ASTM 423 -90 a)  
**Sub-Div#5.07/A/Doc.3/TP#14**

### 7. RESULTS

As requested by the party, the material was tested only for its sound absorption coefficient by reverberation method as per IS: 8225 - 1987 under existing environmental conditions in a reverberation chamber of volume 257 m<sup>3</sup>, surface area 240 m<sup>2</sup> and average reverberation time of 6 sec. The chamber was of irregular shape and adequate diffusion was obtained by using suspended stationary diffusers.

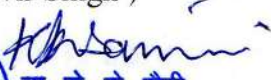
Tested by:   
(Mr. Naveen Garg)

Checked by:   
(Dr. Mahavir Singh)

Scientist-in-charge:   
(Dr. Mahavir Singh)

Issued by:



  
डा. के. के. सैनी  
Dr. K. K. Saini



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### SOUND ABSORBING MATERIAL

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Page  
2

No. of Pages  
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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 with 50 mm glass wool ( $48 \text{ kg/m}^3$ ) so as to get an exposed sample area of  $11.8 \text{ m}^2$ .

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 also applied. The results were:

Frequency (Hz)	Sound Absorption Coefficient	NRC
125	0.47	
250	0.61	
500	0.76	
1000	0.84	0.75
2000	0.74	
4000	0.69	

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

8. Date of Testing :07-05-2013

9. Remarks :NIL

Tested by: *Naveen Garg*  
(Mr. Naveen Garg)

Checked by: *[Signature]*  
(Dr. Mahavir Singh)

Scientist-in-charge: *[Signature]*  
(Dr. Mahavir Singh)

Issued by: *[Signature]*  
डा. के. के. सैनी  
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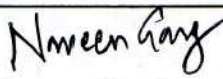
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Checked by:   
(Dr. Mahavir Singh)

Scientist-in-charge:   
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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 also applied. The results were :

Frequency (Hz)	Sound Absorption Coefficient	NRC
125	0.42	0.6
250	0.52	
500	0.67	
1000	0.71	
2000	0.62	
4000	0.52	

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

8. Date of Testing :07-05-2013

9. Remarks :NIL

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(Mr. Naveen Garg)

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*Dr. Mahavir Singh*

(Dr. Mahavir Singh)

Scientist-in-charge:

*Dr. Mahavir Singh*

(Dr. Mahavir Singh)

Issued by:



*Dr. K. K. Saini*  
डा. के. के. सेनी  
Dr. K. K. Saini