



The Building Test Centre

Fire Acoustics Structures

The Building Test Centre
British Gypsum Limited
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Loughborough
Leicestershire LE12 6NF
Tel 0115 945 1564
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Report Number BTC 10104A

ACOUSTIC TEST REPORT COVERING LABORATORY
SOUND ABSORPTION TEST TO BS EN 20354: 1993, ISO
354-1985 ON A GYPTONE POINT 11 CEILING TILES ON
A 200mm HIGH FRAME. (RATED IN ACCORDANCE
WITH EN ISO 11654:1997).

Test Date: 22nd April 1996

Customer:

British Gypsum Ltd
East Leake
Loughborough
Leics
LE12 6HT

Gyproc AB
Box 505
S-201 25
Malmo
SWEDEN

Customer: British Gypsum Limited and Gyproc AB

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TESTING
No. C29C
026651

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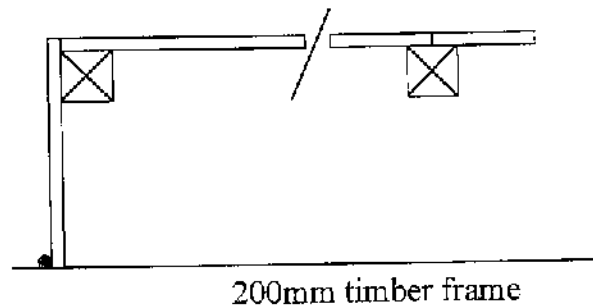
Fire Acoustics Structures

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ACOUSTIC TEST REPORT COVERING LABORATORY SOUND ABSORPTION TEST TO BS EN 20354:1993, ISO 354-1985 ON A GYPTONE POINT 11 CEILING TILES ON A 200mm HIGH FRAME. (RATED IN ACCORDANCE WITH EN ISO 11654:1997).

DESCRIPTION

13mm Gyptone Point 11 ceiling tiles manufactured by Gyproc AB, Sweden, with round full depth slots over the entire surface. The holes occupied 14% of the total face area. Adhered to the back of the tile was a porous tissue. The ceiling tiles were placed over a 200mm airspace over the concrete floor of the reverberation chamber. The specimen test frame was constructed from high density chipboard with 45mm x 45mm timber battens located at 595mm centres running in one direction. The frame was sealed to the chamber floor with Gyproc Sealant. The perimeter edges of the boards were sealed using Gyproc adhesive tape.



The descriptions of individual components making up the test specimen were provided by the customer and were checked for accuracy wherever possible.

RESULT

$$\alpha_w = 0.65 (L)$$

$$NRC = 0.65$$

Test conducted in accordance with BS EN 20254:1993 and ISO 354:1985. The practical sound absorption coefficient, α_w calculated in accordance with EN ISO 11654:1997. The Noise Reduction Coefficient, NRC calculated in accordance with ASTM C423-90a 1992.

Customer: British Gypsum Limited and Gyproc AB

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TESTING
No. 0296
0296SI

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MATERIALS

Gyptone Point 11 Ceiling Tiles with acoustic tissue

Nominally 13mm (thick) x 595 x 595mm Gyptone Point 11 ceiling tiles manufactured by Gyproc AB, Malmö, Sweden.

Actual surface density: 8.05 kg/m²

TEST PROCEDURE

For each of the three microphone locations and the two loudspeaker positions, 2 decays are taken for each combination, making a total of 12 decays. The two loudspeaker positions are placed in diagonally opposite corners of the room - one on the floor and one in the upper corner. Broad band pink noise and third-octave band filters in real time mode are used to make simultaneous measurements for all frequency bands. The test procedure used was 20354 issue 1. See appendix for further information.

Report Author:

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Report Date: 6 May, 1998

Customer: British Gypsum Limited and Gyproc AB

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TESTING
No. C296
C29651

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LABORATORY SOUND ABSORPTION TEST - BS EN ISO 20354:1993

Test Code: **R10104Ae**

Specimen Area, S:	10.8 m²	Temperature, deg.C:	16.2	16.2
Room Volume, m ³ :	196 m³	Rel. Humidity, %RH:	62.7	62.1

(Check environmental requirements - Table 2 of standard)

Freq Hz	Plane Absorber				α_s	α_{pi}	U.D.
	Empty		Specimen				
	T10, Sec	T20, Sec	T10, Sec	T20, Sec			
50	22.25	24.19	7.33	8.67	0.22		
63	17.20	21.13	6.41	7.63	0.25	0.30	
80	13.92	16.34	4.77	5.20	0.39		
100	11.12	12.56	3.75	4.06	0.49		
125	10.48	11.69	4.03	4.05	0.48	0.55	
160	8.09	8.88	2.94	2.98	0.66		
200	10.29	10.22	2.95	3.17	0.64		
250	10.48	11.89	3.03	3.11	0.70	0.70	-0.25
315	10.62	11.54	2.85	3.05	0.71		
400	9.86	9.33	2.68	2.64	0.80		
500	6.80	7.02	2.60	2.46	0.78	0.75	-0.10
630	7.34	7.49	2.54	2.64	0.72		
800	7.89	7.92	2.97	2.77	0.69		
1 000	7.73	7.87	2.88	2.99	0.61	0.65	0.00
1 250	7.41	7.41	2.70	2.80	0.65		
1 600	6.52	6.26	2.74	2.71	0.62		
2 000	5.77	5.61	2.59	2.68	0.57	0.60	0.05
2 500	4.83	4.98	2.59	2.54	0.57		
3 150	4.06	4.02	2.28	2.29	0.55		
4 000	3.04	3.11	2.04	1.97	0.55	0.55	0.00
5 000	2.58	2.51	1.78	1.73	0.53		
6 300							
8 000							
10 000							

Single Figure Rating
EN ISO 11654: 1997

$$\alpha_{00} = 0.65 (L)$$

Total U. Dev. **0.05**

It is strongly recommended to use this single figure rating in combination with the complete sound absorption coefficient curve that can be obtained on request

Tested By: A. Muband.
Checked By: P. Stone

Test Procedure: 20354/issue 1
Worksheet: MSOFFICE\EXCEL\20354\20354.XLS

Customer: British Gypsum Limited and Gyproc AB

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TESTING
No. 0293
0296SI

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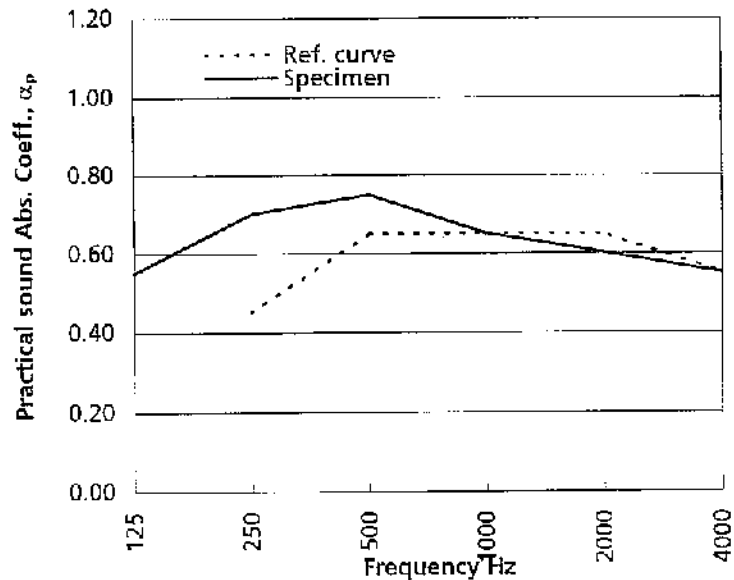
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 Tel: 0115 945 1554
 Fax: 0115 945 1557

Test Code:
R10104Ae
 Test Date:
05/05/98

Freq, Hz	Ref. curve	Specimen
125		0.55
250	0.45	0.70
500	0.65	0.75
1000	0.65	0.65
2000	0.65	0.60
4000	0.55	0.55



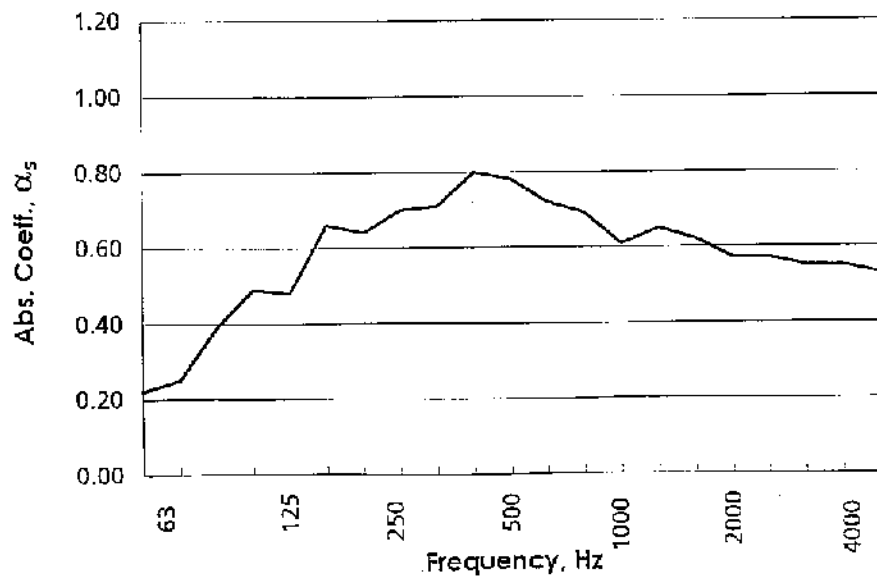
Rating according to

EN ISO 11654: 1997

$$\alpha_m = 0.65 \text{ (L)}$$

It is strongly recommended to use this single figure rating in combination with the complete sound absorption coefficient curve that can be obtained on request

Freq, Hz	α_s
50	0.22
63	0.25
80	0.39
100	0.49
125	0.48
160	0.66
200	0.64
250	0.70
315	0.71
400	0.80
500	0.78
630	0.72
800	0.69
1 000	0.61
1 250	0.65
1 600	0.62
2 000	0.57
2 500	0.57
3 150	0.55
4 000	0.55
5 000	0.53
6 300	



Customer: British Gypsum Limited and Gyproc AB

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TESTING
 No. 0296
 0296SI

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TEST METHOD AND CONDITIONS

The test room with a volume of 196m³ is treated with 16 perspex diffusers of approximately 1220mm x 1220mm dimensions positioned randomly throughout the room.

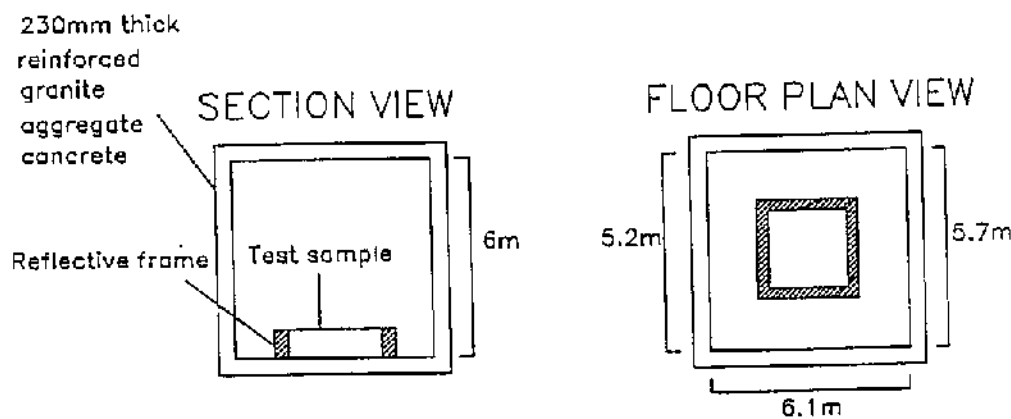
The test specimen is of rectangular shape with an area between 10 and 12 m² placed in the test room so that no part of it is closer than 1m to any edge of the boundary of the room. The edges of the test specimen are tightly enclosed by a reflective frame, sealed to the floor and protruding above the surface of the test specimen.

The equivalent sound absorption area is determined by the measured reverberation times and used to calculate the absorption coefficients.

The repeatability of measurement for low absorption, r_1 , and high absorption, r_2 , are

Freq Hz	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150
r_1	.035	.064	.018	.018	.035	0	.018	0	.035	.028	.028	.021	.053	.066	.033	.048
r_2	.056	.077	.085	.068	.146	.106	.213	.205	.2	.116	.051	.218	.109	.068	.048	.06

The figure below shows the section and floor plan view of the test room.



Customer: British Gypsum Limited and Gyproc AB



TESTING
 No. 0298
 029601

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