The Building Test Centre
British Gypsum Limited
East Leake, Loughborough
Leicestershire, LE12 6NP
Tel. 0115 945 1564
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NAMAS
TESTING
N° 0296, 0296SI

the building test centre

Report Number BTC 3067A

ACOUSTIC TEST REPORT COVERING LABORATORY SOUND ABSORPTION TEST TO BS EN 20354: 1993 ON 12.5mm GYPROC BIG QUATTRO 72B CEILING TILES ON A 45mm X 45mm TIMBER BATTEN FRAME WITH 50mm GYPGLAS 1200 BETWEEN THE BATTENS.

Test Date: 17th June 1996

Customer:

Gyproc AB.
Box 505
S-201 265
Malmo
Sweden

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DESCRIPTION

12.5mm Gyproc BIG Quattro 72B ceiling tiles manufactured by Gyproc AB, Sweden, with full depth square holes over the surface. Adhered to the back of the board was a porous tissue. The open area of the holes was 5.8% of the total face area. The ceiling tiles were placed over a timber frame constructed from 45mm x 45mm timber battens at 600mm centres on the floor of the chamber. 50mm Gypglas 1200 was placed between the battens. The frame was sealed to the chamber floor with Gyproc sealant. The perimeter edges of the boards were sealed using Gyproc adhesive tape.

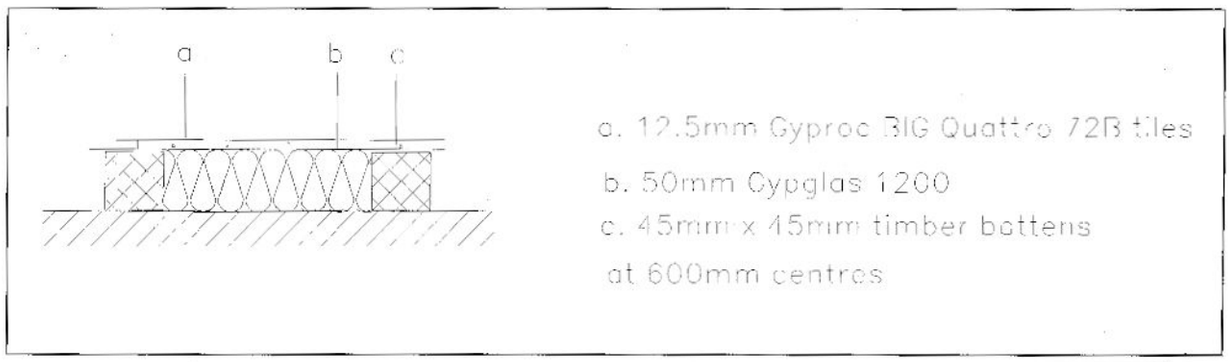

Figure 1: Section through test sample

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

RESULT

For full test results see tabulated data on page 4.

Test conducted in accordance with BS EN 20354:1993 and ISO 354:1985.
NRC calculated in accordance with ASTM C423-90a 1992.

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MATERIALS

Gyproc BIG Quattro 72B ceiling tiles

Nominally 12.5mm (thick) x 1200 (wide) x 2400mm (long) Gyproc BIG Quattro ceiling tiles manufactured by Gyproc AB.

Actual surface density:	8.38 kg/m^2
Actual thickness:	12.62 mm
Board identification number:	
Nominal moisture content:	

Surface density calculated using actual weight of boards used in the test specimen.

Insulation

50mm Gypglas 1200 manufactured by British Gypsum Limited.

Actual surface density:	0.67 kg/m^2

TEST PROCEDURE

For each of 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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Head of Laboratory:

Paul Royle B.Tech.(Hons.), M.Sc., MIOA
Executive Manager

Report Date: 15 July 1996

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S O U N D A B S O R P T I O N T E S T

TEST CODE R3067A Test Date 17-06-96

Sample: Gyproc BIG Quattro 72B tiles on 45mm battens with 50mm Gypglas.

EMPTY ROOM : Air. Temp. 20.4 C : Rel. Hum. = 57.3 %
WITH SAMPLE: Air. Temp. 20.4 C : Rel. Hum. = 57 %

SAMPLE AREA = 10.8 M^2

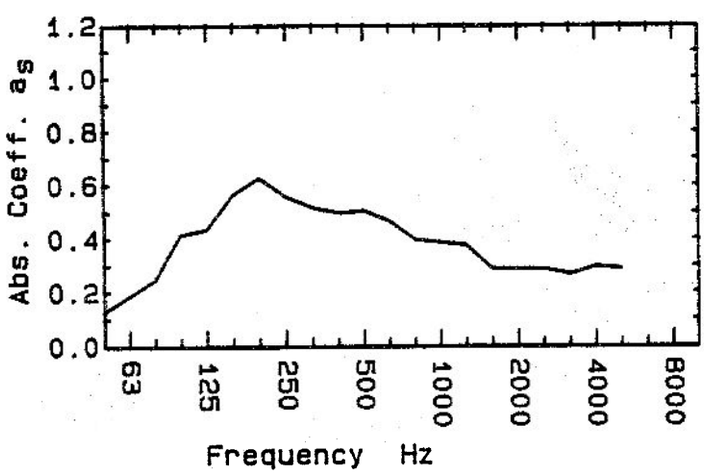
FREQ Hz	T20* empty	T20* sample	ABS COEFF a_s	ASTM values
50	22.49	11.10	0.13	
63	22.56	9.02	0.19	
80	15.28	6.65	0.25	
100	12.90	4.52	0.42	
125	11.28	4.18	0.44	0.44
160	9.14	3.28	0.57	
200	10.76	3.23	0.63	
250	11.97	3.65	0.56	0.56
315	11.35	3.76	0.52	
400	9.06	3.54	0.50	
500	6.97	3.16	0.51	0.51
630	7.56	3.40	0.47	
800	7.82	3.77	0.40	
1000	7.68	3.77	0.39	0.39
1250	7.31	3.74	0.38	
1600	6.17	3.85	0.29	
2000	5.71	3.64	0.29	0.29
2500	4.94	3.32	0.29	
3150	4.01	2.92	0.27	
4000	3.16	2.39	0.30	0.30
5000	2.58	2.05	0.29	

* Average of 12 decays

NRC (ASTM C423-90a) = .45

Tested by A. Hall Checked by R J Lowe

Test Standard :- BS EN 20354:1993
Test Procedure :- 20354 issue
Program Name :- REV4B
Plot Program :- ABSPLOT2



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TEST METHOD AND CONDITIONS

The test room with a volume of 196m^3 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 m^2 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.