

Report Number BTC 3313A

**ACOUSTIC TEST REPORT COVERING
LABORATORY SOUND INSULATION TEST TO
BS EN ISO 140-3 : 1995 ON A 550mm GYPROC
TWIN FRAME HIGH PERFORMANCE WALL WITH
THREE LAYERS OF 15mm GYPROC SOUND BLOC
EACH SIDE ALSO WITH ONE LAYER OF 100mm
GYPLAS 1000 IN THE CAVITY.**

report ammended 7th November 1997

Test Date: 18th August 1997

Customer:

British Gypsum Limited
Head Office
East Leake
Loughborough
Leicestershire
LE12 6HX

Customer: **British Gypsum Ltd.**

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TESTING
No 0296
0296SI

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**ACOUSTIC TEST REPORT COVERING LABORATORY SOUND INSULATION TEST TO
BS EN ISO 140-3 : 1995 ON A 550mm GYPROC TWIN FRAME HIGH PERFORMANCE
WALL WITH THREE LAYERS OF 15mm GYPROC SOUNdBLOC EACH SIDE ALSO WITH
ONE LAYER OF 100mm GYPGLAS 1000 IN THE CAVITY.**

DESCRIPTION

Two independent metal frames were constructed 272mm apart. Each frame comprised of Gyproc 94C90 channel fixed at the head and base of the test aperture at 300mm staggered centres. Gyproc 92S12 studs were set at 600mm centres between the head and base channel. The metal frameworks were clad on the outside with three layers of 15mm Gyproc SoundBloc. The inner layer was fixed with 25mm Gyproc Jack point screws at 300mm centres around the perimeter, the middle layer boards with 41mm Gyproc Jack point screws at 300mm centres around the perimeter, the outer layer boards with 60mm Gyproc Jack Point screws at 300mm centres at intermediate stud positions and also around the perimeter. One layer of 100mm Gypglas 1000 was placed in the cavity. Finally, the perimeter of the partition was sealed with Gyproc sealant and Tri-line treatment was applied to the aperture on the T1 side.

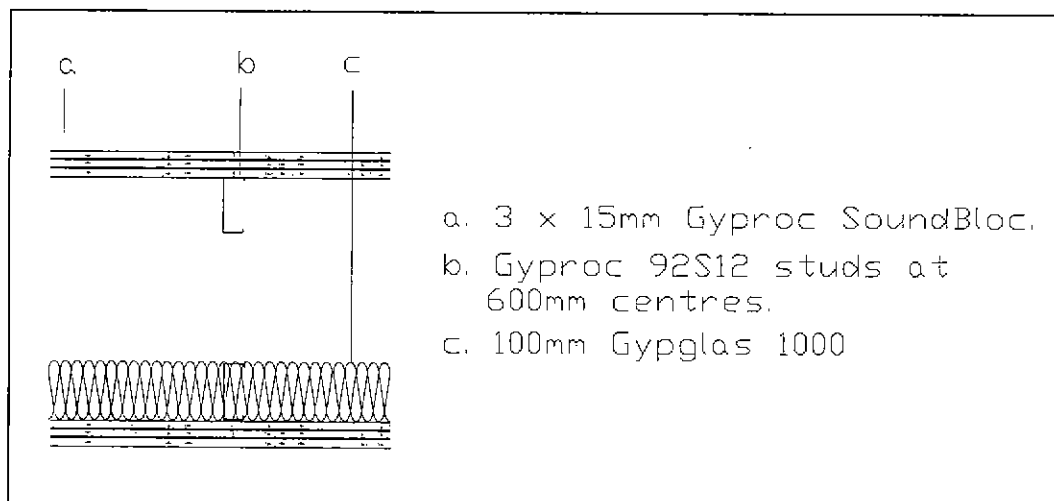


Figure 1: Section through test sample

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

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RESULTS

Weighted Airborne Sound Reduction Index

$R_w (C;Ctr) = 75 (-2;-6) \text{ dB}$

For full tabulated data see pages 6 and 7.

Additional Results

Frequency (Hz)	R (dB)
31.5	35.4
40	31.7

Test conducted in accordance with BS EN ISO 140-3: 1995
Rated in accordance with BS EN ISO 717/1 :1997

MATERIALS

15mm Gyproc SoundBloc

Nominally 15mm (thick), 1200mm (wide), 2400mm (long) Gyproc SoundBloc manufactured by British Gypsum Ltd.

Actual surface density: 12.78 kg/m²
Actual thickness: 14.88 mm
Board identification number: 27 351 6
Nominal moisture content: -

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

Metal components

- (i) Gyproc 92S12 metal studs and 94C90 channel manufactured using the Ultrasteel process from hot dipped galvanised mild steel.

All metal components supplied by British Gypsum Limited.

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Fasteners

25mm Gyproc Jack point screws.
41mm Gyproc Jack point screws.
60mm Gyproc Jack point screws.

All fasteners supplied by British Gypsum Limited.

Insulation

100mm Gypglas 1000 glass mineral wool roll manufactured by British Gypsum Isover Ltd.

Actual surface density: 1.08 kg/m²

Surface density calculated using the actual weight of the insulation.

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TEST PROCEDURE

The test specimen (2.4 m x 3.6 m) was constructed in a wall dividing two reverberant rooms of approximately 62m³ and 98m³. The accuracy of the test method conforms to BS EN 20140-2: 1993, the test procedure used was 140/3 issue 1. Broad-band white noise was used to measure the level differences and broad-band pink noise was used to measure the reverberation times. Third octave band pass filters were used in real time mode. See appendix for further information.

Report Author:


Arshad Mahmood BSc., GradInstP
Senior Technologist

Head of Laboratory:


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

Report Date: 21 August 1997

Customer : **British Gypsum Ltd.**

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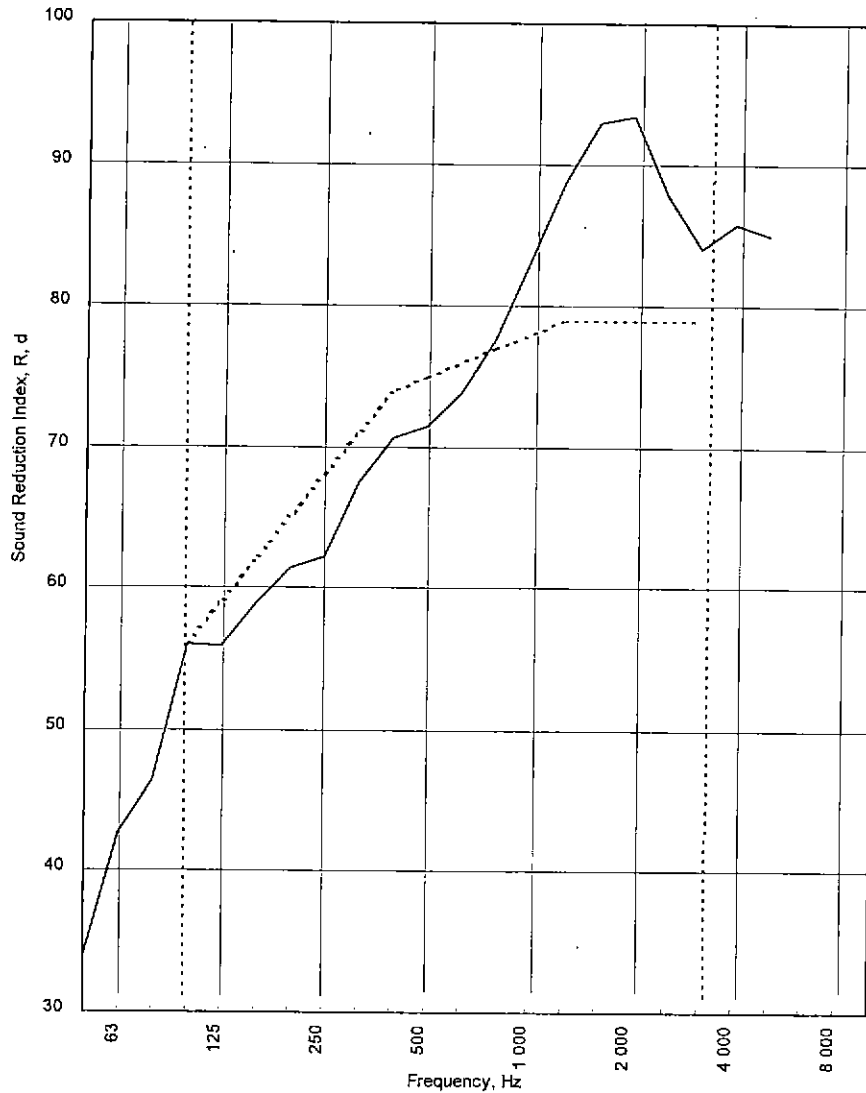
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Test Code:
H3313BA
Test Date:
18/08/97

Freq. Hz	R dB
50	33.9
63	42.7
80	46.5
100	56.0
125	55.9
160	58.9
200	61.4
250	62.2
315	67.4
400	70.6
500	71.5
630	73.8
800	77.7
1 000	83.2
1 250	88.8
1 600	92.9
2 000	93.4
2 500	87.8
3 150	84.0
4 000	85.7
5 000	84.9
6 300	84.9
8 000	83.8
10 000	80.7



..... Curve of reference values (ISO 717-1)

Rating according to	R_w (C;Ctr) = 75 (-2;-6) dB		
Evaluation based on laboratory measurement results obtained by an engineering method:	$C_{90-3150} = -5$ dB	$C_{50-5000} = -4$ dB	$C_{100-5000} = -1$ dB
	$C_{tr,50-3150} = -18$ dB	$C_{tr,50-5000} = -18$ dB	$C_{tr,100-5000} = -6$ dB

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LABORATORY AIRBORNE SOUND INSULATION TEST - BS EN ISO 140-3:1995

Test Code: **H3313BA**

Test Date: **18/08/97**

Specimen Area, S =	8.64 m²	Room T2	Room T1
		Room Volume, m ³ :	98 62
		Temperature, deg.C:	23 23
		Rel. Humidity, %RH:	67 67

Freq Hz	Test Room T2 to Test Room T1						R dB	U.Dev. dB	R 1/1Oct dB
	Source dB	Rec. (uc) dB	Bgrnd dB	Rec. (corr) dB	Rev.time Sec	Corr. dB			
50	86.9	50.7	13.1	50.7	0.67	-2.3	33.9		
63	87.6	41.5	7.0	41.5	0.52	-3.4	42.7		37.9
80	89.6	41.3	4.1	41.3	0.76	-1.8	46.5		
100	99.0	41.8	11.9	41.8	0.88	-1.2	56.0		
125	104.1	47.7	6.3	47.7	1.03	-0.5	55.9	3.1	56.7
160	109.2	50.1	6.4	50.1	1.09	-0.2	58.9	3.1	
200	114.5	53.3	17.3	53.3	1.21	0.2	61.4	3.6	
250	114.1	51.3	15.7	51.3	1.01	-0.6	62.2	5.8	63.0
315	113.2	45.5	13.0	45.5	1.06	-0.3	67.4	3.6	
400	110.6	39.8	15.6	39.8	1.09	-0.2	70.6	3.4	
500	107.4	35.4	16.3	35.4	1.02	-0.5	71.5	3.5	71.8
630	104.9	31.1	17.1	30.9	1.09	-0.2	73.8	2.2	
800	104.6	27.4	15.2	27.1	1.21	0.2	77.7		
1 000	103.0	21.0	12.6	20.3	1.30	0.5	83.2		81.1
1 250	102.2	15.8	12.8	14.5	1.49	1.1	88.8		
1 600	104.6	14.2	11.9	12.9	1.51	1.2	92.9		
2 000	105.5	14.8	11.6	13.5	1.58	1.4	93.4		90.6
2 500	103.4	17.3	8.8	16.6	1.46	1.0	87.8		
3 150	102.0	19.0	9.3	18.5	1.30	0.5	84.0		
4 000	100.6	17.0	12.5	15.7	1.39	0.8	85.7		84.8
5 000	97.1	14.0	12.5	12.7	1.30	0.5	84.9		
6 300	95.2	11.8	11.7	10.5	1.20	0.2	84.9		
8 000	94.4	11.4	11.5	10.1	1.03	-0.5	83.8		82.8
10 000	92.2	11.4	11.4	10.1	0.83	-1.4	80.7		

Single Figure Ratings	Rw	C	Ctr	Total U. Dev., dB	28.3
BS EN ISO 717-1: 1997	dB	dB	dB		
	75	-2	-6		
	(100-5000)	-1	-6		
	(50-3150)	-5	-18		
	(50-5000)	-4	-18		

Tested By: A. M. M. M.
 Checked By: [Signature]
 Test Procedure: 140/3/issue 1
 Worksheet: MSOFFICE\EXCEL\140\140_3_1.XLS

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TEST METHOD AND CONDITIONS

The source room (T2) was treated with six perspex diffusers of approximately 900mm x 1220mm. An omnidirectional loudspeaker sound source is placed near a back corner of the source room (T2), rotating at 1 rpm and at least 0.7m from any room boundary to satisfy Annex C of BS EN ISO 140-3: 1995. A stationary loudspeaker sound source is placed in the corner of the receiving room (T1) opposite the test specimen.

The average sound pressure level in each 1/3 octave band is measured using a rotating microphone boom, positioned such that the minimum distance between microphone and sound source is 1m and between microphone and room boundaries is 0.7m.

The rotating microphone has a sweep radius of at least 1m and is inclined in relation to the boundaries at an angle of at least 30° to the horizontal. The microphone has a traverse time of 32 seconds, and the sound pressure levels are averaged over 64 seconds which is equivalent to two complete sweeps of the microphone boom.

The equivalent absorption area of the receiving room is determined by producing the arithmetic average of six reverberation times and applying this to the Sabine formula.

The laboratory limit for measurement due to flanking is

Freq Hz	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
R ^{max}	32	44	39	55	56	59	64	63	70	77	84	88	91	92	94	97	96	98	96	90	87

The figures below show flanking and isolation treatments in the test chamber.

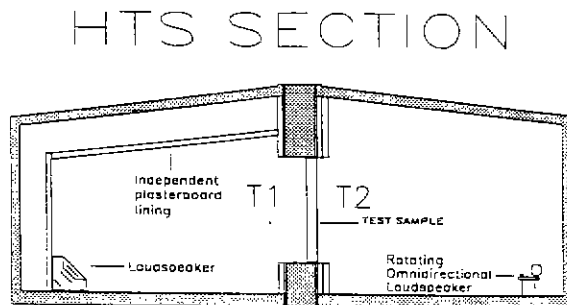


Figure 1 Chamber layout

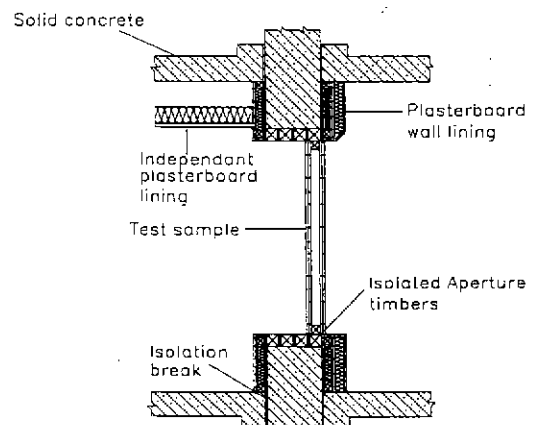


Figure 2 Flanking treatment applied to the chamber

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