

The Building Test Centre

Fire Acoustics Structures

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HORIZONTAL TEST SUITE

This test chamber can be used to test wall, doors, windows, panels, etc. It consists of two adjacent transmission rooms and has been designed to satisfy the British, European and international standard recommendations for measurement of sound transmission through walls. The rooms are similar in shape size and volume.

Test Method and Conditions

The source room (T2) was treated with six perspex diffusers of approximately 900mm x 1220mm. An omni-directional 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 twelve reverberation times and applying this to the Sabine formula.

The test specimen is installed in the aperture so that it finishes flush with the last timber in room T2 side to eliminate indirect transmission between rooms. The specimen is not installed so that the aperture depth ratio 2:1 is met as recommended in section 5.2.1 of BS EN ISO 140-3:1995. Laboratory tests have shown to prove the insignificance of this installation position on the test results

The laboratory limit for measurement due to flanking is (combined BTC 11709A, BTC13562EA, BTC 15398A and BTC 15829A)

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	45.0	46.9	58.5	62.4	62.9	67.7	71.2	77.2	84.2	92.0	97.7	101.5	103.8	97.6	102.4	104.8	101.8	102.9	98.7	96.4	96.2



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

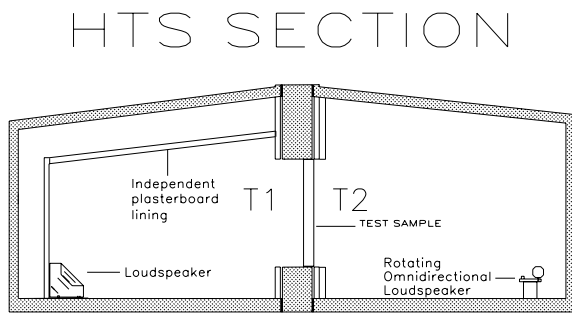


Figure 1 Chamber layout

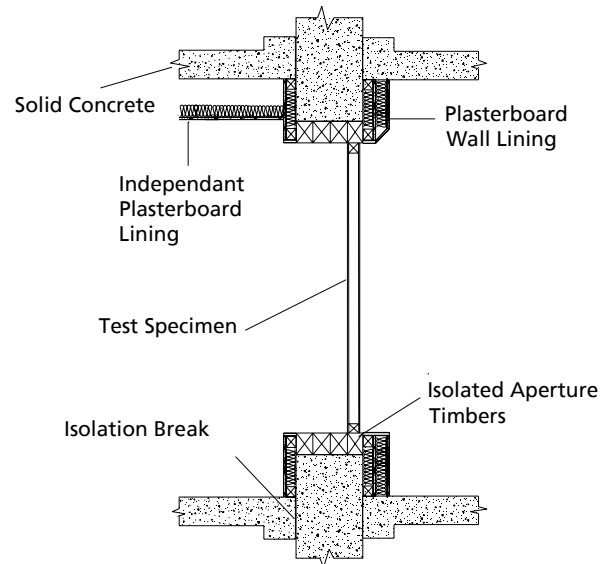


Figure 2. Flanking treatment applied to the chamber

Technical Data

Dimensions - Transmitting room: (T2) 4.9m x 5.9m x 3.5m **Volume T2:** 98m³
 Receiving room: (T1) 4.3m x 4.3m x 3.1m **Volume T1:** 62m³

Both rooms have non parallel walls and ceilings.

Walls and ceiling - 150mm thick dense reinforced concrete. The walls and ceiling are isolated from the test chamber, one side by an independent plasterboard lining.

Floor - 203mm thick concrete with grano screed and vibration mounted on three concrete pillars.

Vibration mountings - rubber studded mats.

Dividing wall - 630mm thick reinforced concrete, Vibration isolated from both rooms and also the floor. Concrete walls remedially treated with plasterboard lined frames both sides.

Test aperture - 2.4m x 3.6m

Access size - 2.5m x 0.88m and 2.11 m x 0.92m.