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# Aggregate Concrete Blocks Separating Walls - Acoustic Performance

## Introduction

The Building Regulations require a wall, which separates dwellings to resist the passage to sound. This data sheet gives guidance on the specification of blocks for separating walls, which if built correctly, meet the requirements indicated.

## Wall Types

Three basic masonry wall types can be identified which provide levels of sound insulation which meet Building Regulation requirements:

- Aggregate concrete block solid walls
- Aggregate concrete block cavity walls
- Walls with an aggregate concrete block solid core and associated freestanding lightweight panels.

The resistance of the first wall type to the transmission of airborne sound depends primarily upon mass. In the second wall type it depends primarily on mass, but also on isolation (provided by the cavity). In the third type, sound insulation is achieved partly by the mass of the masonry core and partly by the isolation provided by the freestanding lightweight panels.

## Factors Affecting Sound Transmission

Effective insulation against airborne sound depends, in most instances, on mass and airtightness and aggregate concrete blocks suitable to achieve the required wall masses for separating walls are widely available.

The weight of a wall is determined by the density and thickness of the materials used. The design, detailing and workmanship of the separating wall are all of paramount importance in achieving good performance.

The specification of the flanking wall, particularly the mass but also the disposition of openings, is of considerable importance in achieving good levels of sound insulation.

## Regulations

The regulations of England & Wales in Approved Document E call for the pre-completion testing of separating walls on a sampling basis. The method of rating performance also now includes a spectrum adaptation term  $C_{tr}$  designed for traffic noise, which places a disproportionate emphasis on low frequency performance. Approved Document E no longer contains prescriptive solutions, but guidance on what should perform adequately. Constructions, which have been shown from long experience to perform well are detailed overleaf. These would be subject to pre-completion testing in England & Wales.

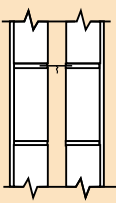
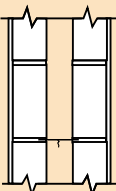
Alternatively, a system of Robust Details may be used, for which a registration needs to be made prior to use and which, if followed, avoids the need to for pre-completion testing. This has been established by Robust Details Ltd ([www.robustdetails.com](http://www.robustdetails.com)).

The Building Standards for Scotland continue to give prescriptive solutions for separating walls (see overleaf).

## Good Practice Points

- Airtightness** - Direct air paths must be avoided. Careful detailing and good workmanship are required.
- Wall Ties** - With cavity walls, the minimum number of flexible ties consistent with stability should be used.
- Services** - Pipes, conduits etc, must not pass through the wall. Chasing, particularly back to back, must be avoided.
- Junctions** - Careful detailing at junctions with flanking walls, floor slabs and ceilings should be ensured. The separating wall should be extended into the roof space without reducing the thickness or otherwise changing the block specification.

## England & Wales Approved Document E 2003

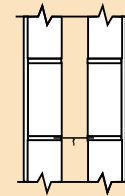
Wall Configuration (for pre-completion testing)	Limitations	Finish	Wall Mass (minimum)
<b>SOLID (blocks laid flat)</b>			
		Plaster or drylining	415kg/m <sup>2</sup>
<b>50mm CAVITY</b>			
		Plaster (or drylining if separating wall stepped or staggered by at least 300mm)	415kg/m <sup>2</sup>
<b>75mm CAVITY</b>			
	Block dry density range 1350-1600kg/m <sup>3</sup>	Plaster or drylining	300kg/m <sup>2</sup>
<b>FREESTANDING LIGHTWEIGHT PANELS</b>			
		Lightweight panels (20kg/m <sup>2</sup> each)	300kg/m <sup>2</sup> (dense aggregate blocks)
		Lightweight panels (20kg/m <sup>2</sup> each)	150kg/m <sup>2</sup> (lightweight aggregate blocks)

Freestanding —  
lightweight panels

Solid masonry core |

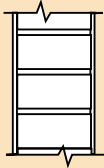
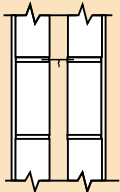
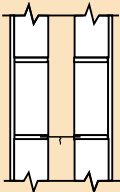
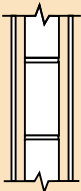
## England & Wales Robust Details

Wall Configuration (without pre-completion testing)	Limitations		Finish	RD Notation
2 leaves 100mm solid blocks with 75mm cavity	Separating wall block density 1350-1600kg/m <sup>3</sup>	Flanking wall block density 850-1600kg/m <sup>3</sup>	13mm plaster	E-WM-2
	Separating wall block density 1850-2300kg/m <sup>3</sup>	Flanking wall block density 1350-1600kg/m <sup>3</sup> or 1850-2300kg/m <sup>3</sup>	13mm plaster	E-WM-1
	Separating wall block density 1350-1600kg/m <sup>3</sup>	Flanking wall block density 850-1600kg/m <sup>3</sup>	8mm parge & drylining (8kg/m <sup>2</sup> )	E-WM-4
	Separating wall block density 1850-2300kg/m <sup>3</sup>	Flanking wall block density 1350-1600kg/m <sup>3</sup> or 1850-2300kg/m <sup>3</sup>	8mm parge & drylining (8kg/m <sup>2</sup> )	E-WM-3
215mm solid blockwork wall (raft foundations only)	Blocks laid flat block density 1850-2300kg/m <sup>3</sup>	Flanking wall block density 1350-1600kg/m <sup>3</sup> or 1850-2300kg/m <sup>3</sup>	13mm render & drylining (12.5kg/m <sup>2</sup> )	E-WM-9



# Separating Walls - Acoustic Performance

## Scotland Technical Handbook Section 5 2006

Wall Configuration (prescriptive solutions)	Limitations	Finish	Wall Mass (minimum)
<b>SOLID (blocks laid flat)</b>			
	Dense Aggregate Blocks	Parging & drylining	415kg/m <sup>2</sup> (before finishes)
	Dense Aggregate Blocks	Plaster	415kg/m <sup>2</sup> (including finishes)
<b>50mm CAVITY</b>			
	Dense Aggregate Blocks	Plaster	415kg/m <sup>2</sup> (including finishes)
	Dense Aggregate Blocks	Dwellings to be stepped or staggered by at least 300mm Parging & drylining	415kg/m <sup>2</sup> (before finishes)
<b>75mm CAVITY</b>			
	Lightweight Aggregate Blocks	Block max. dry density of 1500kg/m <sup>3</sup>  Dwellings to be stepped or staggered by at least 300mm Plaster	250kg/m <sup>2</sup> (including finishes)
<b>FREESTANDING LIGHTWEIGHT PANELS - SOLID MASONRY CORE</b>			
	Dense Aggregate Blocks	Lightweight panels (18kg/m <sup>2</sup> )	300kg/m <sup>2</sup> (dense aggregate blocks)
	Lightweight Aggregate Blocks	Block max. dry density of 1500kg/m <sup>3</sup> Lightweight panels (18kg/m <sup>2</sup> )	200kg/m <sup>2</sup> (lightweight aggregate blocks)

Freestanding light-weight panels

Solid masonry core

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