



CELLULAR

Cellular Dense Blocks

Cellular Dense Concrete Blocks offer a lower weight dense concrete blocks with improved thermal efficiency. With one closed bed surface, block laying is as easy as a solid dense block allowing a full bed of mortar. Our Cellular Dense blocks are available in Standard and Paint-Grade textures.

All dense blocks are manufactured from high quality class 2 aggregates, including a significant proportion of recycled raw material and are suitable for use above and below damp-proof course (DPC).

Cellular blocks are manufactured to BS EN 771-3 and are ISO 9001 Quality Assured, ISO 14001 Environmentally Certified and hold BES 6001 Responsible Sourcing certification.

TECHNICAL PROPERTIES

Property	Value
Face Size (BS EN 771-3):	440mm x 215mm
Dimensional Tolerance (BS EN 772-16):	Category D1
Gross Dry Density (BS EN 772-13):	1850 - 2100 kg/m ³
Mean Compressive Strength (BS EN 772-1):	7.3 N/mm ²
Manufacturing Category (BS EN 771-3):	Category II
Thermal Conductivity (BS EN 1745):	0.88 W/mK [inner leaf] 0.92 W/mK [outer leaf]
Moisture Movement (BS EN 772-14):	< 0.6 mm/m
Fire Resistance (BS EN 13501-1):	Class A1 reaction to fire
Configuration (BS EN 1996-1-1):	Cellular - Group 2
Available Texture, Finish:	Standard & Paint Grade



APPLICATIONS

- Manufactured to BS EN 771-3.
- Inner & outer leaf of external cavity walls.
- Internal partition walls.
- Standard texture finish provides an excellent surface for mortars, renders and plasters. Paint Grade finish available for smooth, painted applications.
- Robust, accepts most standard fixings.

PHYSICAL PROPERTIES

Block Size mm	'R' Value m ² k/W	Walled Weight kg/m ² See Note 1	Sound Reduction Rw, dB See Note 2	Block Weight kg See Note 3	Fire Resistance Hours See Note 4
100	0.11	165	47	15.5	4
140	0.16	205	49	19.5	4

1. Walled weight is for a single-leaf wall, plastered on both sides.
2. Sound Reduction Rw values are based on wall mass and assumes a plastered finish on both sides.
3. The block weights quoted above are approximate and include the typical additional weight from the equilibrium (3%) moisture content of the block. Received block weights will be significantly higher and are variable due to moisture content.
4. Fire resistance periods to BS EN 1996-1-2 for a single-leaf, non-loadbearing plastered wall.

PACK DETAILS

Block Size mm	Blocks per pack	m ² per pack
100	90	9.0
140	60 (56)	6.0 (5.6)

Pack details may vary slightly between manufacturing locations. Always check details with your nearest sales office.

Thermal

The table below shows examples of how cavity walls built with a Cellular Dense block inner leaf can meet a range of u-value targets. For specific calculations, please contact our technical department.

U Value W/m ² K	Partially Filled Cavity Brick outer leaf 50mm clear cavity plasterboard on dabs	Fully Filled Cavity Brick outer leaf Fully filled cavity plasterboard on dabs
0.25	50mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	125mm batt @ 0.034
0.22	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	125mm batt @ 0.030
0.20	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	100mm batt @ 0.021
0.18	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	150mm batt @ 0.030
0.15	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022	100mm batt @ 0.021 + 35mm insulated drylining

Acoustic

Cellular Dense blocks are suitable for use in acoustic separating party walls between dwellings and for internal partitions in accordance with Part E of the Building Regulations. They are not suitable for Robust Standard Detail party walls and will require Pre-Completion Testing. The figures below are predicted sound reduction ratings based on wall mass:

Block Thickness mm	Walled Weight kg/m ²	Predicted Sound Reduction, Rw		
		Unfinished	Plastered	Dry Lined
100	165	46	47	47
140	205	48	49	48

Below Ground

All of our aggregate and dense concrete blocks are durable products which are suitable for use in soil conditions up to Design Sulphate class DS-3 as defined in BRE Special Digest 1. Dense Concrete blocks of any strength can be used below dpc although we recommend the use of Solid Dense blocks wherever possible.

Suspended Block & Beam Floors

Cellular Dense blocks are not suitable for use as infill blocks in block and beam suspended floors.

Fire Resistance

Cellular Dense blocks are non-combustible with zero spread of flame and are classed as Class 'A1' in accordance with BS EN 13501-1. Notional fire resistance periods based on BS EN 1996-1-2 are:

Block mm	Loadbearing Wall		Non-loadbearing Wall	
	No Finish	VG Plaster	No Finish	VG Plaster
100	1 hours	1.5 hours	1 hour	2 hours
140	3 hours	3 hours	4 hours	4 hours

"VG" = vermiculite / gypsum plaster or perlite plaster 13mm thick applied to both faces of single leaf walls.

Mortars

Cellular Dense blocks offer an excellent surface for accepting mortars and no pre-treatment is required other than ensuring that all dirt and debris is removed. Generally, in order to avoid unsightly cracking, the weakest mortar mixture appropriate to the structural requirements should be selected as per BS 5628-3. For most applications, we recommend that grade iii mortar is used.

	Mortar Class BS EN 1996-1-1	Recommended mix proportions of materials by volume (as per BS EN 998-2)	
Above dpc	(iii) M4	1 : 1 : 5½ to 6 1 : 5½ to 6 1 : 4½ to 5	Cement : Lime : Sand Cement : Sand (with plasticiser) Masonry Cement : Sand
Below dpc	(ii) M6	1 : ½ : 4 to 4½ 1 : 3½ to 4	Cement : Lime : Sand Cement : Sand

External Rendering

Standard texture Cellular Dense blocks have a surface which provides an excellent key for adhesion. These blocks have low - moderate suction and no special pre-treatment of the wall is required other than ensuring that all dirt and debris is removed from the surface. It is important that blocks are protected from the weather prior to and during rendering.

Traditional renders should be applied in 2 coats. The first coat should not exceed 15mm and the second coat 5 - 7mm. The first coat should be slightly stronger than the second coat. Render designation iii/M4 should be used, recommended proportions:

Cement : Lime : Sand With or without air entrainment	Cement : Sand With or without air entrainment	Masonry Cement : Sand With non-lime filler	Masonry Cement : Sand With lime filler
1 : 1 : 5 or 6	1 : 5 or 6	1 : 4 or 5	1 : 3½ to 4

Wall Ties & Movement Joints

Generally under normal conditions, wall ties should be embedded 50mm into the mortar on each leaf, staggered in alternate courses and spaced in accordance with the following:

Leaf Thickness mm	Cavity Width mm	Horizontal Spacing mm	Vertical Spacing mm	Ties per m ²
Less than 90mm	50 - 75	450	450	4.9
Over 90mm	50 - 150	900	450	2.5

For unreinforced masonry panels, the typical recommended spacing between vertical movement joints for Dense blocks is 7m - 9m for internal and external walls.

Good Site Practice & Safe Handling

- Packs should be stored on firm, level ground no more than 2 packs high and protected from severe weather to preserve their quality. Care must be taken when removing the plastic bands as individual blocks may fall out. Never un-band packs above shoulder height.
- In the absence of a revised version of the HSE guidance given in their withdrawn Construction Sheet 37 'Handling Building Blocks' the following principles should be followed: There is a risk of injury in the repetitive handling of blocks heavier than 20kg. Repetitive manual handling of blocks over 20kg should be subject to a risk assessment and a safe system of work should be established before block-laying commences.
- Blocks should not be laid if the temperature is at or below 3°C and falling.
- Blocks should always be laid on a full bed of mortar and vertical joints filled.

NBS Clauses for our concrete block products can be found on www.source.thenbs.com

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Product details and availability may vary between manufacturing locations. Please contact your nearest regional sales office for sales, product and technical advice.

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