THOMAS ARMSTRONG
(CONCRETE BLOCKS) LTD

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, consisting of up to 30% 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/m³
Mean Compressive Strength (BS EN 772-1):	7.3 N/mm²
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

bsi. ISO 9001 Quality Management FS 665648 · ISO 14001 Environmental Management EMS 665649 · BES 6001 Responsible Sourcing of Construction Products BES 665651 BES 665634

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^2k/W	Walled Weight kg/m² 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	158	47	14.8	3
140	0.16	227	50	21.3	4

PACK DETAILS

Block Size mm	Blocks per pack	m² per pack
100	90	9.0
140	60 (56)	6.0 (5.6)

1. Walled weight is for a single-leaf wall, plastered both sides.
2. Sound reduction R_w values are based on wall assuming a plastered finish both sides.
3. The block weights quoted above are approximate and include the typical additional weight from the moisture content.
4. Fire resistance periods to BS 5628-3 for a single-leaf, non-loadbearing plastered wall.

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

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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/m²K	Partially Filled Cavity Brick outer leaf | 50mm clear cavity | plasterboard on dabs	Fully Filled Cavity Brick outer leaf | Fully filled cavity | plasterboard on dabs
0.28	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	100mm batt @ 0.032
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. The figures below are predicted sound reduction ratings based on wall mass:

Block Thickness mm	Walled Weight kg/m²	Predicted Sound Reduction, Rw		
		Unfinished	Plastered	Dry Lined
100	158	46	47	47
140	227	50	50	50

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 Digest Special Digest 1. Dense Concrete blocks of any strength can be used below dpc.

Suspended Block & Beam Floors

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

Fire Resistance

Solid 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 are:

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

"VG" = vermiculite / gypsum plaster or pearlite 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.

	BS 5628-3 Mortar Class	Recommended mix proportions of materials by volume (as per BS 5628-3)	
Above dpc	iii	1 : 1 : 5 to 6 1 : 5 to 6 1 : 4 to 5 1 : 3½ to 4	Cement : Lime : Sand Cement : Sand Masonry Cement : Sand (with non-lime filler) Masonry Cement : Sand (with lime filler)
Below dpc	iii	*A stronger (class ii) mix is preferred - see below*	
	ii	1 : ½ : 4 to 4½ 1 : 3 to 4 1 : 2½ to 3½ 1 : 3½ to 4	Cement : Lime : Sand Cement : Sand Masonry Cement : Sand (with non-lime filler) Masonry Cement : Sand (with lime filler)

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 m²
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 is as follows:

Internal Walls: 8m – 12m External Walls: 6m – 9m

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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