



Made to stand the test of time

Your Besblock product technical guide covering:

- 100mm Star Performer Block
- 140mm Insulite Medium Density "15" Block
- 100mm Solid Insulite Medium Density Block
- 100mm Bescrete Solid Dense Aggregate Block
- 100mm Solid Fibolite Block



Besblock

THE
BEST
BLOCKS

100mm Besblock Star Performer Block

Still air trapped in voids dramatically improves thermal and acoustic performance

Five 'bridges' give transverse strength of 4.5kN

Three splitter cores make cutting easy

Decorate Direct. No special precautions or surface preparations required

Available in standard, paint grade and fair faced textures

Solid mortar bed. Blocks should be laid voids down

Dense aggregate composition provides an exceptional strength-to-weight ratio of up to (10.5N/mm²) at 15kg

Plaster Direct. No special precautions or surface preparations required



Illustrated in paint grade texture



Standard texture

Specification

Unit weight at 3% moisture (approx)	14.5 Kg
Weight / m ² laid (approx)	154 Kg/m ²
Net density of unit (approx)	1528 Kg/m ³
Net density of concrete (approx)	1900 Kg/m ³
Effective Lambda value	0.64 W/mK
Thermal resistance	0.154 m ² K/W
Compressive strength*	3.6N/mm ² : 7.3N/mm ² : 10.4N/mm ²
Void percentage	20.82%
Moisture movement	0.5mm / m
Number per pack	9 m ²
Thickness of shell	27.5 mm
Manufacturing category	BS EN 771-3:2003 Category D1
Finishes available	Standard and paint grade

* Note: The compression test is taken over the whole bed area of the block, including the voids, as if the block were solid

The Besblock Star Performer Block

Suitable applications

Inner leaf of external cavity walls with suitable cavity insulant.

Typical external wall U-values with brick outer leaf and internal finish of plasterboard on dabs would be:

Type of Insulation	Lambda value (W/Mk)	Cavity width	Resultant U-value (W/m ² K)
Full fill blown	0.032	75mm	0.34
Full fill blown	0.032	100mm	0.27
Full fill blown	0.034	100mm	0.28
Full fill blown	0.036	100mm	0.29
Full fill slabs	0.034	100mm	0.29
Full fill slabs	0.036	100mm	0.30
Partial fill	0.023	Cavity 50mm : Insulation 50mm	0.29

For more information on this subject see Approved Document L1A 2006 Conservation of Fuel and Power in Dwellings.

Sound resisting separating walls

All 100mm Star Performer Blocks are suitable for the following applications.

1. Walls separating dwelling – houses, flats and rooms for residential purposes. Walls should be constructed with the Star Performer Block in accordance with Robust Detail E-WM-5. See page 4 and 5 for specification.
2. Walls separating any habitable room within a flat/dwelling from other parts of the same building that are not used exclusively with that flat/dwelling e.g. service corridors, stairwell walls, refuse chutes, etc. See Fig.4 on page 6. These are non testable walls and are not covered by Robust Detail. They are required to achieve a minimum performance of DnTw+Ctr 45dB, the Star Performer Block will meet this criterion achieving a performance of DnTw+Ctr 52dB in a cavity wall construction.
3. Building Regulation E2 (a) (protection against sound within a dwelling). E2 (a) requires that internal walls separating a bedroom or a room containing a water closet, and other rooms, require a minimum Rw dB 40. Rw is the Weighted Sound Reduction Index measured in a laboratory, where the separating wall is of masonry (as internal wall type C in Approved document E see Fig.1).



Fig.1

One way of achieving this performance is to construct a single skin wall of concrete blocks with plaster or plasterboard on both sides whose mass per unit area EXCLUDING finish is at least 120kg/m². A single skin 100mm Star Performer Block excluding finish = 154kg/m².



Use near to or below ground

Besblock Star Performer Blocks are suitable for use below Ground Level in non aggressive soil complying fully with the requirements of B. S. 5628-3:2001 (Table 12).

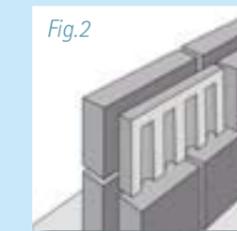


Fig.2
Bescrete Cellular Blocks should be laid vertically, voids down.

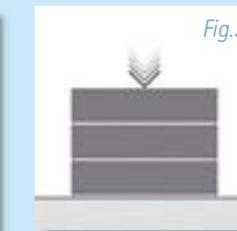


Fig.3
When using "trenchblock" footings always use Bescrete Solid Blocks laid flat.

Guidance Notes

- Lay blocks vertically, voids down (see Fig.2)
- Where blocks are laid flat for "trenchblock" footings, use Bescrete Solid Blocks (see Fig.3)



Separating Wall – Cavity Masonry E-WM-5

Besblock Star Performer Dense Aggregate Cellular Blocks

Render and gypsum-based board on dabs

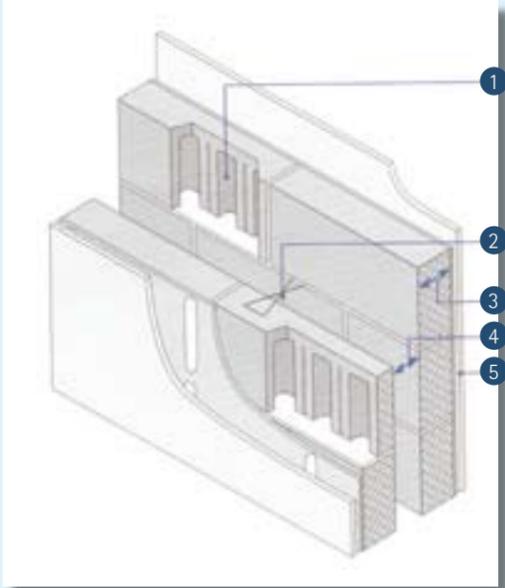
1. **Block** - Only Besblock Star Performer 5-bridge cellular block (4-core, concrete density 1995kg/m³, block density 1528 kg/m³, unit weight 14.5 kg).
2. **Wall ties** - Approved Document E 'Tie type A' (See Appendix A).
3. **Block thickness** - 100mm (min), each leaf.
4. **Cavity width** - 75mm (min).
5. **Wall finish** - Gypsum based-board (nominal 8 kg/m²) mounted on dabs on cement:sand render (nominal 8mm) with scratch finish. Typical render mix 1:1:6 to 1:1/2:4. Render mix must not be stronger than background (see appendix A).
6. **External (flanking) wall** - Masonry (both leaves) with 50mm (min) cavity - clear, fully filled or partially filled with insulation.

DO

- Place blocks with cellular holes open to lower mortar bed
- Keep cavity and wall ties free from mortar droppings and debris
- Fully fill all blockwork joints with mortar
- Make sure there is no connection between the two leaves except for wall ties and foundations
- Keep any chases for services to a minimum and fill well with mortar. Stagger chases on each side of the wall to avoid them being back to back
- Ensure that render is applied to the complete face of each leaf (it may be omitted within the floor joist/beam zone)
- Refer to Appendix A

Alternative internal render specification

British Gypsum Gyproc SoundCoat (nominal 8mm, minimum 6mm) applied in accordance with the manufacturer's instructions, may be used instead of the cement:sand render mix.



External flanking wall requirements for Robust detail E-WM-5

Where there is no separating floor e.g. houses, or in flats/apartments or, where the separating floor is a concrete floor of either Robust Detail Type E-FC-1 or E-FC-2.

- The inner leaf of the external wall should be of either:
- 100mm (min) Besblock Star Performer Blocks
 - 100mm (min) concrete block within density range of 1350 kg/m³ - 1600 kg/m³ or 1850 - 2300 kg/m³
 - Internal finish nominal 8 kg/m² gypsum-based board or 13mm plaster

Where there is no separating floor e.g. houses, or in flats/apartments or, where the separating floor is a concrete floor of either Robust Detail Type E-FC-4.

- The inner leaf of the external wall should be of either:
- 100mm (min) Besblock Star Performer Blocks
 - 100mm (min) concrete block within density range of 1350 kg/m³ - 1600 kg/m³ or 1850 - 2300 kg/m³
 - 100mm (min) Aircrete block within density range 450 - 800 kg/m³
 - Internal finish nominal 8 kg/m² gypsum-based board or 13mm plaster

For more detailed information on this subject refer to Robust Details manual.

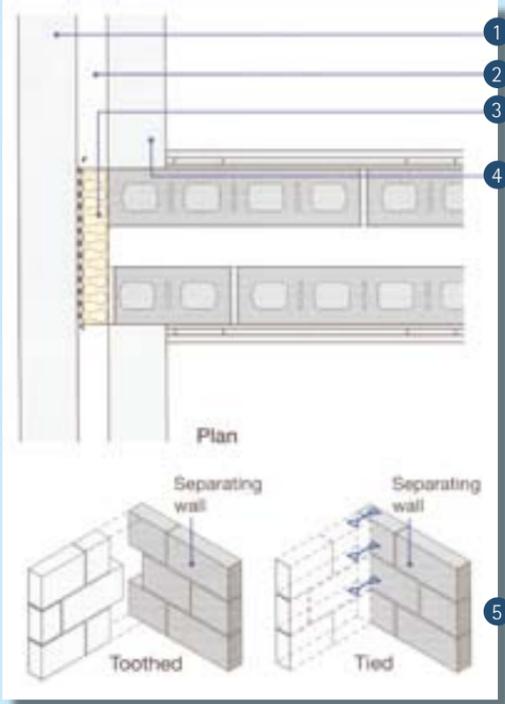
External (flanking) wall junction

1. **Masonry outer leaf**
2. **External wall cavity (min 50mm)**
3. **Close cavity with a flexible cavity stop unless it is fully filled with built in mineral wool insulation**
4. **Inner leaf where there is no separating floor e.g for houses**
 - 100mm (min) concrete block (1350 kg/m³ to 1600 kg/m³) or Aircrete Block (450 kg/m³ to 800 kg/m³) or Besblock Star Performer Block
 - Internal finish - 13mm plaster or nominal 8 kg/m² gypsum-based board

Inner leaf where there is a separating floor e.g for flats/apartments

- If using robust detail for floor, refer to Table 3 in introduction to select an acceptable robust detail separating floor. Then refer to separating floor robust detail to identify acceptable inner leaf construction or use Besblock Star Performer Block
- If using floor requiring pre-completion testing, seek specialist advice

5. **Tooth or tie walls together**



Staggered external (flanking) wall junction

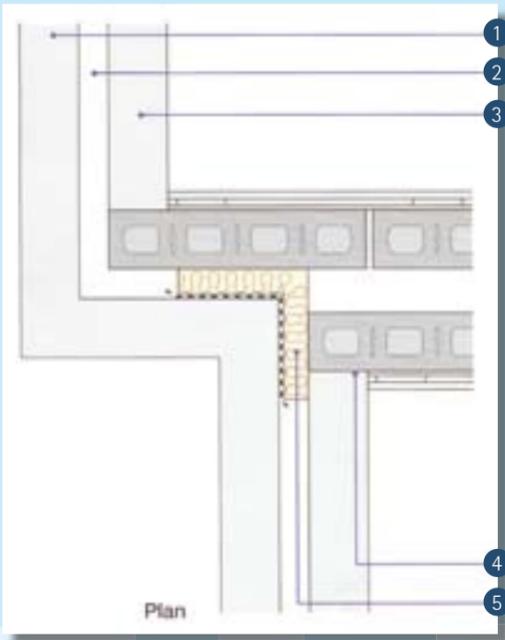
1. **Masonry outer leaf**
2. **External wall cavity (min 50mm)**
3. **Inner leaf where there is no separating floor e.g for houses**
 - 100mm (min) concrete block (1350 kg/m³ to 1600 kg/m³) or Aircrete Block (450 kg/m³ to 800 kg/m³) or Besblock Star Performer Block
 - Internal finish - 13mm plaster or nominal 8 kg/m² gypsum-based board

Inner leaf where there is a separating floor e.g for flats/apartments

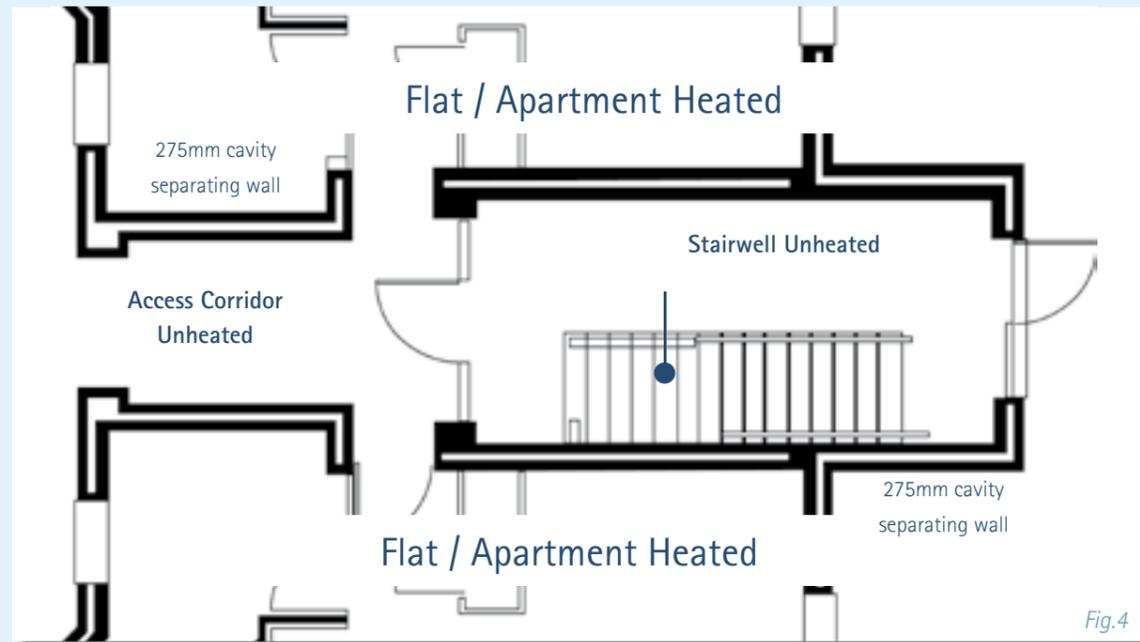
- If using robust detail for floor, refer to Table 3 in introduction to select an acceptable robust detail separating floor. Then refer to separating floor robust detail to identify acceptable inner leaf construction or use Besblock Star Performer Block
- If using floor requiring pre-completion testing, seek specialist advice

4. **Tooth or tie walls together**

5. **Close cavity with a flexible cavity stop unless it is fully filled with built in mineral wool insulation**



Sound resisting separating walls and heat loss walls in flats etc



The above diagram see (Fig.4) shows a typical layout of an access corridor and stairwell to an apartment block. The stairwell and access corridors are unheated, the apartments to either side are heated. These separating walls are therefore heat loss walls and will usually require insulation in order for the dwelling to meet the requirements of L1A2006.

In addition, the same walls are sound resisting separating walls and will be required to comply with the requirements of Approved Document E.

These walls do not come under the requirements of RSD walls and are exempt from pre-completion testing. They are required however to provide a performance of DnTw + Ctr dB 45.

Two skins of 100mm Star Performer Blocks achieve DnTw + Ctr dB of 52.

Separating wall, cavity insulation

Use any mineral fibre type insulation in either slab, blown or rigid board partial fill. We do not recommend the use of blown polystyrene for this application as it may have an adverse effect on the sound performance of the wall.



Infill units for beam and block flooring systems

The Cellular Star Performer Block is suitable as infill units for beam and block flooring for occupancy type A Domestic and Residential activities (BS 6399 – 1: 1996). (see Fig.5).

For this application BS 6399 – 1: 1996 requires a concentrated load rating of 1.4 kN.

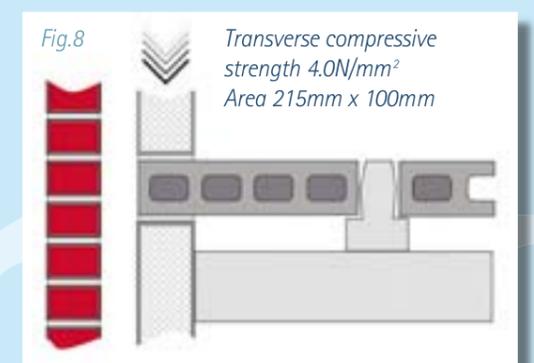
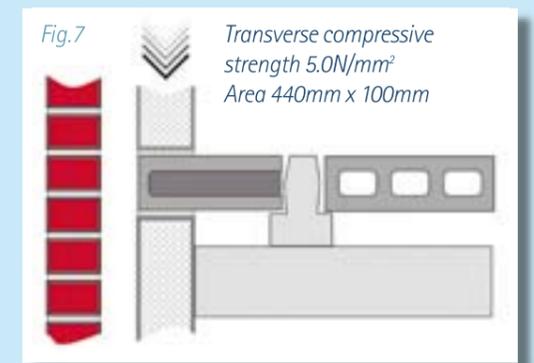
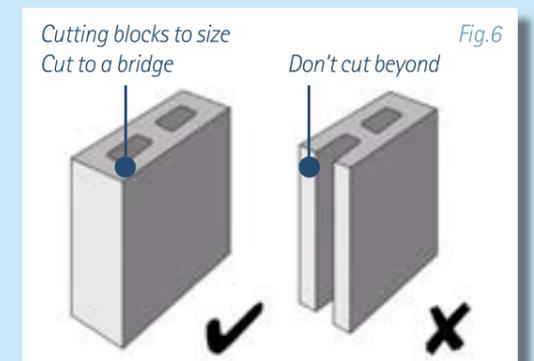
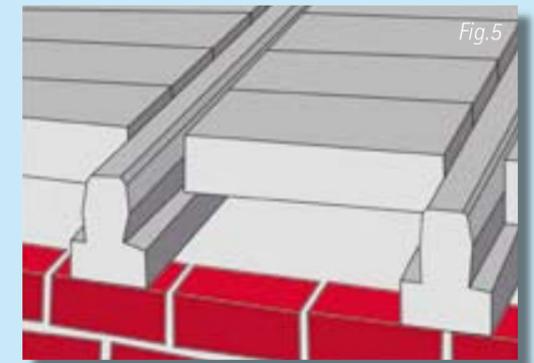
The Pre Cast Flooring Federation requires 3.5kN.

The Star Performer achieves 4.7kN.

See diagrams for guidance in use.

Guidance Notes

- Always specify the blocks with 7N/mm² strength for this application.
- Where it is necessary to cut blocks to size always cut to and not beyond a bridge. If inconvenient, use the Bescrete Solid Block 440 x 215 x 100 (see Fig.6).
- Where the block bears on, and forms part of the foundation wall, note the "on bed" transverse compressive strengths of the areas that are likely to be subject to load; assuming the bearing wall to be 100mm thickness these are :-
1. 440 x 100 = 5.0N/mm² (see Fig.7)
2. 215 x 100 = 4.0N/mm² (see Fig.8)
- Ensure that the floor is constructed and finished in accordance with the floor manufacturers recommendations.



140mm Besblock Insulite Medium Density "15" Block

Plaster Direct. No special precautions or surface preparations required

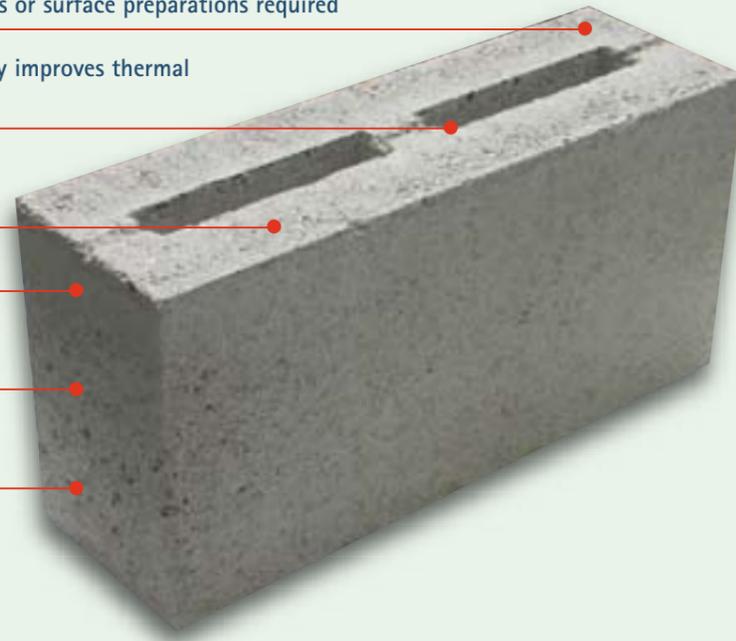
Still air trapped in voids dramatically improves thermal and acoustic performance

Wall thickness of 55mm makes for good fixings

Lightweight sub 20kg's

Solid mortar bed. Blocks should be laid voids down

Available in standard and paint grade textures



Specification

Unit weight at 3% moisture (approx)	18.1 Kg
Weight / m ² laid (approx)	188 Kg/m ²
Net density of unit (approx)	1367 Kg/m ³
Net density of concrete (approx)	1550 Kg/m ³
Effective Lambda value	0.369 W/mK
Thermal resistance	0.379 m ² K/W
Compressive strength*	3.6N/mm ² : 7.3N/mm ² : 10.4N/mm ²
Void percentage	15.4%
Moisture movement	0.8mm / m
Number per pack	6 m ²
Thickness of shell	55 mm
Manufacturing category	BS EN 771-3:2003 Category D1
Finishes available	Standard and paint grade

* Note: The compression test is taken over the whole bed area of the block, including the voids, as if the block were solid

100mm Besblock Solid Insulite Medium Density Block

Plaster Direct. No special precautions or surface preparations required



Specification

Unit weight at 3% moisture (approx)	14.66 Kg
Weight / m ² laid (approx)	157 Kg/m ²
Net density of concrete (approx)	1550 Kg/m ³
Effective Lambda value	0.448 W/mK
Thermal resistance	0.223 m ² K/W
Compressive strength*	3.6N/mm ² : 7.3N/mm ² : 10.4N/mm ²
Moisture movement	0.8mm / m
Number per pack	9 m ²
Manufacturing category	BS EN 771-3:2003 Category D1
Finishes available	Standard and paint grade



Besblock Insulite Medium Density Blocks

Suitable applications

Inner leaf of external cavity walls with suitable cavity insulant.

Typical external wall U-values with brick outer leaf and internal finish of plasterboard on dabs would be:

Type of Insulation	Lambda value (W/Mk)	Cavity width	Resultant U-value (W/m ² K)
Full fill blown	0.032	75mm	0.33
Full fill blown	0.032	100mm	0.26
Full fill blown	0.034	100mm	0.28
Full fill blown	0.036	100mm	0.29
Full fill slabs	0.034	100mm	0.28
Full fill slabs	0.036	100mm	0.29
Partial fill	0.023	Cavity 50mm : Insulation 50mm	0.28

For more information on this subject see Approved Document L1A 2006 Conservation of Fuel and Power in Dwellings.

Sound resisting separating walls

All 100mm Besblock Medium Density Blocks are suitable for the following applications.

- Walls separating dwelling – houses, flats and rooms for residential purposes.** Walls should be constructed with the Besblock Medium Density Block in accordance with either Robust Detail E-WM-2, E-WM-4 or E-WM-8.
- Walls separating any habitable room within a flat/ dwelling from other parts of the same building** that are not used exclusively with that flat/dwelling e.g. service corridors, stairwell walls, refuse chute etc. See Fig.4 on page 6. These are non testable walls and are not covered by Robust Detail. They are required to achieve a minimum performance of DnTw+Ctr 45dB against airborne sound transmission. The Besblock Insulite Medium Density Block will meet this criterion in a cavity wall construction.
- Building Regulation E2 (a)** (protection against sound within a dwelling).
E2 (a) requires that internal walls separating a bedroom or a room containing a water closet, and other rooms, require a minimum Rw dB 40. Rw is the Weighted Sound Reduction Index measured in a laboratory, where the separating wall is of masonry (as internal wall type C in Approved document E see Fig.1).

One way of achieving this performance is to construct a single skin wall of concrete blocks with plaster or plasterboard on both sides whose mass per unit area EXCLUDING finish is at least 120kg/m². A single skin 100mm Insulite Medium Density Block excluding finish = 156kg/m².

Use near to or below ground

Besblock Medium Density blocks of 7N/m² compressive strength are suitable for use below Ground Level in non aggressive soil complying fully with the requirements of B. S. 5628-3:2001 (Table 12).



100mm Bescrete Solid Dense Aggregate Block

Decorate Direct. No special precautions or surface preparations required

Available in standard, paint grade and fair faced textures



Illustrated in paint grade texture

Plaster Direct. No special precautions or surface preparations required



Standard texture

Specification

Unit weight at 3% moisture (approx)	18.26 Kg
Weight / m ² laid (approx)	192 Kg/m ²
Net density of concrete (approx)	1930 Kg/m ³
Effective Lambda value	0.99 W/mK
Thermal resistance	0.101 m ² K/W
Compressive strength*	3.6N/mm ² : 7.3N/mm ² : 10.4N/mm ² : 15.0N/mm ² : 21N/mm ²
Moisture movement	0.8mm / m
Number per pack	7.2 m ²
Manufacturing category	BS EN 771-3:2003 Category D1
Finishes available	Standard, paint grade and fair faced



Bescrete Dense Aggregate Blocks

Suitable applications

Inner leaf of external cavity walls with suitable cavity insulant.

Typical external wall U-values with brick outer leaf and internal finish of plasterboard on dabs would be:

Type of Insulation	Lambda value (W/Mk)	Cavity width	Resultant U-value (W/m ² K)
Full fill blown	0.032	75mm	0.34
Full fill blown	0.032	100mm	0.27
Full fill blown	0.034	100mm	0.29
Full fill blown	0.036	100mm	0.30
Full fill slabs	0.034	100mm	0.29
Full fill slabs	0.036	100mm	0.31
Partial fill	0.023	Cavity 50mm : Insulation 50mm	0.30

For more information on this subject see Approved Document L1A 2006 Conservation of Fuel and Power in Dwellings.

Sound resisting separating walls

All 100mm Bescrete Dense Aggregate Blocks are suitable for the following applications.

- Walls separating dwelling – houses, flats and rooms for residential purposes.** Walls should be constructed with the Bescrete Dense Aggregate Block in accordance with either Robust Detail E-WM-1, E-WM-3 or E-WM-9.
- Walls separating any habitable room within a flat/ dwelling from other parts of the same building** that are not used exclusively with that flat/dwelling e.g. service corridors, stairwell walls, refuse chute etc. See Fig.4 on page 6. These are non testable walls and are not covered by Robust Detail. They are required to achieve a minimum performance of DnTw+Ctr 45dB against airborne sound transmission. The 100mm Bescrete Dense Aggregate will meet this criterion in a cavity wall construction.
- Building Regulation E2 (a)** (protection against sound within a dwelling). E2 (a) requires that internal walls separating a bedroom or a room containing a water closet, and other rooms, require a minimum Rw dB 40. Rw is the Weighted Sound Reduction Index measured in a laboratory, where the separating wall is of masonry (as internal wall type C in Approved document E see Fig.1).

One way of achieving this performance is to construct a single skin wall of concrete blocks with plaster or plasterboard on both sides whose mass per unit area EXCLUDING finish is at least 120kg/m². A single skin 100mm Bescrete Solid Dense Aggregate Block excluding finish = 192kg/m².

Use near to or below ground

Bescrete Dense Aggregate Blocks are suitable for use below Ground Level in non aggressive soil complying fully with the requirements of B. S. 5628-3:2001 (Table 12).



100mm Besblock Solid Fibolite Block

An ultra lightweight aggregate building block manufactured to BS EN 771-3:2003 ideally suited to both D.I.Y. and commercial applications.

Lightweight, easy to handle

Easy to cut

Readily accepts fixings. Good plaster key

Also suitable for plasterboard dry lining systems

High thermal performance



Standard texture

Specification

Unit weight at 3% moisture (approx)	10.5 Kg
Weight / m ² laid (approx)	110 Kg/m ²
Net density of concrete (approx)	1050 Kg/m ³
Effective Lambda value	0.26 W/mK
Thermal resistance	0.385 m ² K/W
Compressive strength*	3.6N/mm ²
Moisture movement	0.5mm / m
Number per pack	9 m ²
Manufacturing category	BS EN 771-3:2003 Category D1
Finishes available	Standard

Suitable applications

Inner leaf of external walls and internal partition walls.

Typical external wall U-values with brick outer leaf and internal finish of plasterboard on dabs would be:

Type of Insulation	Lambda value (W/Mk)	Cavity width	Resultant U-value (W/m ² K)
Full fill blown	0.032	75mm	0.31
Full fill blown	0.032	100mm	0.25
Full fill blown	0.034	100mm	0.26
Full fill blown	0.036	100mm	0.28
Full fill slabs	0.034	100mm	0.27
Full fill slabs	0.036	100mm	0.27
Partial fill	0.023	Cavity 50mm : Insulation 50mm	0.27

Not recommended for sound resisting separating walls, or for use below DPC.



FAERO Certified

As authorised SAP assessors and members of NHER we are recognised as competent persons (as required by L1A 2006) to advise clients on all aspects of the constructions envelope, heating systems and insulations in order to ensure that the dwelling will meet the required carbon emission rate.

Our assessors operating the NHER software are able to produce for clients the full documentation package required by the Building Control body for the construction to commence, and also the Design Final documentation in order that the dwelling(s) can be "signed off" following completion. The dwellings Energy Performance Certificate will form part of this package.

Our assessors are members of the FAERO Competent Persons Scheme. as such, Building Control is authorised to accept a certificate issued by an assessor who is registered with FAERO Ltd as evidence in respect of the required CO₂ emission rate calculations.

For more information contact technical@besblock.com



Air Leakage Testing

Achieving the required Carbon Emission Rate for a new dwelling will depend on the quality of the construction of the envelope of the building and its associated air leakage paths. Part L1A 2006 requires that the maximum air leakage rate for new dwellings is 10m³ / (h.m²) @ 50 Pa. In some circumstances however a lower air leakage rate may be required for the dwelling to achieve the required Carbon Emission Rate.

Besblock Limited is authorised to complete air pressure testing as required by L1A 2006. All tests will include official test data and certification as required by Building Control.

Our test technicians are BSRIA trained and certified as competent persons to undertake this work.

To book a test or for more information visit www.besblock.co.uk



Structural

Characteristic comprehensive strength of Besblock products, f_k in N/mm² of walls constructed under laboratory conditions tested at an age of 28 days under axial compression.

Constructed with 100mm Star Performer Blocks

Mortar strength class / designation	Compressive strength of block N/mm ²			
	3.6	5.2	7.3	10.4
M12 / (i)	3.5	5.0	6.8	8.8
M6 / (ii)	3.5	5.0	6.4	8.4
M4 / (iii)	3.5	5.0	6.4	8.2
M2 / (iv)	3.5	4.4	5.6	7

Constructed with Besblock 100mm Solid Blocks

Mortar strength class / designation	Compressive strength of block N/mm ²			
	3.6	5.2	7.3	10.4
M12 / (i)	3.5	5.0	6.8	8.8
M6 / (ii)	3.5	5.0	6.4	8.4
M4 / (iii)	3.5	5.0	6.4	8.2
M2 / (iv)	3.5	4.4	5.6	7

Constructed with Besblock 140mm medium density "15" blocks

Mortar strength class / designation	Compressive strength of block N/mm ²			
	3.6	5.2	7.3	10.4
M12 / (i)	2.9	4.2	5.7	7.3
M6 / (ii)	2.9	4.2	5.3	7.0
M4 / (iii)	2.9	4.2	5.3	6.8
M2 / (iv)	2.9	3.7	4.7	5.8





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