Besblock 140mm

Acoustic Star Performer Block

Sub 20kg's

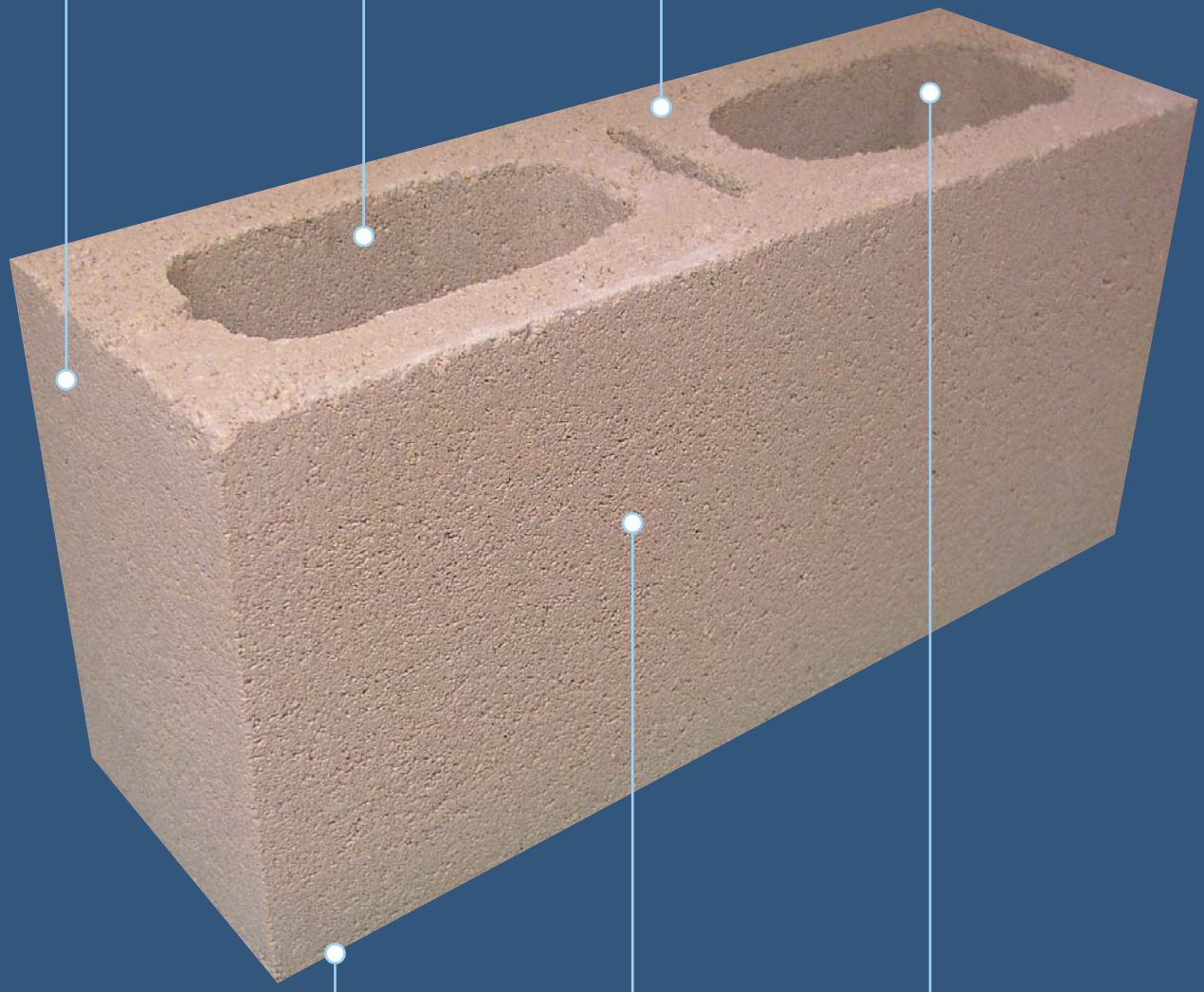
Besblock

The 140mm Acoustic Star Performer Building Block

Plaster Direct. No special precautions or surface preparations required.

Available in standard, paint grade and smooth masonry textures.

Lightweight sub 20kg's



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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 18kg's.

Still air trapped in voids dramatically improves thermal and acoustic performance.

140mm Acoustic Star Performer

Specification

Work face size	440mm x 215mm
Concrete density (approx)	1930 kg/m^3
Block density (approx)	1380 kg/m^3
Laid weight (approx)	203.21 kg/m^2
Unit weight (approx)	18.2 kg's
Thermal conductivity	0.80 W/mK
Thermal resistance	0.224 m^{2}K/W
Moisture movement	0.03%
Aggregate specification	Natural quarried aggregates complying with BS EN 1260
Compressive strengths	3.5 N/mm^2: 7.0 N/mm^2: 10.5 N/mm^2
Manufacturing standard	BS EN 771 parts 3 and 5
Number of blocks per pack	90 (9m^2)
Concrete shell thickness	36mm
Void (hole) content	33%

Note: compressive strengths shown are calculated over the whole bed area of the block (440mm x 140mm including the voided areas) as if the block were solid.

Suitable Applications:

- Inner leaf of external walls with suitable insulent.
- Below ground level damp course in non aggressive soil situations.

Sound Insulation:

- Regulation E1. Certain separating walls in flats and rooms for residential purposes.
- Regulation E2. Protection against sound within dwelling houses, flats and rooms for residential purposes.
- Regulation E4. Certain acoustic conditions in schools.

Suitable Applications

Building regulations compliance

Approved document E, the requirements, separating walls

Regulation		
E1	Dwelling houses and flats	45 (DnTw + Ctr dB)
E1	Rooms for residential purposes	43 (DnTw + Ctr dB)
E2	Protection against sound within dwelling houses, flats and rooms for residential purposes	40 (Rw dB)
E4	Acoustic conditions in schools	See table 1.2

E1 Rooms for residential purposes see Diagram 1A

E2 protection against sound within dwelling houses, flats and rooms for residential purposes

E4 Acoustic conditions in schools

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Sound Reduction Data

Bescrete 440mm x 215mm x 140mm cellular blocks have been tested for Sound Reduction index in accordance with BS EN ISO 140-3:1995 and BS EN ISO 717-1:1997, by AIRO a UKAS accredited testing laboratory.

Test table data summary

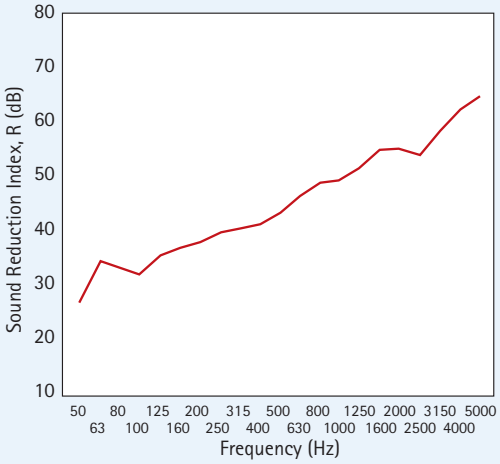
Single leaf blockwork wall constructed from 140mm cellular

Acoustic "Star Performer" blocks laid in stretcher bond using 5:1 sand and cement mortar

Wall construction	AIRO Certificate No	Rating
140mm Cellular "Acoustic Star Performer" blocks laid fair faced both sides	L/2930/1	Rw (C;Ctr) = 49 (-1;-4) dB
140mm Cellular "Acoustic Star Performer" blocks 12.5mm plasterboard on dabs on both sides of the wall	L/2930/2	Rw (C;Ctr) = 52 (-2;-5) dB
140mm Cellular "Acoustic Star Performer" blocks 13mm 2 coat lightweight plaster on both sides of the wall	L/2930/3	Rw (C;Ctr) = 50 (0;-3) dB

Results Test Report Reference No. L/2930/1

Frequency Hz	RdB	Frequency Hz	RdB
50	26.7	630	46.6
63	34.6	800	49.0
80	33.5	1000	49.7
100	32.2	1250	51.6
125	35.8	1600	55.1
160	37.1	2000	55.4
200	38.1	2500	54.5
250	40.2	3150	58.5
315	40.4	4000	62.4
400	41.3	5000	64.9
500	43.5		

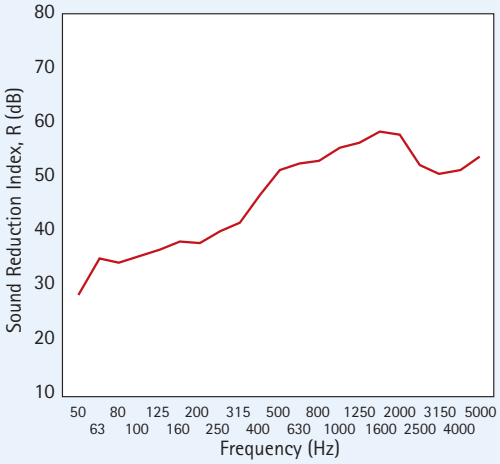


Rating according to BS EN ISO 717-1:1997

Rw (C:Ctr) = 49 (-1;-4) dB

Results Test Report Reference No. L/2930/2

Frequency Hz	RdB	Frequency Hz	RdB
50	28.4	630	52.7
63	35.2	800	53.2
80	34.4	1000	55.7
100	35.7	1250	56.7
125	36.8	1600	58.5
160	38.3	2000	58.0
200	38.1	2500	52.4
250	40.3	3150	50.7
315	41.9	4000	51.5
400	47.2	5000	54.0
500	51.5		



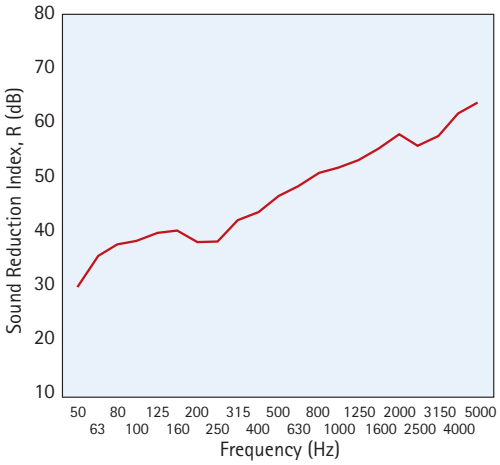
Rating according to BS EN ISO 717-1:1997

Rw (C;Ctr) = 52 (-2;-5) dB

Sound Reduction Data

Results Test Report Reference No. L/2930/3

Frequency Hz	RdB	Frequency Hz	RdB
50	30.0	630	48.6
63	35.4	800	50.7
80	37.7	1000	51.9
100	38.8	1250	53.2
125	40.1	1600	55.5
160	40.4	2000	58.2
200	38.6	2500	56.2
250	38.7	3150	57.8
315	42.4	4000	62.2
400	44.0	5000	64.1
500	46.7		



Rating according to BS EN ISO 717-1:1997

Rw (C;Ctr) = 50 (0;-3) dB

Regulation E4 Acoustic conditions in schools

Below see Table 1.2 - Performance standards for airborne sound insulation between spaces – minimum weighted BB93 standardised level difference, DnT (Tmf,max), w (Information extracted from Building Bulletin 93 Acoustic Design Of Schools)

Minimum DnT (Tmf,max),w (dB)		Activity noise in source room			
		Low	Average	High	Very high
Noise tolerance in receiving room	High	30	35	45	55
	Medium	35	40	50	55
	Low	40	45	55	55
	Very Low	45	50	55	60

The following notes contain additional guidance that should be considered when designing the spaces to meet the performance standards in table 1.2. This guidance Is for good practise and will not currently be enforced under the Building Regulations.

Notes:

1 *Each value in the table is the minimum required to comply with the Building Regulations. A value of 55dB DnT (Tmf,max),w between two music practice rooms will not mean that the music will be inaudible between the rooms; in many cases, particularly if brass or percussion instruments are played, a higher value is desirable.*

2 *Where values greater than 55 dB DnT(Tmf,max),w are required it is advisable to separate the rooms using acoustically less sensitive areas such as corridors and storerooms. Where this is not possible, high performance constructions are likely to be required and specialist advice should be sought.*

3 *It is recommended that music rooms should not replaced adjacent to design and technology spaces or art rooms.*

4 *These values of DnT (Tmf,max),w include the effect of glazing, doors and other weaknesses in the partition. In general, normal (non-acoustic) doors provide much less sound insulation than the surrounding walls and reduce the overall DnT (Tmf,max),w of the wall considerably, particularly for values above 35 dB DnT (Tmf,max),w. Therefore, doors should not generally installed in partitions between rooms requiring values above 35 dB DnT (Tmf,max),w unless acoustic doors, door lobbies, or double doors with an airspace are used. This is not normally a problem as rooms are usually accessed via corridors or circulation spaces so that there are at lest two doors between noise-sensitive rooms.*

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Masonry reinforcement

When using masonry blocks and facing blocks, in areas of high stress, concentrated imposed loads and possible uneven settlement, it is good practice to consider the use of reinforcement, laid in the horizontal bed joints. The reinforcement should be of sufficient length to distribute the stresses to nearby movement joints, or into adjacent block panels.

To minimize these known areas of risk, masonry reinforcement should be installed in the mortar joints. Both cellular and hollow blocks, as well as solid blocks, work equally well in conjunction with mortar bed reinforcement. There are two main areas of application:-

Structural applications

It has been proven by design that the use of masonry reinforcement products can enhance the load carrying capacity of masonry block walls by providing additional tensile strength. This can also result in savings of wall width and/or panel supports, particularly when considering wind loading.

Crack control

The introduction of masonry reinforcement in the two courses above and below openings, at the change in masonry profiles and under areas of concentrated loading will assist in the control of cracking that can occur if not considered.

Materials

Stainless steel wire to BS 5628 – 2 or Galvanised steel wire zinc coated to BS EN 10244 – 2.

Stainless shall always be specified when included in the construction of an external masonry panel or internally where the surface of the masonry block will be subject to high humidity ie swimming pools.

Masonry Design

If you are in doubt about the structural design of any specified masonry panel, Besblock Ltd recommend masonry design specialists BRC Special Products, who offer a Free Design service, as well as a range of masonry reinforcement products to suit all design requirements.

To access this service, B.R.C.'s technical department can be contacted on 01785 222288. Further information on masonry reinforcement together with downloadable product brochures can be found at:- www.brickforce.co.uk

BRC Special Products has been designing and manufacturing masonry reinforcement since 1918 and has a wealth of experience to enhance your next project incorporating Besblock products.

Health and Safety

Health and Safety requirements when handling heavy Building blocks.

HSE information sheet (Construction Sheet No 37) Offers guidance, as determined by the Construction Industry Advisory Committee (CONIAC), in the safe handling of Heavy building blocks. Coniac's conclusion is that there is a high Risk of injury in the single-handed repetitive manual handling of blocks heavier than 20 kg's.

This limit is intended as guidance only, the legal requirement being for the Project planners, contractors, designers and specifiers to ensure that everything reasonably practicable is done to reduce the risks from hazardous manual handling of blocks to the lowest possible level.

Enforcement action, including prohibition of work and prosecution may be undertaken by HSE where this legal requirement is not complied with. HSE Inspectors may also intervene where clients, designers or planning supervisors have not complied with their CDM duties.

Risk assessment should be undertaken by the contractor under the Manual Handling Operation Regulations where hazardous man handling of blocks is unavoidable.

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Insulation Data

Thermal Transmittance value examples 140mm Cellular Acoustic Star Performer

Insulation	Lambda m2K/W	Thickness (mm)	U-value W/m2K
Blown fibre	0.039	100	0.31
Blown fibre Knauf	0.036	100	0.290
Thermal bead	0.033	100	0.27
Celotex 50mm partial	0.023	50	0.30

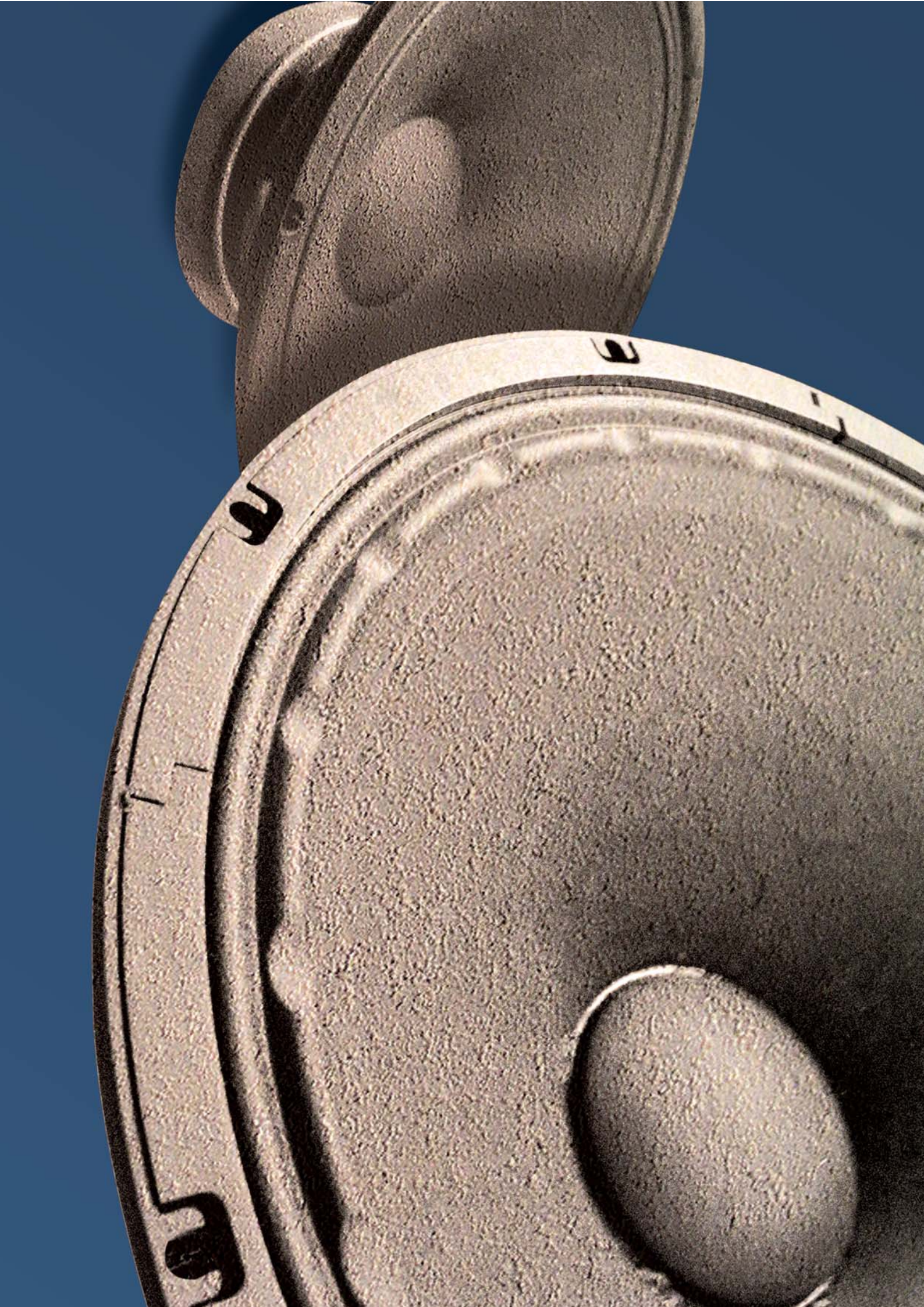
All U-values based on brick outer leaf and standard wall board on dabs

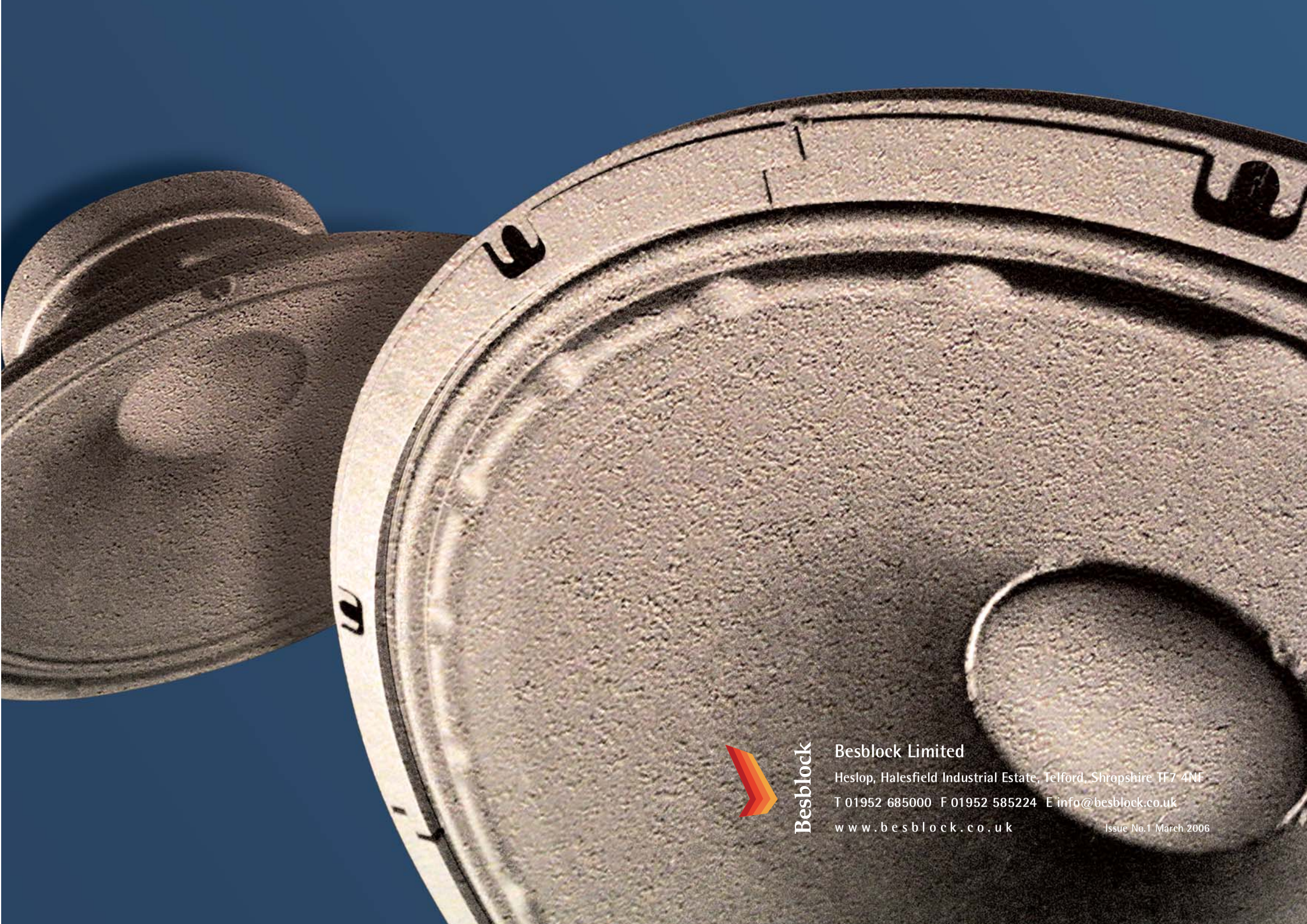
All U-values to BS EN ISO 6946

Structural

Characteristic compressive strength of masonry, f_k, in N/mm^2 constructed with 140mm Cellular Acoustic Star Performer

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	5.5	6.9
M6 / (ii)	2.9	4.2	5.3	6.4
M4 / (iii)	2.9	4.2	5.1	6.1
M2 / (iv)	2.9	3.7	4.8	5.6





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