

A range of high density, robust, loadbearing units, suitable for internal and external walls. For total design flexibility select from a range of sizes, strengths and finishes.



General Properties - Table 1

Face Size	440mm x 215mm ⁽¹⁾		
Dimensional Tolerances	Category: D1		
Mean Unit Strength ⁽²⁾	7.3, 10.4, 17.5, 22.5, 30N/mm ²		
Net Dry Density	Blocks <20.0N/mm ² : 2000 kg/m ³ Blocks >20.0N/mm ² : 2100 kg/m ³		
Thermal Conductivity	1.33 W/mK at 3% moisture content (internal use)		
	1.43 W/mK at 5% moisture content (external use)		
Moisture Movement	<0.6mm/m		
Reaction to Fire	Class A1		
Air Tightness			
		Paint one side	Paint both sides
		(m ³ /hr/m ²)	
	100mm solid	-	0.48
140mm solid	1.17	0.97	
Configuration	Solid Blocks: Group 1, Cellular & Hollow Blocks: Group 2		
Specific Heat Capacity	1000J/kg/K		
Water Vapour Diffusion Coefficient	$\mu = 5/15$ (Tabulated value from BS EN 1745)		



Recycled content Products with a high recycled content available. Details upon request.

Note:

- ⁽¹⁾ Some products have an alternative face size as described in this Data Sheet
- ⁽²⁾ Cellular and hollow blocks are produced in 7.3 and 10.4N/mm² strengths
- ⁽³⁾ Airtightness results are based on blocks finished using an emulsion paint

- High strength blocks from 7.3 to 30N/mm²
- Standard and Paint Grade finishes
- For use internally and externally above and below ground
- High levels of air tightness, sound insulation and fire resistance.

Lignacrete dense blocks are suitable for a wide range of applications. They have excellent levels of sound insulation and high strength capability, making them especially suitable for use in separating and partition walls. They can also be used as infill blocks in beam and block flooring systems.

Lignacrete dense blocks generally have a face size of 440mm x 215mm. Certain products are produced in an alternative size. For example, Midi blocks are solid 140mm units with a face size of 290mm x 215mm and have been developed for ease of handling whilst providing all the performance associated with conventional size solid blocks.

Appearance

Lignacrete blocks are medium grey to buff in colour with a texture, depending on grade, suitable for plastering, rendering or directly painted.

Blocks are available in cellular, hollow or solid form.



“Co-ordinating coursing block available”



Standards

Lignacrete blocks are BSI Kitemarked approved to BS EN 771-3. They are Category 1 masonry units manufactured under a BSI certified Quality System complying with BS EN 9001.

Applications

Lignacrete can be considered for use in the following locations:

- The inner and outer leaves of external cavity walls
- Internal walls including fire break walls
- Separating walls including those conforming to Robust Detail specifications
- High strength, loadbearing walls - blocks up to 30N/mm² available
- External and internal walls below ground
- Infill units to beam and block flooring
- Hollow blocks to construct reinforced retaining walls

Sustainability

Responsible sourcing - Lignacrete Ltd operates its manufacturing plants to a BSI certified Environmental Management System (EMS) complying with ISO 14001. Lignacrete Ltd. complies with the requirements of BES 6001 – Framework Standard for the Responsible Sourcing of Construction Products, Certificate No: BES 580823. This independently confirmed Responsible Sourcing Certification provides re-assurance to our customers that they are procuring products responsibly and sustainably. Credits can also be gained under environment assessment schemes such as BREEAM.

Environmental ratings - Summary green guide ratings applicable to Lignacrete blocks can be obtained from the BRE Green Guide to Specification.

Unit and Laid Weights

Unit and laid weights (including mortar) are shown in Table 2. All weights are approximate and subject to normal variations in raw materials.

Block Weights - Table 2

Width (mm)	Form	Unit Weight (kg)	Laid Weight (kg/m ²)
100	Solid	18.9	198
140	Solid	26.5	278
140	Solid Midi	17.5	279
140	C/H	20.0	214
190	Solid	35.9	377
190	Hollow	25.0	269
215	Solid	40.7	427
215	Hollow	27.5	297

Note: For blocks above 20N/mm², the unit and laid weights will be approximately 5% greater than those indicated. Weights are based on 3% moisture content by weight.

Thermal Resistance

The thermal resistance values (m²K/W) for Lignacrete are shown in Table 3. The values are derived by dividing the block thickness by its thermal conductivity (W/mK).

Thermal Resistances - Table 3

Width (mm)	Form	Thermal Resistance (m ² K/W)	
		3% m/c	5% m/c
100	Solid	0.075	0.070
140	Solid	0.105	0.098
140	Solid Midi	0.105	0.098
140	C/H	0.162	0.155
190	Solid	0.143	0.133
190	Hollow	0.195	0.187
215	Solid	0.162	0.150
215	Hollow	0.207	0.199

Note: 3% moisture content (m/c) should be used for protected locations such as the inner leaf, and 5% for exposed locations such as the outer leaf when rendered.

Sound Insulation

Lignacrete blockwork provides excellent levels of sound insulation between buildings and adjoining rooms. It can be used in cavity and solid party wall constructions in dwellings, satisfying the specifications for dense blockwork in accordance with Approved Document E to the Building Regulations. It can also be used to construct party walls meeting Robust Detail specifications eg. Robust Details E-WM-1, 3, 16, 18 and 19. The Weighted Sound Reduction Index (Rw) values of various Lignacrete wall constructions are shown in Tables 4(a) and 4(b).

Table 4(a) presents sound values for Lignacrete blockwork with conventional finishes. Table 4(b) presents values for Lignacrete blockwork with acoustic linings to one side of the wall. These constructions will be of interest where higher levels of sound insulation are required without increasing the block wall thickness and are based on the use of 100mm and 140mm Lignacrete blocks in conjunction with a standard specification acoustic panel.

Sound Reduction - Lignacrete wall with conventional finishes - Table 4a

Wall Width (mm)	Block Type	Weighted Sound Reduction Index Rw (dB)			
		L/tweight Plaster	Dry Lined	Paint Finish	No Finish
100	Solid	51	49	48	46
140	Solid	55	53	53	52
140	Solid Midi	55	53	53	52
140	Cellular/Hollow	52	50	48	47
190	Solid	57	56	56	55
190	Hollow	55	55	53	52
215	Solid	58	57	58	57
200-215	Collar Jointed Wall 2x100m leaves ⁽¹⁾	56	55	53-55	52-54
215	Hollow	55	54	53	53

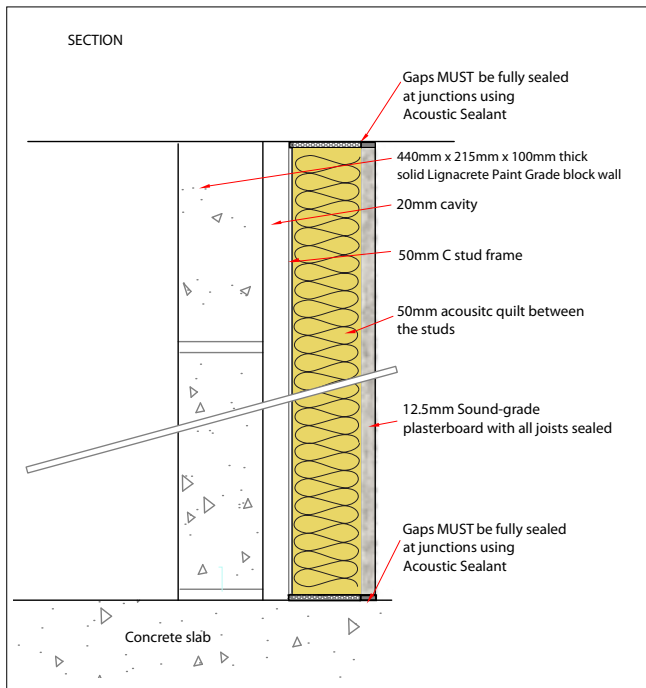
⁽¹⁾ 2 leaves of 100mm solid blocks laid back to back and tied together.

Note:

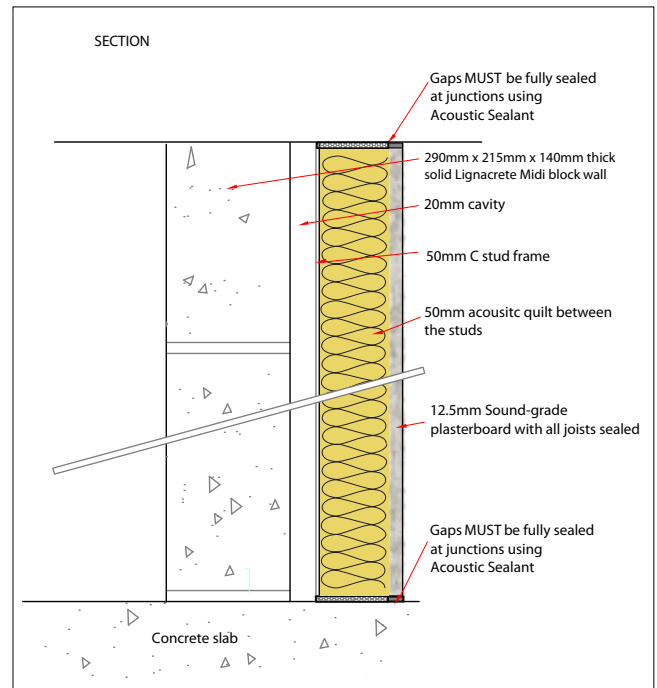
1. The above values are based on technical assessments and tests to BS EN ISO 140-3.
2. Surface finishes are assumed to be applied to both wall faces.

Sound Reduction - Lignacrete wall with acoustic linings - Table 4b

Block Type	Acoustic Lining Specification	Weighted Sound Reduction Index R_w (dB)
100mm Lignacrete Paint Grade - Lining to one face	12.5mm Soundbloc or similar plasterboard on 50mm steel C stud located 20mm from the wall face, 50mm acoustic quilt between studs. All exposed edges fully sealed.	64
140mm Lignacrete Midi - Lining to one face	12.5mm Soundbloc or similar plasterboard on 50mm steel C stud located 20mm from the wall face, 50mm acoustic quilt between studs. All exposed edges fully sealed.	65



100mm Lignacrete solid blockwork with acoustic lining to one side. Sound insulation = 64 R_w , dB



140mm Lignacrete solid blockwork with acoustic lining to one side. Sound insulation = 65 R_w , dB

Fire Resistance

The fire resistance periods of Lignacrete loadbearing and non-loadbearing walls are shown in Tables 5a and 5b.

This data is only valid for walls complying with BS EN 1996 Part 1-1, Part 2 and Part 3. For walls designed in accordance with BS 5628, fire resistance values can be confirmed with our Technical Department.

Fire resistance of Lignacrete solid blocks - Table 5a

Solid blocks (Group 1 units) - no finish	Non-loadbearing wall (criteria E1)	Loadbearing wall (criteria RE1)	
		$a \leq 1.0$	$a \leq 0.6$
100mm	3 hours	2 hours	3 hours
140mm	4 hours	3 hours	4 hours

Fire resistance of Lignacrete cellular and hollow blocks - Table 5b

Cellular and hollow blocks (Group 2 units) - no finish	Non-loadbearing wall (criteria E1)	Loadbearing wall (criteria RE1)	
		$a \leq 1.0$	$a \leq 0.6$
100mm	1 hour	1 hour	1.5 hours
140mm	3 hours	3 hours	3 hours

Note:

- These Tables are only valid for walls complying with BS EN 1996 Part 1-1, Part 2 and Part 3. For walls designed in accordance with BS 5628, fire resistance values from that Standard are available on request.
- Criteria E1 refers to walls with a separating function. Criteria RE1 refers to walls with a separating and loadbearing function.
- This Table is derived on data from the National Annex to BS EN 1996-1-2. References to $a \leq 1.0$ and $a \leq 0.6$ refer to the proportion of load on a wall. If unknown, we suggest the values for $a \leq 1.0$ are used as these are 'worst case' values.

Thermal insulation

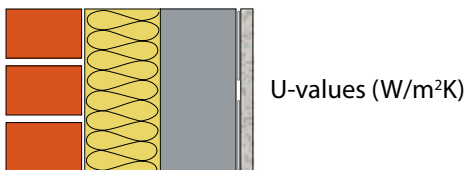
Lignacrete dense blocks can be used to satisfy the requirements of Part L of the Building Regulations. This includes changes driven by the Future Home Standard which seek to significantly improve the energy performance of new homes, with all homes to be highly energy efficient, with low carbon heating and be zero carbon ready by 2025.



Presented are the U-values for a range of wall constructions based on 100mm Lignacrete blocks in conjunction with full and partial cavity insulation. The outer leaf is facing brick, but a rendered block outer leaf will usually achieve at least the same U-value

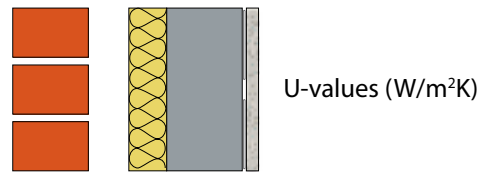
For constructions not shown please contact our Technical Department (tel 01842 810678) who will be pleased to provide confirmation of performance.

Full Cavity Fill and 100mm Lignacrete blocks



Cavity fill type	12.5mm plaster-board on dabs	13mm lightweight plaster
100mm DriTherm Cavity Slab 32 Ultimate	0.27	0.28
125mm DriTherm Cavity Slab 32 Ultimate	0.22	0.23
150mm DriTherm Cavity Slab 32 Ulimite	0.19	0.20
100mm Isover CWS 32	0.27	0.28
125mm Isover CWS 32	0.22	0.23
150mm Isover CWS 32	0.19	0.20
90mm Kingspan Kooltherm K106 (plus a 10mm cavity)	0.18	0.18
115mm Kingspan Kooltherm K106 (plus a 10mm cavity)	0.14	0.14
90mm Eurowall + (plus a 10mm cavity)	0.20	0.20
115mm Eurowall + (plus a 10mm cavity)	0.17	0.16
140mm Eurowall + (plus a 10mm cavity)	0.14	0.14
100mm Xtratherm Cavity Therm	0.20	0.19
125mm Xtratherm Cavity Therm	0.16	0.16
150mm Xtratherm Cavity Therm	0.14	0.13

Partial Cavity Fill and 100mm Lignacrete blocks



Cavity fill type	12.5mm plaster-board on dabs	13mm lightweight plaster
60mm Celotex CW4000	0.25	0.26
75mm Celotex CW4000	0.22	0.22
100mm Celotex CW4000	0.17	0.18
60mm Kingspan Kooltherm K108	0.22	0.23
75mm Kingspan Kooltherm K108	0.19	0.19
100mm Kingspan Kooltherm K108	0.15	0.15
60mm Eurowall Cavity	0.25	0.26
75mm Eurowall Cavity	0.22	0.22
100mm Eurowall Cavity	0.17	0.18
100mm Rockwool Partial Fill	0.27	0.28
150mm Rockwool Partial Fill	0.19	0.20
170mm Rockwool Partial Fill	0.17	0.18
100mm Isover CWS 32	0.26	0.27
125mm Isover CWS 32	0.22	0.22
150mm Isover CWS 32	0.18	0.19

Notes to tables:

1. The U-values shown are based on the use of various proprietary insulation products. Alternative products can be used, provided they can achieve an equivalent thermal resistance (m^2K/W).
2. Wall ties are assumed to be stainless steel with a cross-sectional area of no more than $12.5mm^2$ for structural cavities up to 125mm wide.
3. The suitability of full fill cavity insulation materials will depend on exposure conditions and should be confirmed by the designer. For partial cavity fill, a 50mm residual should be maintained or as recommended by the manufacturer.

Thermal Bridging

A significant factor in thermal assessments is the heat loss through thermal bridges (known as non-repeating or linear thermal bridges).

These occur at junctions between elements or where the continuity of the external fabric insulation is interrupted (e.g. at junctions with external walls, floors and roof). Assessors will need to apply a PSI (y) value to the particular junction being measured.

The Concrete Block Association (CBA) have developed a comprehensive set of junctions that have been independently assessed. The results clearly demonstrate that constructions using Lignacrete aggregate blocks can be assigned improved performance when compared to the Government's Accredited Construction Details and Default values shown in Appendix K of SAP 2012.

Thermal Bridging (cont)

We recommend use of these enhanced bridging details. This information will be of interest to designers and SAP assessors as well as builders who will have the responsibility for correctly constructing the various junctions.

Junction details and PSI (y) values can be accessed at www.cba-blocks.org.uk



Design

The design of walls incorporating Lignacrete blocks should be in accordance with relevant design standards including BS 8103: Part 2, BS EN 1996-1-1 and the requirements of the Building Regulations.

Surface Finish Recommendations

Drylining - Application to be as manufacturer's recommendations.

Dense Plaster - Apply either 1:1:6 cement:lime:sand or 1:4 ½ Masonry cement:sand or 1:5 ½ cement; sand and plasticiser. Alternatively: Thistle Bonding or Thistle Hardwall or Knauf Ultimate backing plaster.

Finishing Coats - Thistle plaster finish or Thistle multi-finish or Knauf Multi cover.

External Rendering - Rendering to be in accordance with BS EN 13914-1. Avoid over strong mixes. Ensure the first coat of render is applied to a greater thickness than successive coats. An initial spatterdash coat is advisable, consisting of 1 part cement, 1 part sand, gauged with a proprietary bonding agent (SBR).

Builders considering the use of proprietary render systems must exercise caution to accurately adhere to the render manufacturers' design and specification instructions. Detailed guidance is also published in the NHBC Standards, Chapter 6.11- Render.

Strictly adhere to the specific application instructions, paying particular attention to prevailing weather conditions and the minimum recommended thickness of single coat renders.

Movement Control

Movement joints should be considered in accordance with PD 6697 at approximately 6.0 metre spacings. In areas of concentrated stress, such as those above and below openings, consideration should be given to the use of bed joint masonry reinforcement.

Mortar

The mortar type for work above ground level should be designation (iii) / Compressive Class M4. Stronger mixes may be used only with the permission of the designer. Stronger mixes may also be required for work below ground in accordance with PD 6697.

Accreditations

