

Medium density fine textured concrete blocks available in paint grade and fair-face finish. Suitable for use in commercial, industrial and leisure projects

- Robust and durable
- Excellent sound reduction
- High periods of fire resistance
- Low air permeability resulting in thermally efficient buildings
- Strong background for heavy duty fixings



Available in Fair Faced and Paint Grade finishes

General Properties - Table 1

Face Size	440mm x 215mm		
Dimensional Tolerances	Category: D1		
Mean Unit Strength	3.6, 7.3, 10.4N/mm ²		
Net Dry Density	Lignacite (all strengths): 1570kg/m ³	Lignacite SP: 1450kg/m ³	
Thermal Conductivity @ 3% moisture content	Lignacite (all strengths): 0.90W/mK	Lignacite SP: 0.79 W/mK	
Moisture Movement	<0.7mm/m		
Reaction to Fire	Class A1		
Air Tightness		No finish	Paint one side
		(m ³ /hr/m ²)	
	100mm solid	3.57	0.5
	140mm SP	4.62	0.24
	140mm cellular	4.82	0.88
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)		

Note:

⁽¹⁾ Cellular and hollow blocks are produced in 3.6 and 7.3N/mm² strengths

⁽²⁾ The airtightness results are based on blocks finished using an emulsion paint'

Lignacite blocks are available in the following grades:

- Fair-Faced. For locations requiring a consistent colour and close textured block face. (When ordering please state blocks are for Fair-Faced use)
- Paint-Grade. For locations where a consistent close textured face is required as a background for direct painting

Lignacite SP is available in a 140mm width solid block. It consists of a specially formulated mix which reduces the block density to produce a solid block under 20kg unit weight. It is available in all grades. There is a slight colour difference between the traditional block and the Lignacite SP.

Appearance

Lignacite blocks are medium grey in colour with a fine textured surface. Solid, cellular, and hollow block types are available.

Standards

Lignacite 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.



"Co-ordinating coursing block available"



Applications

Lignacite blocks are suitable for use in commercial, industrial and leisure projects. Fair-Faced blocks are recommended for internal use. They can be used in the following locations:

- External cavity walls
- Internal partitions
- Fire break walls
- Separating walls

Sustainability

Responsible sourcing - Lignacite Ltd operates its manufacturing plants to a BSI certified Environmental Management System (EMS) complying with ISO 14001. Lignacite 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 Lignacite blocks can be obtained from the BRE Green Guide to Specific 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	14.9	159
140	Solid SP	19.2	206
140	C/H	15.3	168
190	Solid	28.2	301
190	Hollow	19.0	210
215	Solid	31.9	340
215	Hollow	20.8	231

Note: Weights are based on 3% moisture content by weight.

Thermal Resistance

The thermal resistance values (m²K/W) for Lignacite 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	0.111	0.103
140	Solid SP	0.177	0.167
140	C/H	0.210	0.200
190	Solid	0.211	0.196
190	Hollow	0.246	0.235
215	Solid	0.239	0.222
215	Hollow	0.258	0.247

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

The Weighted Sound Reduction Index (Rw) values of various Lignacite wall constructions are shown in Tables 5(a) and 5(b). Table 4(a) presents sound values for Lignacite blockwork with conventional finishes. Table 4(b) presents values for Lignacite blockwork with acoustic linings to one or both sides 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 Lignacite blocks in conjunction with proprietary acoustic panels. These enhanced constructions have the capability to achieve a sound reduction in excess of 60 Rw (dB).

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

Wall Width (mm)	Block Type	Weighted Sound Reduction Index Rw (dB)			
		L/tweight Plaster	Dry Lined	Paint Finish	Fair Faced
100	Solid	47	47	47	46
140	Solid SP	51	51	50	49
140	Cellular/Hollow	49	49	47	47
190	Solid	54	53	54	53
190	Hollow	50	50	50	49
215	Solid	54	55	55	54
200-215	Collar Jointed Wall 2x100m leaves laid back to back ⁽¹⁾	52	52	51	51
215	Hollow	51	51	51	50
275	Cavity Wall 2x100m leaves with a 75mm cavity	54	54	53	52
340	Cavity Wall 100mm Solid blocks and 140mm LignaciteSP blocks with a 100mm cavity	57	57	56	55

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

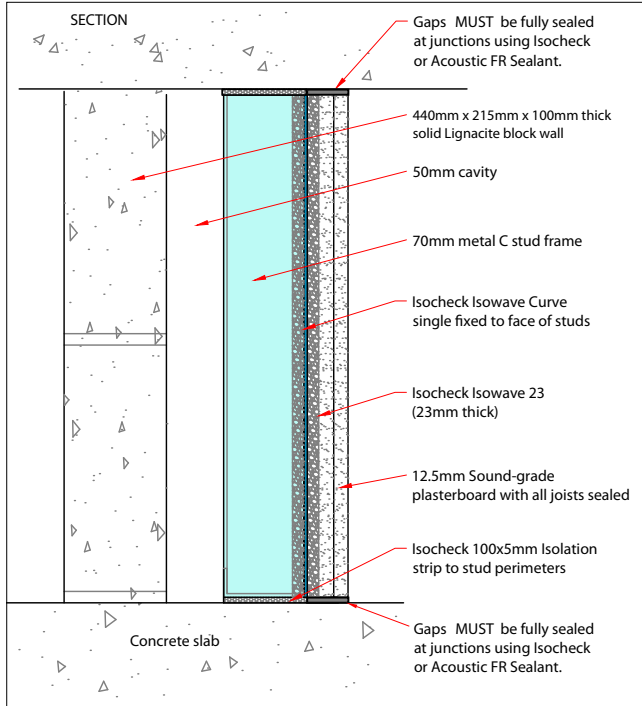
Note:

- The above values are based on technical assessments and tests to BS EN ISO 140-3.
- Surface finishes are assumed to be applied to both wall faces.
- Cavity walls tied together using Type 4/Type A wall ties e.g. Ancon Staifix HRT4

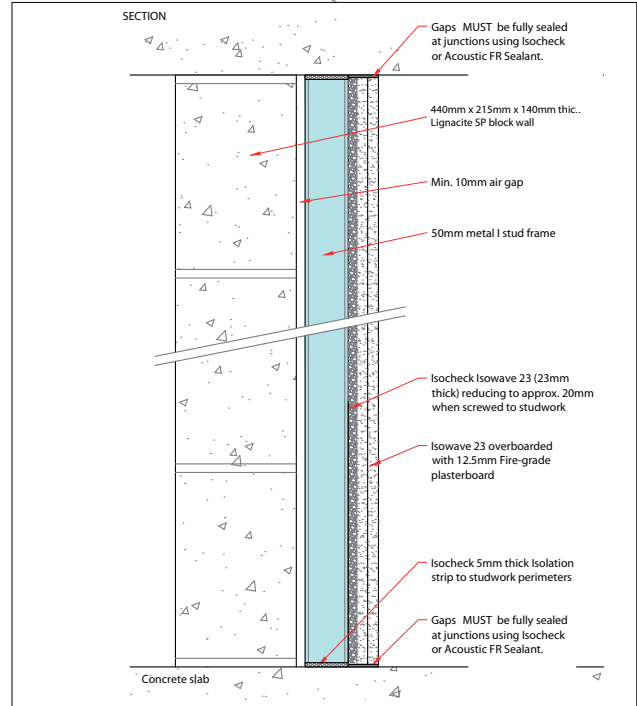
Sound Reduction - Lignacite wall with acoustic linings - Table 4b

Block Type	Acoustic Lining Specification	Weighted Sound Reduction Index Rw (dB)
100mm Lignacite Solid - Lining to one face	Isowave 23 system fixed to one wall face.	64
140mm Lignacite SP - Lining to one face	Isowave 23 system fixed to one wall face.	56
140mm Lignacite SP - Lining to both faces	Isowave 23 system fixed to both wall faces.	65
140mm Lignacite SP - Lining to one faces	50mm C stud built with 20mm gap from wall, 50mm Isover APR Insulation, 12.5mm Soundbloc plasterboard	65

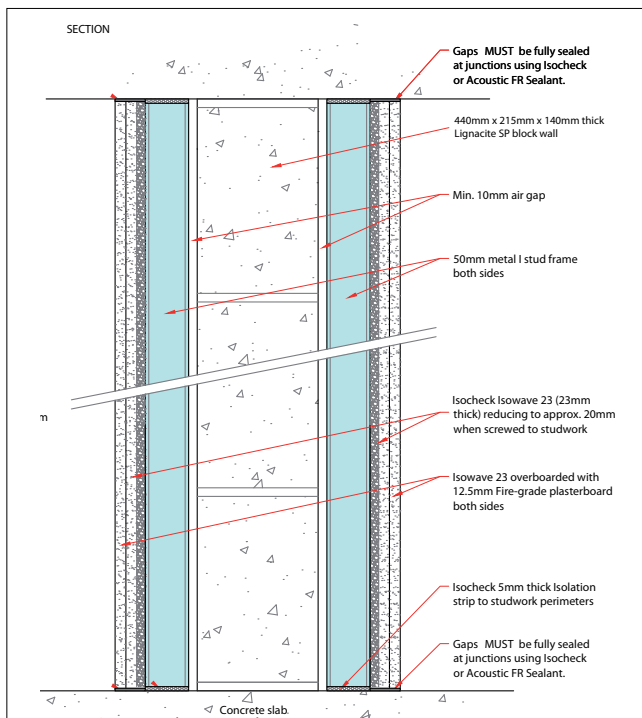
Note: The Isowave system is supplied by Isomass Ltd. www.isomass.co.uk



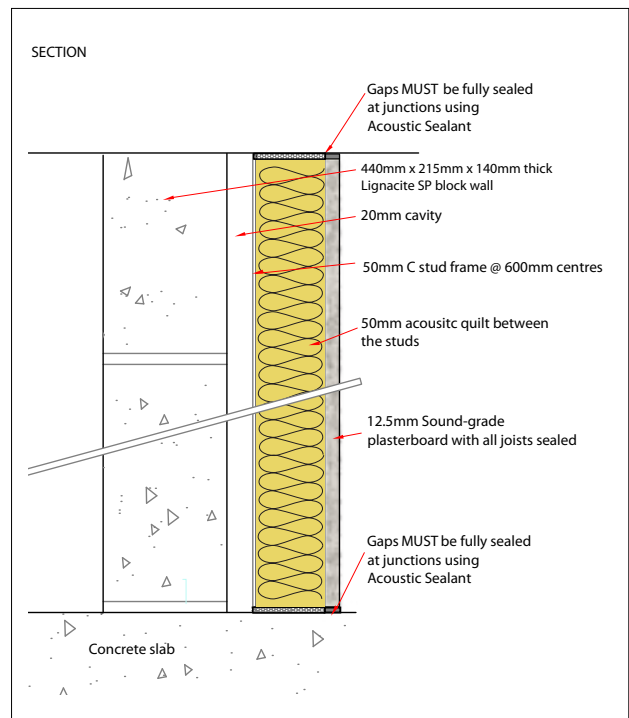
100mm Lignacite solid blockwork with acoustic lining to one side.
Sound insulation = 64 Rw, dB



140mm Lignacite SP blockwork with acoustic lining to one side. Sound insulation = 56 Rw, dB



140mm Lignacite SP blockwork with acoustic lining to both sides.
Sound insulation = 65 Rw, dB



140mm Lignacite SP blockwork with acoustic lining to one side.
Sound insulation = 65 Rw, dB

Fire Resistance

The fire resistance periods of Lignacite loadbearing and non-loadbearing walls are shown in Tables 5a and 5b. The data is derived from BS EN 1996-1-2.

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.

The thicknesses given in the Table 4a and 4b are for masonry alone, excluding finishes. For the fire resistance of walls with finishes, refer to the Lignacite Design Guide – Fire Resistance.

Fire resistance of Lignacite solid blocks - Table 5a

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

Fire resistance of Lignacite 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 ≤ 1.0	a ≤ 0.6
100mm	1 hours	1 hours	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 ≤ 1.0 and a ≤ 0.6 refer to the proportion of load on a wall. If unknown, we suggest the values for a ≤ 1.0 are used as these are 'worst case' values.

Thermal insulation

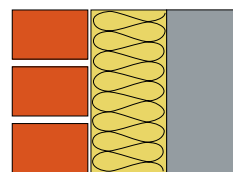
Lignacite blocks can be used to satisfy the requirements of Part L of the Building Regulations. This includes changes driven by the Future Home Standard which seek to significantly improve the energy performance of new homes, with all homes to be highly energy efficient, with low carbon heating and be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



Presented are the U-values for a range of wall constructions based on 100mm Lignacite blocks - Paint and Fair Face grades - 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.

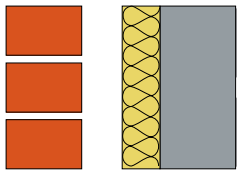
Full Cavity Fill and 100mm Lignacite blocks



U-values (W/m²K)

Cavity fill type	Fair Face or Paint Finish
100mm Dritherm 32 Cavity Slab 32	0.28
125mm Dritherm 32 Cavity Slab 32	0.23
150mm Dritherm 32 Cavity Slab 32	0.20
100mm Isover CWS 32	0.28
125mm Isover CWS 32	0.23
150mm Isover CWS 32	0.20
90mm Kingspan Kooltherm K106 (plus a 10mm cavity)	0.18
115mm Kingspan Kooltherm K106 (plus a 10mm cavity)	0.14
90mm Eurowall + (plus a 10mm cavity)	0.21
115mm Eurowall + (plus a 10mm cavity)	0.17
140mm Eurowall + (plus a 10mm cavity)	0.14
100mm Xtratherm Cavity Therm	0.20
125mm Xtratherm Cavity Therm	0.16
150mm Xtratherm Cavity Therm	0.14

Partial Cavity Fill and 100mm Lignacite blocks



U-values (W/m²K)

Cavity fill type	Fair Face or Paint Finish
60mm Celox CW400	0.26
70mm Celotex CW400	0.22
100mm Celotex CW400	0.18
60mm Kingspan Kooltherm K108	0.23
75mm Kingspan Kooltherm K108	0.19
100mm Kingspan Kooltherm K108	0.15
60mm Eurowall Cavity	0.26
75mm Eurowall Cavity	0.22
100mm Eurowall Cavity	0.18
100mm Rockwool Partial Fill	0.28
150mm Rockwool Partial Fill	0.20
170mm Rockwool Partial Fill	0.18
100mm Isover CWS 32	0.27
125mm Isover CWS 32	0.22
150mm Isover CWS 32	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 (m² K/W).
2. Wall ties are assumed to be stainless steel with a cross-sectional area of no more than 12.5mm² 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 Lignacite 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 the use of 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 Lignacite blocks should be in accordance with relevant design standards including BS 8103 Part 2 and BS EN 1996-1-1 and requirements of the Building Regulations.

Surface Finish Recommendations

For Lignacite walls to be directly painted, a mist and at least two coats of emulsion will provide a good finish. However, the actual coverage will depend on the quality of the paint and how it is applied e.g., brush, roller or by spray. Always ensure that each coat of paint has fully dried before any further layers are added.

Where other finishes are required, the following can be considered.

Drylining - Application to be as manufacturer's recommendations.

Dense Plaster - Apply either 1:1:6 cement:lime:sand or 1:4 1/2 Masonry cement:sand or 1:5 1/2 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

