LIGNACITE ECO MEDIUM DENSE CONCRETE BLOCKS

Product data updated: 10th Nov 2026

Lignacite ECO Medium Dense concrete blocks contain 92% recycled material by weight per m^2 and achieve an embodied carbon figure as low as 5.2 $kgCO_2e/m^2$ across A1-A3 (cradle to gate). Independently verified Environmental Product Declarations (EPDs) provide transparent, reliable environmental data to support informed material selection. Available in a Paint Grade finish in 100mm and 140mm thicknesses, the blocks offer a lower-carbon alternative to conventional masonry.

Their carefully developed mix design combines recycled sand, recycled graded-wood particles, recycled lightweight material and cement to deliver robust, durable blocks with reliable technical performance. The 140mm version is specially formulated to optimise density while keeping unit weight below 20kg, resulting in a slight colour difference compared with the 100mm block. Suitable for a wide range of applications, they are an excellent choice for projects with ambitious sustainability and BREEAM targets.

Specification & Application

Standards

Lignacite ECO Medium Dense blocks are BSI Kitemarked and certified to BS EN 771-3. They are also Category 1 masonry units manufactured under a BSI-certified Quality Management System, which is BS EN 9001 compliant.

Appearance

Lignacite ECO Medium Dense blocks are mid-grey in colour with a close-textured surface, making them suitable for direct painting. Where the appearance of the wall is important, it is recommended that a sample panel is constructed on-site to establish a benchmark for the standard of workmanship.

Application

Lignacite ECO Medium Dense blocks are recommended for walls that are to be directly decorated. If left fair, some colour variation will be discernible.

Typical applications include:

- The inner leaves of external cavity walls
- Internal walls including fire break walls
- Separating walls

Where the appearance of the wall is important, walls of 210-215mm thickness are recommended to be constructed using two leaves of 100mm Lignacite ECO Medium Dense blocks laid back-to-back and suitably tied. This construction is known as a collar-jointed wall.

Alternatively, if the appearance of the wall is not critical, a 215mm wall can be built using 100mm or 140mm Lignacite ECO Medium Dense blocks laid, if the appearance of the wall is not critical, a 215mm wall can be built using 100mm or 140mm Lignacite ECO 70 blocks laid flat.

Specification

Face Size	440mm x 215mm
Thickness	100mm, 140mm
Mean Unit Strength	3.6 N/mm^2, 7.3N/mm^2
Configuration	Group 1, solid blocks
Dimensional Tolerances	Category D1
Net Dry Density	100mm blocks: 1570 kg/m^3 140mm blocks: 1450 kg/m^3
Thermal Conductivity at 3% Moisture Content	0.88 W/mK (100mm & 140mm)
Airtightness ($m^3/hr/m^2$) No finish	4.90 (100mm), 3.30 (140mm)
Airtightness ($m^3/hr/m^2$) Paint one side	<0.1 (100mm & 140mm) - 2 coats of emulsion paint
Reaction to Fire	Class A1
Moisture Movement	100mm blocks: <0.7 140mm blocks: <0.9
Durability Against Freezing/Thawing	Frost resistance in accordance with PD 6697, Table 15.

Weights & Pack Sizes

All weights are approximate and subject to normal variations in raw materials.

Table 1 – Block Weights and Pack Sizes

Size mm nominal (mm) (L x W x H)	Unit weight (kg)	Laid weight inc. mortar (kg/m²)	No. of blocks per pack
Solid 440 x 100 x 215	14.9	159	72
Solid 440 x 140 x 215	19.2	206	48

Table 1 Notes:
(1) Weights are based on 3% moisture content by weight.

Fire Resistance

Lignacite ECO Medium Dense blocks are suitable for use in masonry walls designed for fire resistance in accordance with BS EN 1996-1-2:2024 and its UK National Annex.

The fire resistance periods shown in Table 2 are derived from the tabulated design data in Tables NA.7 and NA.8 of NA to BS EN 1996-1-2:2024, applicable to dense and lightweight aggregate concrete masonry. Table NA.7 provides minimum masonry thicknesses for separating non-loadbearing walls (criteria EI), while Table NA.8 provides minimum masonry thicknesses for separating loadbearing single-leaf walls (criteria REI).

The values are based on the applicable masonry unit group, aggregate type, gross density, wall thickness, mortar and, for loadbearing walls, utilisation factor specified by the tabulated design method. The masonry thicknesses stated exclude applied finishes.

The stated fire resistance periods are derived from Eurocode tabulated design data and are not the results of product-specific fire resistance testing. For loadbearing applications, the suitability of the wall construction and applicable fire resistance period should be verified against the design loading and other requirements of BS EN 1996-1-2:2024 and its UK National Annex.

Table 2 – Fire Resistance

Block type (No finish)	Non-loadbearing wall (criteria E1)	Loadbearing wall (criteria RE1)
Lignacite ECO Medium Dense - 100mm solid	2 hours	2 hours
Lignacite ECO Medium Dense - 140mm solid	4 hours	3 hours

Table 2 Notes:
(1) Solid blocks are Group 1 units as defined in EN 1996-1-1

Sound Properties

Due to its relatively high mass and low porosity, Lignacite ECO Medium Dense blockwork provides excellent levels of sound insulation between buildings and adjoining rooms. The Weighted Sound Reduction Index (Rw) values of various Lignacite ECO Medium Dense wall constructions are shown in Table 3.

Table 3 – Sound Reduction Values

Weighted Sound Reduction Index: Rw, (dB):

	No finish	Paint finish
Lignacite ECO Medium Dense - 100mm solid	43	45
Lignacite ECO Medium Dense - 140mm solid	52	53

Table 3 Notes:
(1) Sound insulation values are based on technical assessments and tests to BS EN ISO 140-3.

Thermal Properties

The thermal resistance values (m² K/W) for Lignacite ECO Medium Dense blocks are shown in Table 5. The values are calculated by dividing the block thickness by its thermal conductivity (W/mK).

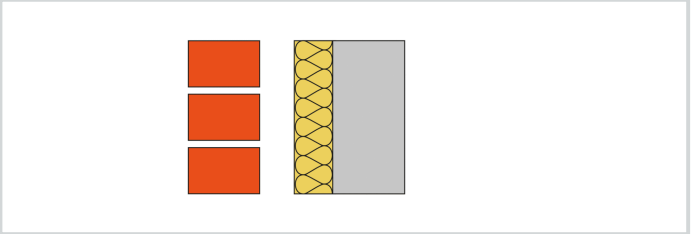
Table 5 – Thermal Resistance Values

	Thermal Resistance (m² K/W): 3% m/c
100mm Lignacite ECO Medium Dense	0.114
140mm Lignacite ECO Medium Dense	0.159

Table 5 Notes:
(1) 3% moisture content (m/c) should be used for protected locations, such as the inner leaf of external cavity walls.

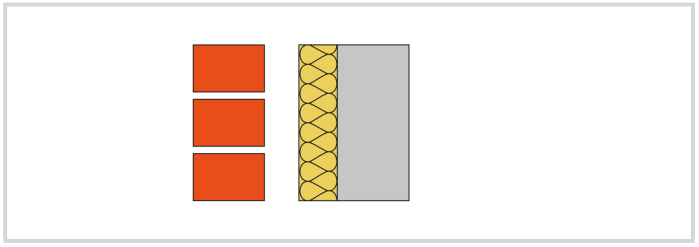
The tables below show the U-values for a range of wall constructions based on 100mm Lignacite ECO Medium Dense blocks with full and partial cavity insulation. The outer leaf is facing brick, but a rendered block outer leaf will usually achieve at least the same U-value. The U-values assume no surface finishes, other than paint.

Full Cavity Fill and 100mm Lignacite ECO Medium Dense Blocks



Cavity fill type	No Finish U-values (W/m² K)
100mm DriTherm Cavity Slab 32 Ultimate	0.28
125mm DriTherm Cavity Slab 32 Ultimate	0.23
150mm DriTherm Cavity Slab 32 Ultimate	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)	0.19
115mm Kingspan Kooltherm K106 (plus a 10mm cavity)	0.15
140mm Kingspan Kooltherm K106 (plus a 10mm cavity)	0.13
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 ECO Medium Dense Blocks



Cavity fill type	No Finish U-values (W/m² K)
60mm Sopratherm CW4000	0.26
75mm Sopratherm CW4000	0.22
100mm Sopratherm CW4000	0.18
60mm Kingspan Kooltherm K108	0.24
75mm Kingspan Kooltherm K108	0.20
100mm Kingspan Kooltherm K108	0.16
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

Cavity Fill Table's Notes:
(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 (always check the manufacturer's guidance).

Sustainability

Environmental Management and Responsible Sourcing

Our manufacturing plants operate to a BSI-certified Environmental Management System (EMS), which complies with ISO 14001.

Lignacite Ltd also meets the requirements of BES 6001 – Framework Standard for the Responsible Sourcing of Construction Products (Certificate No: BES 580823). This independently awarded Responsible Sourcing Certification confirms that our products have been made with constituent materials that have been responsibly sourced. This extends to organisational governance, supply chain management and environmental and social aspects, all of which must be addressed in order to ensure the responsible sourcing of construction products. Certification to BES 6001 will allow credits to be gained under environment assessment schemes such as BREEAM.

Energy Management

A BSI-certified energy management system in accordance with ISO 50001 (Certificate No. ENMS 751020) is used to help manage energy use.

Compliance with ISO 50001 is a valuable tool in helping to manage energy use and includes the following outputs.

- A policy for more efficient use of energy
- Fix targets and objectives to meet the policy
- Use data to better understand and make decisions about energy use
- Measure the results
- Review how well the policy works, and
- Continually improve energy management

Recycled Materials

Lignacite ECO Medium Dense blocks are manufactured with 87% recycled content.

Environmental Performance Declaration (EPD)

Key environmental performance data (in accordance with EN 15804+A2 and ISO 14025/ ISO 1930) can be found in the EPD for Lignacite ECO blocks.

Environmental Data Summary

A1-A3 (Production Stage) - 100mm Lignacite ECO Medium Dense	5.6 kg CO_2e/m^2
A1-A4 (Production & Transport) - 100mm Lignacite ECO Medium Dense	6.9 kg CO_2e/m^2
A1-A3 (Production Stage) - 140mm Lignacite ECO Medium Dense	5.2 kg CO_2e/m^2
A1-A4 (Production & Transport) - 140mm Lignacite ECO Medium Dense	17.4 kg CO_2e/m^2

Table Note:
(1) A4 based on delivery into Central London using HVO fuel.

Source – Click here for all Lignacite ECO EPDs.

The Life Cycle Stage (A1-A3) refers to the extraction, processing, transportation and manufacture of materials and products up to the point where they leave the factory gate to be taken to site.

The notation 'e' is an abbreviation for tonnes of carbon dioxide equivalent.

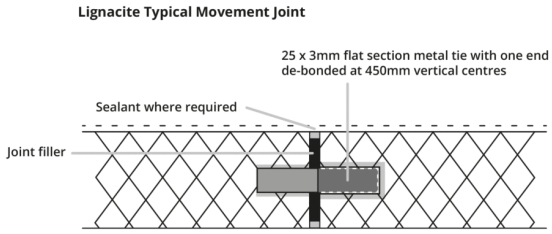
Design

Structural Design

The design of walls using Lignacite ECO 70 concrete 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.

Movement Control

Vertical movement joints should be considered in accordance with masonry design codes and the recommendations of Published Document PD 6697, at 6.0 – 7.0 metre spacings. In areas of raised stress, such as above and below openings in external walls, the blockwork may need to be reinforced to restrain movement.



Service Life

When properly constructed, the durability of walls built using Lignacite ECO Medium Dense products will match that of walls of traditional masonry and will fulfil their intended function for the life of the building in which they have been installed (typically 100 years). The concrete blocks themselves will require no maintenance.

Maintenance for walls will normally include the replacement of sealant in movement joints and at junctions/openings. Repointing for walls that are exposed to the elements may be necessary towards the end of their service life.

Wall Ties

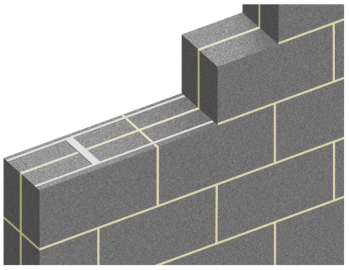
Under normal conditions, wall ties should be embedded 50mm into the mortar on each leaf, staggered in alternate courses and spaced in accordance with the following.

Table 6 – Wall Tie Spacings

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

Collar Jointed Walls

A 200-215mm collar-jointed wall can be built using two leaves of 100mm Lignacite ECO Medium Dense blocks laid back-to-back and suitably tied. This construction is recommended for directly painted walls.



Walls can be tied together using metal ties or using masonry reinforcement e.g., AMR-CJ masonry reinforcement.

Design continued...

Mortar

Generally, the mortar type for work above ground level should be designation (iii) / Compressive Class M4. Stronger mixes may be required if blocks are used below ground.

Table 7 – Mortar Mixes

Mortar Designation (as per BS 5628-3)	Compressive Strength Class (as per BS EN 1996)	Recommended mix proportions of materials by volume
(iii)	M4	1:1:5 to 6 - Cement:Lime:Sand. 1:5 to 6 - Cement:Sand with or without air entrainment. 1:4 to 5 - Masonry Cement:Sand (with non-lime filler). 1:3½:4 - Masonry Cement:Sand (with lime filler).
(ii)	M6	1:½:4-4½ - Cement:Lime: Sand. 1:3 to 4 - Cement:Sand with or without air entrainment. 1:2½:3½ - Masonry Cement:Sand (with non-lime filler). 1:3 - Masonry Cement:Sand (with lime filler).

Site Practice

Surface Finish Recommendations

Direct Painting

A mist coat followed by at least two coats of emulsion will provide a good finish. 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.

Safe Handling

For detailed advice, refer to Lignacite's Sitework Guide and the Material Safety Data sheet.

- Lignacite ECO Medium Dense concrete block packs may be stacked on firm and level surfaces to a maximum height of 2 packs. Consideration of handling equipment's suitability for site terrain and safety limits should also be given. Hand-operated pallet trucks may not be suitable unless pallets specific for this purpose are used and loads do not exceed the limits of the pallet truck or its operator(s). Care should be taken when opening packs that are wrapped or banded to ensure that items do not fall or otherwise endanger persons handling the blocks or those nearby.
- Handling of Lignacite ECO Medium Dense concrete blocks should be undertaken in accordance with HSE Construction Sheet No. CIS77 'Preventing injury from handling heavy blocks' (Construction Industry Advisory Committee) and in accordance with the Manual Handling Regulations 1992 (as amended). This concludes that there is a high risk of injury to individuals who repetitively manually handle blocks in excess of 20 kg. Where practical, mechanical handling equipment should be used to transport block packs to the area of work.
- Lignacite ECO Medium Dense concrete blocks should not be installed if the temperature is at or below 3°C and falling. Lignacite ECO Medium Dense concrete blocks should always be laid on a full bed of mortar and vertical joints solidly filled.
- For walls built undecorated, sample panels are recommended, which should be built prior to commencing Lignacite ECO Medium Dense concrete block laying. This will serve as a benchmark for defining and specifying the quality of work required. Please note that block colour consistency is not guaranteed
- It is advisable to view sample panels at a distance of approximately 3m from the wall in good natural light.