Porotherm

Wall Solutions

Precision-made clay block walling system

Porotherm

Wienerberger

Building Material Solutions

Wienerberger – leading the way

Founded in 1819, Wienerberger has grown into a world-class provider of wall, roof and landscaping solutions with a global reach. With 214 plants in 30 countries – 14 of them in the UK – we lead the way in new build and renovation markets, offering more than 1,000 products encompassing the complete building envelope.

Our product innovation is measured against three key benchmarks: quality of construction, perfection in performance and, increasingly, sustainability. All three are built-in to every aspect of the Porotherm clay block walling system.

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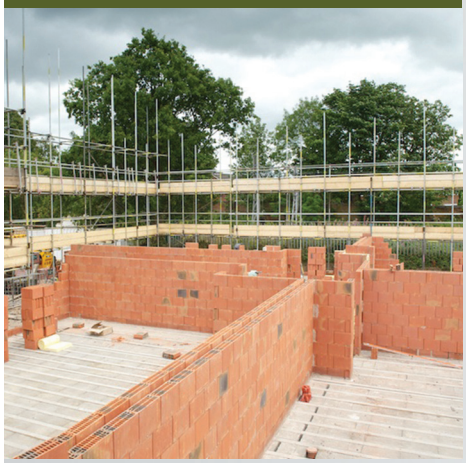
The Wienerberger sustainability story

We strive to maximise sustainability without compromising the performance of our products – it's central to our output worldwide.

The Wienerberger contribution:-



Wienerberger's clay block walling system helps secure Code Level 4 for housing trust development.

* Applies to brick manufacturing

Our CO_2 emissions are 12.5% lower than the industry average*

More than £25 million invested in improving UK production efficiency, energy performance and capacity increases in 2014/15

All of our UK manufactured products are certified to BES 6001, the standard for the Responsible Sourcing of Construction Products

First recycled slates to achieve 'excellent' BES 6001 status

First carbon-neutral roofing factory in the UK

All of our products achieve a BRE Green Guide A or A+ rating

Received the world's first ISO 14001 Environmental Management certification for a brickworks

We are signatories of the British Ceramic Confederation Health and Safety Pledge

Founder member of the ASBP (Alliance for Sustainable Building Products), which is committed to accelerating to a high performance, healthy and low-carbon built environment

The Porotherm performance

- Up to 30% MARSS (materials from alternative, recycled and secondary sources)
- Low embodied energy
- Re-usable as hard core at end of life – 150+ years
- 95% less water use
- Minimal waste during use

Porotherm in brief

Porotherm is a clay block walling system – the ideal option for the UK construction market.

It's extremely fast, virtually dry, safe and simple to use, immensely strong, efficient for stock-holding and storage and environmentally friendly.

The heart of the system – and the secret of its speed and efficiency – is the precision-engineered clay block. A unique interlocking design rules out the need for mortar in the vertical joints and consistent manufacturing quality allows for true 1mm bed joints. Used successfully for decades across Europe, and now well-established as a building solution for UK working conditions, Porotherm can be used in load-bearing and non-load-bearing applications and is ideal for:

- Inner leaf of brick-faced cavity walls
- Inner and outer leaves of rendered cavity walls
- Infill panels within framed structures
- Partition walls and separating walls
- Single leaf (monolithic) internal & external walls

With its lean laying process and rapid daily output, Porotherm brings cost and time-saving benefits throughout the build while its thermal and acoustic efficiencies bring further advantages for decades to follow – the design life for a Porotherm wall is over 150 years.

Contour Homes and Keepmoat Ltd eco-trial.
House built to Code Level 6 of Code for Sustainable Homes.

Successful
& sustainable.

Approved & supported

Porotherm is produced by the world's market leader in clay technology and has been used successfully for over 30 years.

Porotherm blocks comply with BS EN 771-1, carry a CE Mark, and can be used in masonry designed in accordance with Eurocode 6.

Use of the Porotherm system is supported by a technical report and design guidance publication by Lucideon Limited.

Why choose clay blocks?

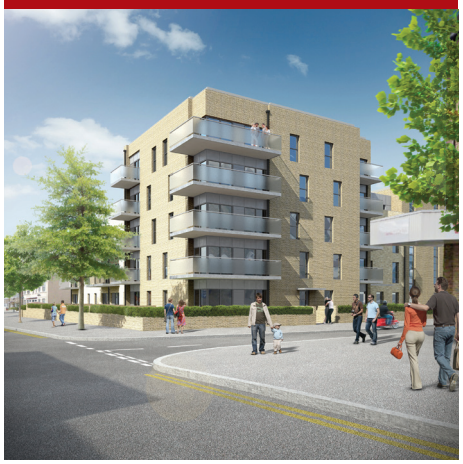
Used for thousands of years in construction worldwide, clay remains the most sustainable solution for modern buildings. Its natural properties means that it provides a complete, long term sustainability, not only offering increasingly sophisticated low-carbon product manufacture, but giving a building life of over 150 years with little or no maintenance.

Strong and durable, yet lighter and often less of a strain to work with than many of the alternatives, clay also builds-in sound and temperature-control benefits wherever it's used – creating the ideal internal living environment.

From sustainability credentials and build quality to the ease of use on-site, clay is a material equipped to meet every demand of modern construction.

Porotherm in depth

The list of key benefits for Porotherm is a long one, and together they form a compelling argument for making it your quick, cost-effective, highly sustainable choice.



Clearview Homes specifies Porotherm for second scheme due to speed.

Faster

- With no mortar needed in vertical joints and a minimal 1mm bed joint, the Porotherm system rises rapidly. An average of 30-40m^2 per man per day is easily achievable, much faster than traditional masonry
- The Porotherm system is capable of being built to storey height in a day
- Floors can be placed without the need for normal backing up so the external envelope can be completed more quickly
- While matching masonry structures for fire-resistance, longevity and sustainability, Porotherm can even be faster than timber frame in construction – with the added benefit of allowing parallel working for internal and external trades earlier in the programme
- Porotherm's specialist ZeroPlus mortar can be used from 0°C and above, meaning that the projects can gain days/weeks extra in working time during winter

Dryer

- In comparison to traditional block-work, Porotherm uses around 95% less water. In a typical 212m^2 building, concrete blocks will consume 1060 litres of water compared to just 72 litres for Porotherm
- The system takes less time to achieve a watertight shell
- The external skin can be removed from the critical path to allow parallel working

Safer

- Porotherm blocks are generally lighter than concrete (optimum weight under 11kg) allowing workers to maintain steady production rates without the risk of repetitive strain injuries
- Precision engineering means no sharp corners, reducing the risk of cuts
- ZeroPlus mortar is applied with a roller, reducing dermatological risk
- The bed joint mix is mixed locally to the workplace, which means a reduction in forklift movements, less plant/pedestrian contact and no need for noisy cement mixers

More Efficient

- Thermally efficient in helping to regulate variations in temperature; air-tightness is maximised with a parge coat or wet plaster
- Acoustically efficient
- Fire resistance is outstanding – Porotherm achieves a Class A1 rating for a 100mm wall
- Breathable – assists in regulating humidity
- No moisture shrinkage – no disruption to finishes, fewer movement joints (1:20 linear metres) and reduced risk of cracking

Stronger

- The compressive strengths of Porotherm's core range are typically 10 N/mm^2, so one block fits the majority of requirements. As a result, there is no need to keep multiple blocks on-site, reducing the risk of wrong-block use and optimising storage space

Porotherm in depth

Another key benefit of Porotherm is it's particularly green.

Sustainable

- All code for sustainable homes levels can be achieved with Porotherm
- 30% of materials from alternative, recycled or secondary sources (MARSS)
- Life expectancy of more than 150 years and blocks recyclable at end-of-life, e.g. hard core
- A+ BRE Green Guide rating in external walls

Energy-efficient

- Less embodied energy due to lower firing temperatures
- Psi values improve the SAP rating of the building envelope and are better than default values
- Increased building fabric efficiency, so reduced need for bolt-on enhancements
- Good thermal mass
- Lucideon tested air-tightness, maximised through a parge coat or wet plaster

Water-efficient

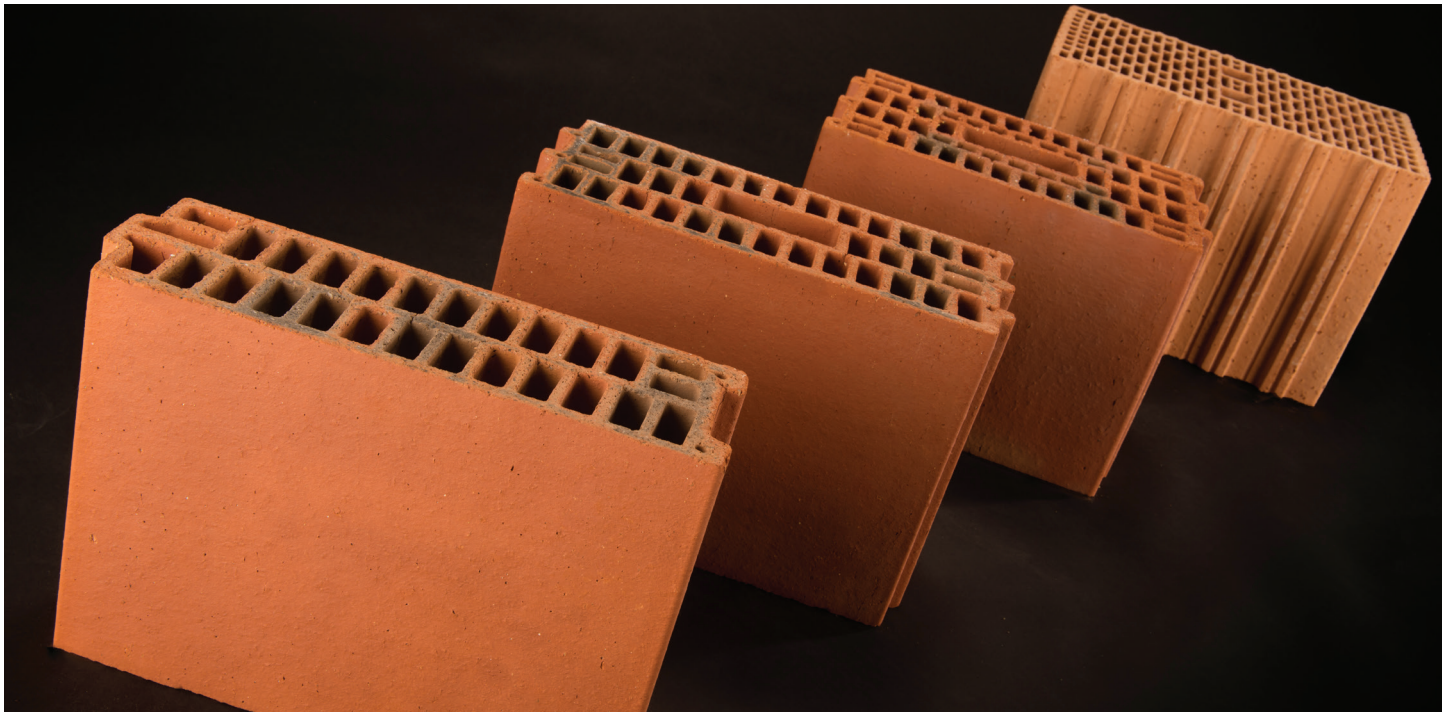
- 95% less water used during construction
- Work is less reliant on the local water supply
- Cleaner wall construction

Waste-efficient

- Maximum build volume for minimum material usage
- Typically 2% waste provision for blocks
- Mortar can be mixed in small quantities local to laying and applied in a controlled fashion, reducing wastage

The Porotherm core range

	DIMENSIONS W X L X H (mm)	QUANTITY/ m^2	QUANTITY/ PACK NO. (m^2)	WEIGHT EACH kg	WEIGHT PACK (inc pallet) kg
Porotherm 100 	100 X 300 X 224	15	160 (10.6)	6.4	1032
Porotherm 140 	140 X 300 X 224	15	120 (8)	7.9	955
Porotherm 190 	190 X 300 X 224	15	80 (5.3)	10.7	870
Porotherm 365 	Technical details available on request				



UNIT GROSS DENSITY kg/m³	TYPICAL BLOCK DRY CONDUCTIVITY (lambda) W/mK	SOUND REDUCTION Rw (dB)*			WALL TYPICAL AIR TIGHTNESS (Parged) m³/(h.m²)	TYPICAL MEAN UNIT COMPRESSIVE STRENGTH N/mm²	TYPICAL CHARACTERISTIC MASONRY STRENGTH fk(N/mm²)	TYPICAL PRODUCTION RATE m² man/hr
		13mm DENSE PLASTER	13mm LIGHTWEIGHT PLASTER	12.5mm PLASTERBOARD				
950	0.29	43	40	40	≤1.2	10	6.5	4 to 8
850	0.26	44	41	41	≤1.2	10	5.0	4 to 6
850	0.26	51	46	47	≤1.2	10	4.5	3 to 5

Notes: Sound reduction – finishes to both wall faces are assumed.
Plus dense plaster 13mm plaster – 27kg/m².
Plus lightweight plaster – 11mm base-coat, 2mm skim – 11.8kg/m².
Eco-parge to each side is assumed prior to application of 12.5mm plasterboard.

Porotherm in use

Assembly methods for Porotherm are easy to understand, and the blocks can be laid extremely quickly to achieve a strong and accurate structure.

To get the best use from the Porotherm system, it's important first to understand the tools and materials that define the process:

1. ZeroPlus Mortar is a mix of fine-ground sand, cement and other ingredients specific to Porotherm use.

- Mixed locally to laying, it allows for thin joints which still achieve full strength after 24 hours
- Unlike traditional mortar, which is often limited to use only when the temperature exceeds 3°C, ZeroPlus is able to be used from 0°C, allowing constructors to minimise weather related delays
- Each 15kg pack requires just 3.6 litres of water and will lay 1 No. pack of blocks when applied by roller

2. A Roller to apply the ZeroPlus mortar allows for the swift and simple creation of true 1mm bed joints.

3. Eco-parge

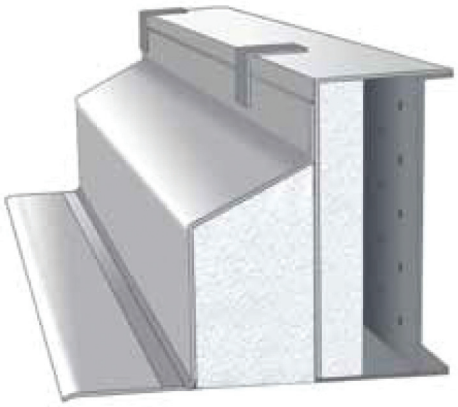
- A high performance parge coat is an alternative to a wet plaster parge coat to provide an airtight barrier prior to the application of plasterboard on dabs internal finishes
- Eco-parge is a high performance modern parge coat that has been specifically designed and tested for the fast application onto the Porotherm system. It has been engineered to increase airtightness and to optimise the sound and thermal performance of the system, prior to dry lining
- Eco-parge can be easily applied by brush or roller ensuring fast, de-skilled application

Fixtures and accessories

A wide variety of fixtures and accessories are available for use with Porotherm, some specifically created to work with the system (in conjunction with our industry-leading partners) and others available as standard items.

Wall Ties

Because of the thin joints created with Porotherm, standard ties are not suitable. However, a range of purpose made, system-compliant stainless steel ties are widely available.



Lintels

A range of system-compliant lintels from all leading manufacturers are widely available.

Fixings

Many off-the-shelf fixings are suitable for use with Porotherm, covering the complete range of light to heavy requirements.

Chasing for electrical and plumbing services.

Chases

Installing chases for the purposes of running services is best achieved by using a proprietary tool designed specifically for the purpose e.g. a wall chaser with two parallel diamond tipped cutting wheels. A bolster chisel can then be used to remove the cut section. The chase should then be sealed for air tightness.

Contractors must follow guidelines to make the installation of electrical cables as safe as possible and note new circuit work may be covered by Part P of the building regulations.

Ideally works pertaining to chasing and making good should be completed prior to applying a parge coat. Should chasing and making good be undertaken after a parge coat is applied then an additional parge coat must be applied over the chased area.

Sizes of vertical chases and recesses in masonry, allowed without calculation

	Chases and recesses formed after construction of masonry		Chases and recesses formed during construction of masonry	
Thickness of wall mm	Max depth mm	Max width mm	Minimum wall leaf thickness remaining mm	Max width mm
85 - 115	30	100	70	300
116 - 175	30	125	90	300
176 - 225	30	150	140	300
226 - 300	30	175	175	300
> 300	30	200	215	300

NOTE 1 The maximum depth of the recess or chase should include the depth of any hole reached when forming the recess or chase.
NOTE 2 Vertical chases which do not extend more than one third of the storey height above floor level may have a depth up to 80mm and a width up to 120mm, if the thickness of the wall is 225mm or more.
NOTE 3 The horizontal distance between adjacent chases or between a chase and a recess or an opening should not be less than 225mm.
NOTE 4 The horizontal distance between any two adjacent recesses, whether they occur on the same side or on opposite sides of the wall, or between a recess and an opening, should not be less than twice the width of the wider of the two recesses.
NOTE 5 The cumulative width of vertical chases and recesses should not exceed 0.13 times the length of the wall.
NOTE 6 When installing gas pipework into chases cut into Porotherm, the pipework should be secured using proprietary side fixed clips into the face of the block and not into the inner face of the chase. As with all masonry types, the sealing of the chase should be in line with Gas Safe regulations. If in doubt, the advice of a Heating Engineer should be sought.

If chases are too deep or back-to-back the structural integrity of the wall will have been altered and therefore will be subject to a structural engineers survey and report.

The person chasing for electrical work may not be the same person who hangs a picture or cuts a retrospective window, therefore, all chases should be sensibly placed allowing everyone the opportunity of working out where services are in relation to lights, switches, sockets and appliance points.


Ear Defenders


Dust Mask


Safety glasses


Safety gloves


Safety Boots

The method

1. Lay the first course on a traditional sand-cement mortar bed

2. Ensure the first blocks are level, horizontal in both directions and vertically plumb. This is the most crucial stage of the process, as it determines the levelness of each of the subsequent build storeys, and the speed and accuracy of the construction as a whole

3. Mix ZeroPlus according to guideline quantities – don't mix more than you need

4. Apply ZeroPlus (mixed close to the build) to blocks with a roller

5. Repeat until a precision wall is complete – up to four times faster than traditional methods

6. Wall ties are easily installed

7. Insulation can be applied simply

8. Block-cutting is straightforward

Training and technical support

We have a network of purpose-built training and demonstration centres, which cover everything needed to get the most from the Porotherm system.

Understanding exactly how Porotherm works in practice is absolutely vital to getting the maximum benefit from the system, which is why Wienerberger and our distributors do everything we can to ensure we provide the site training and support contractors need. Our expertly-run courses are designed to suit tradesmen, production personnel and management.

Training

Free training sessions are held at our network of Porotherm Training Centres. These sessions are designed to teach participants how to build with the Porotherm system and how to achieve all of the benefits the system offers. Each participant is awarded a certificate for completing the training.

On-site support

To ensure the Porotherm aspect of your project runs smoothly and efficiently from the word go, we offer on-site consultation at the start. Porotherm masons can be present on-site when work commences to offer best practice advice and continuing on-site training to operatives if required.

Technical support

We provide comprehensive technical and installation advice and a library of key component details.

The economic argument

Amongst the many benefits the Porotherm system brings, time and cost-savings are of major significance.

Speed of laying

A simple measure of productivity highlights the stark contrast between Porotherm and other methods – our precision clay blocks can be laid significantly faster.

With no mortar required in the vertical joints, and with each block precision-ground for easy on-site use, Porotherm is designed for maximum build efficiency.

Optimum stock

The structural performance of the Porotherm system reduces the variance of block types and strengths required on-site. Furthermore, next day delivery from stockists reduces storage requirements on-site.

Efficiency in the build programme

Although the price per square metre of block-work is comparable to other masonry materials, the speed and efficiency that the Porotherm system offers on-site creates substantial savings in virtually every area, starting with a clear reduction in preliminary costs, and consolidated by reduced labour and mortar costs (due to the virtually dry nature of the system).

- The benefits begin with the foundations – since our blocks are considerably lighter than concrete, foundation loads are lighter, which means structural, labour and machinery costs can be reduced.

- The increased laying speed means achieving a water-tight shell significantly more quickly, allowing finishing trades to start work sooner.

- With Porotherm, a project can be built to storey height without the normal need to back up, so the external skin can be taken off the critical path.

The ultimate result is a walling system that is able to save both time and money throughout the build process, without compromising build quality or key sustainability criteria.

Porotherm in action

Bramall Construction finds solution in Porotherm.

Project: Hunters Gate

Location: Handforth, Cheshire

Developer: Bramall Construction

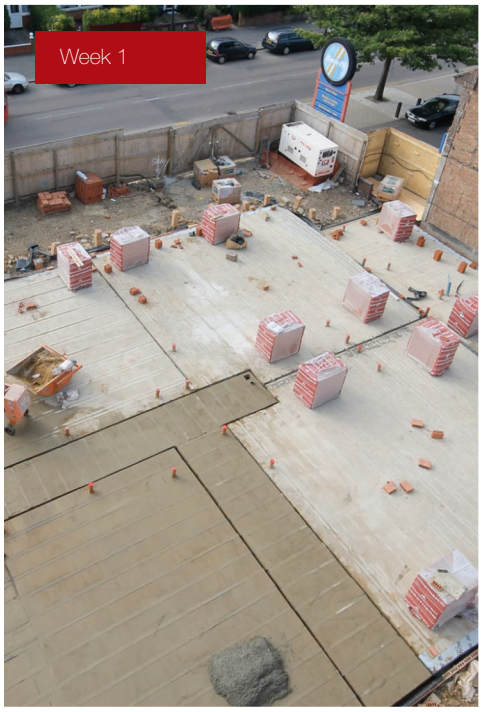
The Porotherm system has been used to help a new housing development reach Code for Sustainable Homes Level 4. The £3.7m Hunters Gate scheme from Peaks and Plains Housing provides 36 two-bedroom apartments at affordable rents for people in Handforth, Cheshire. The Government's Homes and Communities Agency provided £1.8m of funding and the scheme was officially opened by Chancellor of the Exchequer and local MP George Osborne.

The project, built by Bramall Construction North West, comprises two three-storey blocks, housing 12 and 24 apartments respectively. A combination of sustainable building materials and mechanical systems were employed to hit the Code Level 4 target, including the use of Porotherm for structural and cavity walls, Xtratherm insulation and an air source heat pump system which provides heating and hot water to all the flats. The construction team specified Porotherm for both its laying speed and to maximise the points available under the materials section of the Code. Used in conjunction with 100mm insulation and Wienerberger's Terca Woodland Mixture facing brick, the walls achieve a U-value of 0.18wmk. It is anticipated the thermal efficiency of the walls will help reduce heating costs for residents in the apartments over the longer term.

Steve Parrington, Area Director, Bramall Construction commented:

"We selected materials and systems which would allow us to achieve a higher Code Level while also meeting the time and cost considerations of the construction programme. Porotherm was chosen over alternative masonry construction or timber frame as it offered both speed and thermal performance, and delivered in both areas over the duration of the project.

As innovators in community regeneration and housing, we have been able to use our knowledge and the latest in green build technology to improve the efficiency of these homes and help to minimise their environmental impact."



To demonstrate the Porotherm walling system in action, this project was filmed by a time-lapse camera, providing a quick-fire visual perspective of how the system helped reduce the overall build time. The video can be viewed on the Wienerberger website: www.wienerberger.co.uk

Clearview Homes specified Porotherm to speed up construction of a new development in the centre of South Harrow.

Project: 50 Unit Apartment Block

Location: South Harrow, London

Contractor: Clearview Homes

The system was used for the internal structure, going up one floor per eight days and making the building ready for roof installation within 10 weeks.

Once this internal structure was erected, external facing bricks were applied and internal fix began at the same time – which cut a 15-month build to around 12 months in total.

Clearview Homes' technical manager, Richard Drury, said speed of construction was vital for housebuilders during the recession. He said:

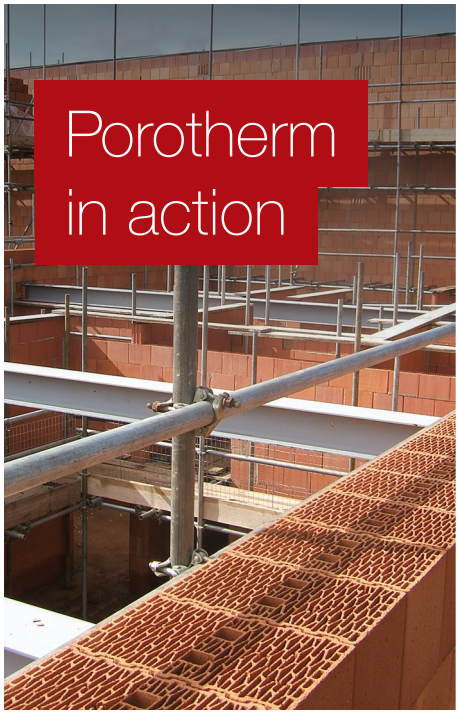
"This highly-anticipated development is in the centre of town where there is high demand for new, good quality housing. We believe there will be a lot of interest from buyers and so were keen to get on with construction as soon as possible.

"Porotherm offered us the ability to complete the development three months earlier than we would normally have finished if we used another method of construction. This obviously had implications for the sales cycle as it allowed us to release the properties onto the market much sooner than usual."

This was the second time Clearview Homes used Porotherm for the structural internal cavity walls to increase construction speed. The developer completed a development of 12 houses at Hadley Gate in Alexandra Avenue, also in South Harrow, and shaved two months off the build programme by utilising the system.

"The lessons we learned from the first project are being brought to bear on the second. Pre-planning and organisation are vital in order to make the best use of the system and really benefit from the speed. It exceeded our expectations at Hadley Gate and was the obvious choice for the new scheme," added Drury.

Porotherm in action



The project to build the new Chaddesley Corbett Endowed Primary School, Worcestershire, had been a long time coming.

Project: Chaddesley Corbett Endowed Primary School

Location: Chaddesley Corbett, Worcestershire

Developer: A&H Construction

The build, which was first approved in 2004 by Worcester County Council, finally started in December 2011. Thankfully, due to clever architectural planning and use of the Porotherm system, the project was completed by November 2012. Porotherm was used to build the school's internal cavity walls, allowing both Boughton Butler and A&H Construction greater flexibility and options with other areas of the build.

Ian Butler, Director of Architecture, Boughton Butler LLP, commented:

"Having tried other clay block systems we recognise that Porotherm is a first class product and the best on the UK market. Boughton Butler specify Porotherm clay blocks for more and more projects as they achieve outstanding thermal performance combined with crucial thermal mass. On-site the project benefits from the fast construction, becoming water tight quickly and facilitating follow-on trades. All this is backed up with great technical support, fast response times, operative training and punctual delivery."

Project: Private house

Location: Northamptonshire

Contractor: Top Haven Properties

A property developer has been so impressed with Porotherm that he used it to build his own home. Ian Johnson, managing director of Top Haven Properties, was one of the first contractors to trial Porotherm following its launch to the UK market in March 2009 and wanted to realise the benefits for himself. Mr Johnson used Porotherm for the internal walls and cavities of the 2,800 sq ft property which significantly increased the speed of the build over its nine-month programme, and enabled him to achieve the latest sustainability standards.

The inner wall was built independently of the outer facing brick wall due to the strength and stability of the Porotherm construction method, which creates a watertight shell enabling internal fixes and external finishes to be carried out simultaneously, further shortening the build programme.

Ian Johnson, Managing Director, Top Haven Properties, commented:

"We are always on the lookout for innovative new construction methods and I was delighted to see Porotherm come to the UK after having seen it used so successfully on the continent for many years. The system has so many benefits for residential developers, especially as it achieves great thermal performance values which helps us to meet the Code for Sustainable Homes standard.

"My site supervisor agreed Porotherm offered the best option as it is lightweight, easy to cut and, most importantly, simple to use with large sections laid far faster than traditional blocks. The team has achieved speeds up to three times quicker than traditional blockwork which meant I was able to move in far sooner than I might have done if we had gone with another product."

Project: Housing innovation showcase

Location: Dunfermline

Contractor: Campion Homes

The Porotherm system was selected as one of a small number of sustainable, innovative products used at the Housing Innovation Showcase in Dunfermline, Scotland. This £3.3m joint venture between Kingdom Housing Association and Fife Council is supported by Fife Construction Forum and Green Business Fife and will see the long-term performance of a series of 'sustainable' homes monitored and evaluated.

Campion Homes used Porotherm in the construction of Plot 14, a pair of two bedroom semi-detached cottages. External walls were constructed with a monolithic 190mm block with insulated external render, with the smaller 100mm Porotherm blocks used for the cavity party walls.

Dougie Herd, Construction Director, Campion Homes, commented:

"The thin joint mortar reduced the amount of water we used and because the blocks are so easy to cut to size, we produced very little waste on-site. The finish is particularly neat which gives the team huge job satisfaction, not to mention the lightweight blocks that make for easier transportation around the site, a welcome addition for the brickies!

"We'd never worked with Porotherm before but we found it straightforward to use and achieved incredibly fast construction speeds. As a modern method of construction the Porotherm system hits the mark in almost every aspect. Not only is it fast, but it is also sustainable."

As a complete building solution, the Porotherm system offers properties and efficiencies that can be favourably compared to virtually every building fabric on the market. The below tables demonstrate this in greater detail:

Porotherm versus Concrete Masonry

	Concrete Masonry inc Dense Concrete	**Porotherm**
Speed of laying	The laying speed of Porotherm is up to 4 times that of traditional masonry.	
Programme benefits	10mm vertical and perpendicular bed joints. Height capability restricted by the need to back up with facing brick and insulation after 1.2m.	1mm beds, no mortar in vertical joints, blocks interlock mechanically. Storey height capability without the need to back up allows the external envelope to be removed from the critical path. Reduced time to a water-tight shell. Quicker availability for finishing trades.
Mortar	A material cost to the project. Once the wet bed joints are laid the mortar is slow to set with full strength reached at circa 48hrs.	Supplied with blocks free of charge. Circa 95% less water built in. Once applied to the blocks, the bed joint mortar begins to set within 30 minutes. Significant strength is gained after a matter of hours with full strength reached at circa 24 hours.
Safety	Dense concrete blocks are not designed for single hand handling, weighing up to 19kg. The application of mortar introduces the risk of dermal burns etc. Dense concrete walls with wet mortar beds are not stable when unsupported.	Porotherm blocks are typically lighter in weight than concrete blocks, with the PTH-100 block weighing only 6.4kg. Porotherm blocks have rounded ends and no sharp corners. Using the roller to apply the bed joint mortar reduces the risk of skin contact thus reducing dermal burns etc. The walling system is stable and rigid with storey height achievable in a working day.
Strength	Dense blocks are manufactured to a range of compressive strengths.	Core Range compressive strengths typically ≥ 10 N/mm^2 hence reduced requirement to keep multiple block types on-site also reducing the risk of the wrong block being used in the wrong location. Reduces storage requirements on tight sites.
Movement joints	Typically 3 and 6m centres.	Typically 20m centres.
Waste	Typical industry guidelines suggest 40% waste against mortar and 15% waste against block.	Minimum waste on mortar, typically 2% block wastage.
Efficiency	Dense concrete blocks provide less thermal resistance.	The blockwork typically has enhanced Psi values.

Porotherm versus Light Steel Frame

	Light Steel Frame	**Porotherm**
Finishes	Designed to be clad – typically with plasterboard to the internal face, insulated between studs, clear cavity and external skin of masonry or rain-screen.	Cavity or monolithic walls designed to be clad with a wide range of finishes.
Internal partitions	Lighter sections for internal partitions may not be suitably robust for all applications.	Porotherm walls are suitably robust for use on all development types.
Thermal performance	The light steel frame structure provides no contribution.	Contributes with regards to thermal mass and thermal conductivity.
Weatherproof	Dependant upon cladding.	The external walling envelope is removed from the programmes critical path in providing a weatherproof structure.
Internal fit out	Internal fit out cannot commence until external cladding has been installed.	Internal walls can be constructed with external inner leaf walls.

Porotherm versus Timber Frame

	Timber Frame	Porotherm
Cost	Modern Masonry Alliance typically advise Timber Frame 15% more expensive than equivalent masonry construction.	
Fire	Specific security measures required with additional insurance.	Class A1 rated no extra security measures or additional insurance required.
Thermal mass	With low thermal mass due to 75% of walls built-up with insulation, timber frame has a reduced capacity to regulate temperature variations.	With more thermal mass, Porotherm regulates temperature variations through thermal capacity effects to protect against cold in winter and ensure a comfortable and healthy room in summer.
Upper floor depths	Floor zones are generally 500mm in depth.	Standard floor zones can be used with the Porotherm walling system, typically 360mm, thus reducing 2 No. Brick courses per floor reducing ridge height.
Settlements	Compression joints required at all window cill areas and at storey levels.	No settlement occurs therefore no extra movement joints.
Post completion shrinkage	Potential for shrinkage cracks due to timbers drying out.	No shrinkage problems occur.
Flexibility of design	Lengthy lead in time for panel design and manufacture. Changes are difficult to accommodate.	Short lead times. Change incorporated with ease during site construction.

Porotherm versus Aircrete Thin Joint

	Aircrete Thin Joint	Porotherm
Block Strength	2.9 – 8.7 N/mm^2.	10 N/mm^2.
Movement Joints	Typically 6m centres (3m from corners).	Typically 20m centres.
Mortar	Greater volume (beds and perps) at additional cost.	Free with blocks (beds only). Less water built-in.
Additional movement control reinforcement mesh	Frequently every second course and 2 courses below and 2 courses above window/door openings.	None required.
Product accuracy	To avoid unnecessary rasping TLMA or TLMB dimensional tolerance class blocks must be used.	During the manufacturing process Porotherm blocks are ground top and bottom with a tolerance of +/- 0.5mm and therefore are virtually flat.

Why should house builders use Porotherm?

Reduce build programmes and save time and money – especially on multi-plot projects.

- Saves around 25% of construction time per plot. Massive programme savings possible, particularly on multi-plot sites, on preliminary costs, sales and land interest rates , etc
- Watertight envelope in 10 days means finishing trades can start sooner in the programme
- Sustainable, eco-friendly system
- Virtually dry construction with 95% less water than traditional blockwork
- Typically only 2% wastage provision for Porotherm blocks improves site waste management as well as offering reduced costs and tidier sites
- Porotherm blocks are lighter than concrete blocks, with no sharp edges, designed for single hand laying, thus reducing the risk of repetitive strain
- ZeroPlus mortar included with the blocks and means building can continue down to temperatures of 0°C increasing the number of working days available during the winter months
- Reduced contact with mortar further promoting good site safety and occupational health
- All Code for Sustainable Homes Levels can be achieved with Porotherm
- Accepted by the NHBC, LABC and other insurance providers
- Fire resistant at all stages of construction and in use
- Virtually no shrinkage and minimal need for movement joints (typically at 20m centres) meaning less snagging and follow up work required
- Fully developed system of lintels, wall ties, eco-parge and fixings
- Blocks and components readily available through a national distribution network
- Ongoing technical support during design and construction as well as comprehensive training either on-site or at Porotherm training centres

Why should an architect use Porotherm?

Deliver versatile, high performance, sustainable walls with full technical support at all project stages.

- A modern method of construction with the reassuringly traditional values of clay
- Sustainable, eco-friendly system with expected lifespan of over 150 years
- Porotherm assists in the provision of high performance, well-constructed buildings
- Porotherm walls achieve an A+ green guide rating
- Porotherm can be used for monolithic and cavity wall construction and provides an airtight yet breathable solution using a fabric first approach
- A strong, stable, adaptable method of construction that allows flexibility in the choice of external façades and systems
- All Code for Sustainable Homes Levels can be achieved with Porotherm
- Virtually no shrinkage and minimal need for movement joints (typically at 20m centres)
- Porotherm blocks are more thermally efficient than dense concrete blocks contributing to a lower U-Value
- Good thermal mass delivers a comfortable living environment
- Certified to BS EN 771-1, CE marked and accepted by the NHBC, LABC and other insurance providers
- Fully developed system of lintels, wall ties, eco-parge and fixings
- Blocks and components readily available through a national distribution network
- Full technical support during design and construction as well supporting professional development through CPD seminars

Why should main contractors use Porotherm?

Deliver projects efficiently with time and cost savings with full training and technical support – especially on multi-plot projects.

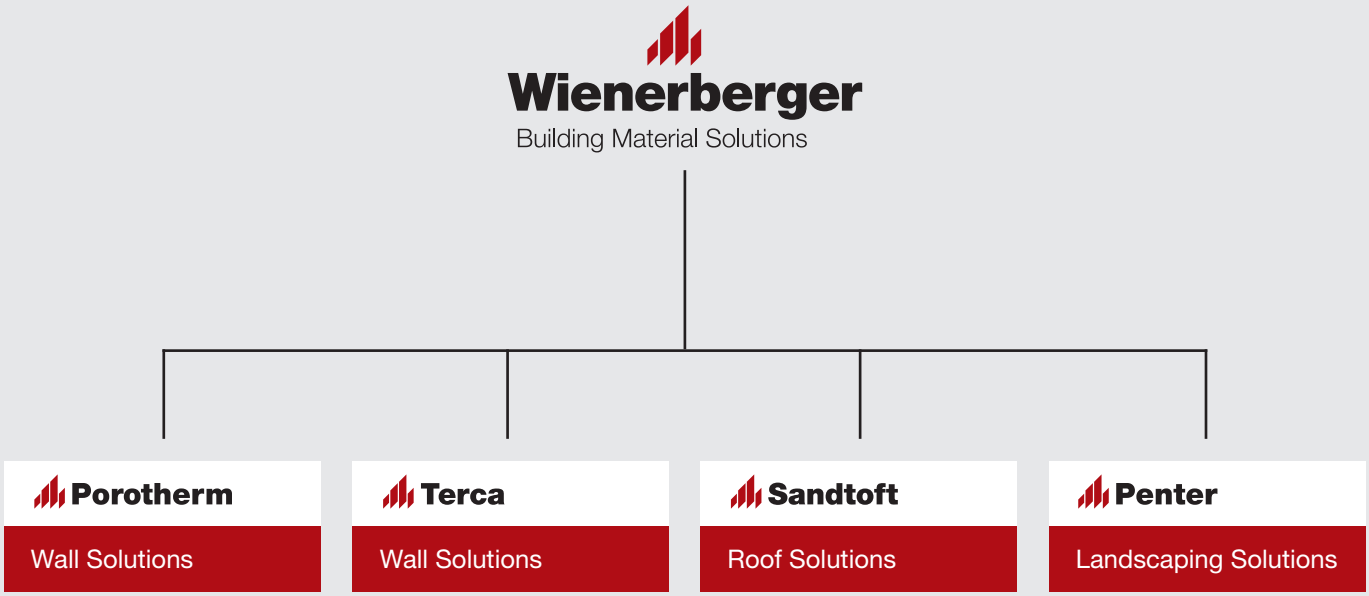
- Considerable programme savings possible by significantly reducing the costs associated with site preliminaries and overheads
- Watertight envelope in 10 days means finishing trades can start sooner in the programme
- Sustainable, eco-friendly system
- Virtually dry construction with 95% less water than traditional blockwork
- ZeroPlus mortar included with the blocks and means building can continue down to temperatures of 0°C increasing the number of working days available during the winter months
- More stable and rigid than traditional masonry construction allowing single storey height construction in a day
- All core range blocks 10N/mm so no need to keep multiple blocks on-site
- Provides the opportunity to remove external façade from the critical path
- All Code for Sustainable Homes Levels can be achieved with Porotherm
- Accepted by the NHBC, LABC and other insurance providers
- Fire resistant at all stages of construction and in use
- Virtually no shrinkage and minimal need for movement joints (typically at 20m centres) meaning less snagging and follow up work required
- Porotherm blocks are lighter than concrete blocks, with no sharp edges, designed for single hand laying, thus reducing the risk of repetitive strain
- Fully developed system of lintels, wall ties, eco-parge and fixings
- Blocks and components readily available through a national distribution network
- Full technical support during design and construction as well as comprehensive training either on-site or at Porotherm training centres

Why should bricklaying specialists use Porotherm?

Increase earnings potential and deliver projects efficiently and safely in less time.

- Porotherm blocks can be laid much more quickly than traditional masonry
- Offers the opportunity for bricklayers to compete on speed against timber frame construction
- Porotherm blocks are lighter than concrete blocks, with no sharp edges, designed for single hand laying, thus reducing the risk of repetitive strain
- ZeroPlus mortar included with the blocks and means building can continue down to temperatures of 0°C increasing the number of working days available during the winter months
- Achieve higher quality blockwork thanks to the precision engineered blocks and true 1mm bed joints
- Offers the opportunity for bricklayers to build the inner skin without the normal need to back up with brickwork
- No need for installation of bed joint reinforcement
- The Porotherm system is becoming increasingly popular with developers and main contractors who always need sub-contractors who are familiar with the system
- Movement joints generally not required in walls less than 20 metres long
- Cleaner working environment
- Blocks and components readily available through a national distribution network
- Free training and continued support provided either on-site or at Porotherm training centres with a certificate for each participant

Complete Building Solutions



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