PERMAROCK

New Buildings

External Wall Insulation

and Render Systems
Industry leading façade solutions today for tomorrow’s buildings

With ever increasing importance being placed on the design of energy efficient buildings, PermaRock external wall insulation (EWI) systems can significantly contribute to the creation of low carbon, sustainable and inspiring developments.

PermaRock, the longest established UK owned manufacturer and supplier of EWI systems, has striven to develop innovative façade solutions that set new quality benchmarks, extend building design possibilities and meet the needs of ever changing architectural, environmental and commercial requirements.

Working closely with building designers and specifiers, we offer advice from design through to installation on how the external wall insulation element of a project can meet or surpass today’s technical and low carbon design requirements.

Aesthetically and technically, we provide the latest innovations in render technology, including our SiliconeUltra range, to provide unparalleled freedom to create unique façades and interesting architectural statements through the use of texture and colour.
PermaRock external wall insulation systems are developed, tested and accredited for use on conventional and modern new build constructions and provide the designer with an extensive range of decorative effects to create unique, innovative and exciting architecture.

Our portfolio of high quality render protected external wall insulation systems meet all of the requirements for modern cladding products taking into consideration areas of concern such as fire & thermal performance, environmental impact, air-tightness, impact resistance and aesthetic choice to ensure there is a PermaRock system that can be specified to meet even the most demanding project requirements.

Systems are suitable for use on all types of substrates, including blockwork, single skin masonry, timber frame, lightweight metal frame (either as infill panels to concrete or steel framed constructions) and structural building systems.

They are also suited for all types of developments, high and low rise, in urban or rural locations, in sheltered or exposed situations and for new and off-site construction.

Architects and designers are always looking at new and effective ways of improving thermal performance whilst reducing CO₂ emissions in buildings - PermaRock external wall insulation provides the solution.
Why External Wall Insulation?

The use of a PermaRock external wall insulation system will provide key benefits to a building designer when specifying our products.

Aesthetic Inspiration

With an extensive range of decorative renders and finishes available, PermaRock provides seemingly endless scope to create exciting and inspiring buildings that can compliment and contrast with other cladding materials such as timber, stone, glass and metal.

Whether you choose from our outstanding palette of over 1300 colour shades available with our textured through-coloured renders, exciting ‘metallic effect’ renders, scratch renders or our synthetic brick slips, we provide an unprecedented freedom to create uniquely expressive façades.

Further dramatic shape and form can be created through simulated blockwork, shadowlines, ashlar effects and architectural profiles to add further expression.

Further details relating to our range of decorative finishes can be found in our ‘Freedom to Express’ section (pages 23 – 34).

Low / Zero Carbon Buildings

Incorporating PermaRock external wall insulation into a building envelope design can be a significant aid in achieving the improved energy standards of the Code for Sustainable Homes, Passivhaus and other standards where sustainable and low carbon design standards are described.

PermaRock external wall insulation can significantly reduce cold bridges in walls and help to deliver U-values of 0.15 W/m²K and below. Furthermore, systems can be designed to produce an extremely airtight façade, limiting any thermal bridging or unnecessary heat loss through the building envelope; a very important factor if the goal is to achieve a low energy / zero carbon building.

For further information on our environmental accreditation and the benefits for specifying PermaRock systems in low carbon developments please see the ‘Sustainable Buildings’ section (pages 9 – 12).

System Accreditation

With over 30 years’ experience of supplying into the UK’s construction sector, PermaRock has been at the forefront of external wall insulation (EWI) development in the UK, obtaining the first British Board of Agrément (BBA) and Building Research Establishment (BRE) certificated EWI systems.

Our commitment to delivering the highest quality systems with the very best in terms of technical performance is reflected in our continued investment in testing to relevant UK / European Standards and UKAS certification of our external wall insulation systems.

PermaRock systems include third party accreditation through the Building Research Establishment (BRE) Global Certification Service (Cert No 158/12), which is recognised under the Building Regulations for England and Wales, Scotland and other European Standard organisations.

Fire-safe Solutions

One of the major considerations for specifiers, when choosing materials for building façades, is the fire performance of the building envelope components.

Particularly important is the performance on high-rise, multi-storey buildings, where the criteria described in BR 135 ‘Fire performance of external thermal insulation for walls of multi-storey buildings’ 2013 should be considered.

Our systems have been tested to relevant standards and satisfy the requirements of the Building Regulations on masonry, timber and metal frame construction, including, where required, a drained cavity.

Construction Types

PermaRock systems carry independent accreditation which confirms their suitability for application onto timber and steel frame buildings, in addition to concrete and masonry construction. Our drained cavity systems are also available to meet the requirements of NHBC, Trada, Zurich and other buildings insurers who prescribe the inclusion of a drained cavity into the cladding system on frame constructions.

Thermal Performance

External wall insulation systems can easily be designed to help meet current limiting fabric parameters (U-value and air permeability), outlined in the existing Part L Building Regulations, and will also comfortably meet the increased requirements proposed within Part L Building Regulations in England (April 2014).

Fabric U-values, quoted for new buildings in dwellings and non-dwellings, show that a fabric first approach remains critical with the improvements required for new thermal elements and when upgrading retained thermal elements on existing buildings.

The increased focus on lowering U-values emphasises the benefits of using PermaRock external wall insulation which can contribute to key requirements such as achieving low air permeability of the building envelope and limiting thermal bridging.

Systems can also be integrated into the design of a building making a meaningful contribution to attaining a high SAP rating.

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Typical Applications – External Wall Insulation

Installation of external wall insulation is typically undertaken as a ‘direct fix’ or through a ‘track’ based approach; the most suitable solution is specified dependant upon individual project requirements.

Direct Fix Application: External Wall Insulation System

Insulation boards are adhesively banded and mechanically fixed to the substrate. The insulation is then covered with a reinforced render system, with additional fire safety fixings if required. Corners are reinforced with pre-formed protection profiles. The reinforced basecoat provides a substrate onto which the decorative finishes are applied.

Systems come complete with a full range of profiles, trims and accessories to achieve a weather tight and durable finish in compliance with the principles of robust construction.

NHBC Drained Cavity Application: Track-EPS (Rail) System

Track-EPS insulation boards are applied onto horizontal rails (tracks), fixed to the substrate, so that an NHBC compliant drained cavity is created behind the insulation. T-Splines interconnect the vertical edges of the insulation boards.

After fixing, the boards are ready to receive a PermaRock high polymer, cementitious base coat or flexible fibre reinforced cement free base coat and reinforcing mesh. Corners are reinforced with pre-formed protection profiles and the system comes complete with a full range of profiles, trims, base support rails and sealing strips.

The system can be designed to create a drained cavity behind the insulation to comply with the requirements of NHBC and other buildings insurers.

Sustainable Buildings

Following the UK Governments commitment to reduce the UK’s impact on climate change, there has been an increasing interest, on the part of the specifier, to understand more about the sustainability of building materials and the environmental impacts of products and materials utilised in the built environment.

PermaRock systems provide an excellent opportunity to reduce carbon emissions in buildings, however, we also realise the important part we play in protecting our environment, which is why we try to minimise our carbon footprint wherever possible – from the sourcing of materials, our manufacturing processes, to the application and long term impact of our products.

We have developed and implemented an Environmental Management System (EMS), certified to BS EN ISO 14001, which has enabled us to identify our environmental impacts, our manufacturing processes, to the application and long term impact of our products.

When specifying our products you can be confident that the manufacturing and supply of our systems has been developed to have minimal environmental impacts.

Sustainable Products

Energy Saving

Energy saving is one of the easiest ways to reduce carbon emissions and using PermaRock external wall insulation systems provides an opportunity to add high levels of insulation to the exterior façade of both new build and refurbishment projects, assisting greatly with the energy efficient running of buildings.

Sustainability

With accredited life-spans of 30 years, all of our cladding systems are durable, long lasting and low maintenance, thus minimising whole life costs.

Supply Chain

Key suppliers including raw material suppliers, waste collectors, waste recycling contractors and transport companies are monitored, assessed and reviewed on a regular basis for their environmental performance to ensure the most commercially sustainable components and services are utilised within our products and services.

Materials

We source our raw materials from sustainable sources wherever possible and waste from the manufacture of our base coats and adhesives are reformulated back into the manufacturing process.

All PermaRock insulation boards are CFC (chlorofluorocarbons) and HCFC (hydrochlorofluorocarbons) free, have zero ozone depletion potential (zero-ODP) and low to zero global warming potential (GWP).

Waste Management

Whether it is product packaging or packing for transport to site, we utilise the minimal amount of material.

Material packaging is recycled or re-utilised wherever possible and we actively liaise with installers and project teams to produce improved workable solutions in relation to the on-site waste and recycling generated from our products.

Recycling

A facility is available for the collection and recycling of uncontaminated, ‘cut-off’ and unused insulation materials, as required.

We also actively recycle many waste products within our offices and manufacturing processes, having implemented many procedures to reduce the amount of waste produced.

Cert No. FM13066

Cert No. EMS S56156

Cert No. EMS S58156
Sustainable & Energy Efficient Buildings

Working closely with building designers, PermaRock can advise from design stage through to installation on how the external wall insulation element of a project can meet low carbon design requirements and contribute to or exceed Passivhaus, BREEAM, Code for Sustainable Homes (Levels 4-6) and similar performance standards.

Through the use of a PermaRock external wall insulation system, heating demand can be dramatically reduced, conserving energy and reducing CO₂ emissions and very airtight façades can be created - important factors in the design of energy efficient buildings.

Although external walls are an extremely important contributing factor, a number of other important considerations can impact on the design process of low carbon and sustainable buildings; including building orientation, window and door type and placement, overhang depth, the efficiency of heating, cooling, lighting equipment, occupant behaviour, not to mention the local climate.

Code for Sustainable Homes (CSH)

The Code for Sustainable Homes is a guide to how a development should perform against a number of specific criteria. It aims to reduce carbon emissions and promote higher standards of sustainable design above the current minimum standards set out by the building regulations.

The Code measures the sustainability of a new home against categories of sustainable design, rating the “whole home” as a complete package. The CSH sets out 6 levels, with level 1 being the least sustainable and level 6 being the most sustainable. Before it was redefined, Zero Carbon was associated with CSH level 6.

The Code sets minimum standards for energy and water use at each level, within England and Wales, and will be closely linked with the future direction of Building Regulations in relation to carbon emissions and energy use in homes and support the government target that future new homes will be built to zero carbon standards.

Where is the CSH required?

The following requirements to meet the standard are in place:

- All new housing, funded by the Homes and Communities Agency (HCA), is required to meet CSH level 3.
- All new housing, promoted or supported by the Welsh Assembly Government, or their sponsored bodies, are required to meet CSH level 3.
- All new self-contained social housing in Northern Ireland is required to meet CSH level 3.

Some local authorities also require higher levels of CSH standards to be met as a condition of planning approval.

PermaRock external wall insulation systems can incorporate high levels of insulation to contribute significantly to reducing heat loss/gains, thereby reducing heating and cooling demands, thus reducing energy and CO₂ emissions – one of the six mandatory performance requirements.

PermaRock systems can achieve U-values of 0.10 W/m²K and below and can be designed to eliminate thermal bridges – another important factor at higher levels of the Code for Sustainable Homes.

Passivhaus

The Passivhaus standards’ strength lies in the simplicity of its approach; construct a building that has an excellent thermal performance, exceptional airtightness and mechanical ventilation. The standard can be applied to residential, commercial, industrial and public buildings.

Passivhaus buildings achieve a 75% reduction in space heating requirements compared to standard practice for a UK new build. The Passivhaus standard therefore gives a robust method to help the industry achieve the 80% carbon reductions that are set as a legislative target for the UK Government. Passivhaus buildings readily achieve CSH level 4 without the need to incorporate micro-generation.

The core focus of Passivhaus design is to dramatically reduce the requirement for space heating and cooling. This can be achieved without compromising comfort or needing to rely on the falling costs of renewable energy technologies.

The Passivhaus Standard requires:

- A maximum space heating and cooling demand of less than 15 kWh/m² year or a maximum heating and cooling load of 10W/m².
- A maximum total primary energy demand of 120 kWh/m²/year.
- An air change rate of no more than 0.6 air changes per hour @ 50 Pa.

Achieving the Passivhaus Standard in the UK typically involves:

- Very high levels of insulation.
- Extremely high performance windows with insulated frames.
- Airtight building fabric.
- ‘Thermal bridge free’ construction.
- A mechanical ventilation system with highly efficient heat recovery.

PermaRock has been involved with a number of Passivhaus projects that have achieved full Passivhaus Certification, including Oakmeadow & Bushbury Hill Primary Schools, Wolverhampton (two of the first certified Passivhaus schools in the UK) the Centre for Disability Studies in Essex (one of the first non-domestic buildings to achieve Passivhaus certification in the UK) and Mayville Community Centre, Islington.

PermaRock’s systems help contribute towards high thermal performance levels, thermal bridge free construction and airtight building fabric that are required. Our technical services are typically consulted and engaged during the early stages of the building design process to assist in the detailing and specification of the PermaRock external wall insulation system.

BREEAM

BREEAM (the BRE Environmental Assessment Method) is the most widely used environmental assessment method for buildings in the UK. The assessment addresses a wide range of environmental and sustainability issues and sets the standard for best practice in sustainable design. This enables developers and designers to demonstrate the environmental credentials of their buildings through a recognised measure of environmental performance.

Buildings are then rated with either a Pass, Good, Very Good, Excellent, or, for exemplar buildings, an Outstanding rating. The assessment commences at design stage and is then verified post construction when the final certificate is issued.

In order to meet or exceed BREEAM requirements, PermaRock can design external wall insulation systems that are extremely high in terms of thermal performance and that can create ‘thermal bridge free’ junctions between walls, floors, roofs and produce very airtight building envelopes.

Green Guide to Specification

Specifiers working on sustainable developments require information on the environmental impact and performance of building components and assemblies so that they can assess their buildings against the Code for Sustainable Homes.

The BRE’s Green Guide to specification provides a rating system for thousands of typical construction components and assemblies which designers and specifiers can refer to when making environmental choices in their selection of materials.

The environmental ratings, described in the Green Guide, are based on life cycle assessments (LCAs) which take into account the winning of raw materials, manufacture, transport, assembly, maintenance, repair and replacement, demolition and waste management at the end of life.

The Green Guide does not take into account operational performance in terms of potential energy savings of materials or systems with high insulation values or thermal mass.

PermaRock systems achieve excellent LCA scores which will translate into Green Guide ratings of A+/A-.
The Centre for Disability Studies is an ultra low energy eco-sustainable building which forms the operational headquarters and professionally accredited training centre for Disability Essex in Rochford, Essex. It is one of the first non-domestic buildings to achieve Passivhaus certification in the UK. The project was designed to the AECB’s demanding CarbonLite Step 2, which is based on the German Passivhaus standard, requiring that the building should consume no more than 15 kWh/m² for space heating each year (15 kWh/m² yr). In comparison, a conventional UK building might use 200 kWh/m² yr.

The design required a super-insulated, thermal-bridge free, external envelope which was achieved through the incorporation of a PermaRock EPS-Premium system and delivered a U-Value of 0.12 W/m² k in the external walls.

Quick project overview:
- Designer: Simmonds Mills - Architect Builders
- Floor area: 307 m²
- Passivhaus Certification
- CarbonLite Step 2 Design (Passivhaus Standard)
- BREEAM Excellent Rating
- Airtightness: 0.33 m³/m²/hr @ 50 Pascals
- CO₂ emissions: 18 kg CO₂/m² yr
- Primary energy requirement: 81 kWh/m² yr
- Annual space heat demand: 15 kWh/m² yr

“...one of the first non-domestic buildings to achieve Passivhaus certification in the UK...”

PermaRock has developed a portfolio of high quality façade solutions that provide architects and specifiers with the freedom to create buildings that are innovative, functional and meet the high thermal performance requirements and aesthetic demands of modern architecture.

PermaRock offer six key systems based on a range of modern insulation materials that include fire-safe mineral fibre, mineral fibre lamella, lightweight expanded polystyrene, enhanced expanded polystyrene and high performance phenolic foam.

Our systems have been designed to enable various methods of fixing to be employed, depending on the substrate condition and type i.e. blockwork/masonry/timber frame/lightweight metal frame/structural building systems.

An introduction to each of the systems listed below can be found over the following pages:
- PermaRock Mineral Fibre System
- PermaRock EPS & EPS-Premium (Grey) Systems
- PermaRock Phenolic System
- PermaRock Lamella System
- PermaRock Track-EPS System

All PermaRock External Wall Insulation Systems are complimented by an extensive range of renders and decorative finishes including acrylic and silicone-based textured renders, metallic-effect renders, brick finishes and scratch renders.
Specifying External Wall Insulation

We understand that it can be a complex process specifying the most suitable external wall insulation system and that many factors can influence system choice and the decorative finish proposed.

Our technical representatives can provide detailed design and technical assistance and with early engagement in the design process, we can produce specifications that are closely tailored to the individual project requirements.

This provides opportunities for cost reductions associated with time and material waste whilst maximising value for money and maintaining the highest quality standards.

The specifier must ensure that the following factors are taken into consideration to ensure the best solution for the project is adopted:

- **Type of Building/Wall Build-Up**: system type should be chosen to suit the wall construction, type of building, design loads, and structural movement, etc.

- **Thermal Performance**: what is the required U-value of the building envelope or SAP rating requirement? Are there limitations to the thickness (zone) of system which can be accommodated?

- **Aesthetics**: is the desired type and colour of decorative finish available and suitable for the design and its intended location and exposure?

- **Detailing and Interfaces**: full consideration needs to be given to the interface with other materials and how the system is protected at edges, overhangs and abutments.

- **Fire Performance**: the system should be suitable for building use, low rise and/or high rise application, as appropriate, and where required, should incorporate fire performance or fire-breaks to meet with Building Regulations and BR135 requirements.

- **Impact Resistance**: the decorative finish may be selected primarily on the desired aesthetic appearance but must also take into consideration the level of impact resistance required.

- **Cost**: a number of design factors can have an effect on the cost of the system, including, insulation type and thickness as well as the selection of decorative finishes and fixing methods.

- **Exposure of Site**: resistance to wind and impact loads, high/low traffic, local pollutants (e.g. roads/ railways), etc. may need to be considered for system and finish selection.
Mineral Fibre EWI System

The PermaRock Mineral Fibre external wall insulation (EWI) system is a fire-safe, high performance, thermal insulation system that is extremely versatile and application is suited to buildings, where the highest levels of fire resistance and non-combustibility are required.

This system is highly recommended for multi-storey/high-rise buildings.

Key Features:

- Excellent Fire Performance: non-combustible insulant (Class A1)
- Fire-breaks not required within the system
- Class O fire rating (surfaces)
- Fire tested in accordance with BS 8414-1: 2002
- Meets the requirements of BR 135: Fire performance of external thermal insulation for walls of multi-storey buildings
- Ecopoints Score of 0.10 (m²) – Excellent Rating
- Thermodynamically stable
- UKAS Accredited (BRE Cert No. 158/12)
- Suitable for use with dark colour renders/finishes

For more detailed information on the PermaRock Mineral Fibre EWI System, please view the individual system sheet.

Quick Check - Mineral Fibre EWI System

UKAS Accreditation: BRE Accredited (Cert No. 158/12)

Substrate Types:

- Brickwork
- Concrete
- Blackwork
- Metal Frame (Direct Fix)
- Timber Frame (Direct Fix)
- SIPS
- Cross Laminated Timber (CLT)

Low-Rise/High-Rise: Low-Rise + High-Rise

Decorative Render/Finishes: All

Insulation Thermal Conductivity (W/mK):
- 0.036 - 0.039*

Insulation Thicknesses: 30 - 250 mm*

Board Size: 1200 x 600 mm

* Dependant on density of board

For more detailed information on the PermaRock EPS-Premium EWI System, please view the individual system sheet.

EPS-Premium EWI System

The PermaRock EPS-Premium external wall insulation (EWI) system is a high-performance, light-weight system based on low lambda, grey expanded polystyrene (EPS) insulating panels that incorporate microscopic particles of graphite for improved thermal performance and to dissipate heat.

The system is suited for low and zero carbon buildings where exemplar levels of thermal performance are required.

Alternatively standard white EPS insulation variant is available (see table).

Key Features:

- Light-weight – suited for situations where low imposed loads are critical
- Graphite additive gives the insulation improved thermal performance over standard white EPS
- Low U-values possible – insulation thicknesses up to 350 mm
- Class O fire rating*
- UKAS Accredited (BRE Cert No. 158/12)

For more detailed information on the PermaRock EPS-Premium EWI System, please view the individual system sheet.
**Phenolic EWI System**

The PermaRock Phenolic external wall insulation (EWI) system incorporates high performance, rigid cellular phenolic foam insulation boards. This lightweight, low thermal conductivity insulation enables high levels of thermal performance to be achieved utilising thinner sections of insulation. It is ideal for buildings that cannot increase their footprint significantly due to encroachment onto pavements, passageways, proximity to an adjacent property (subject to fire performance requirements) or are located within conservation areas.

**Key Features:**
- Higher levels of thermal performance for thinner levels of insulation
- Low density and lightweight
- Can assist in achieving Code for Sustainable Homes Levels 4-6, BREEAM and Passivhaus Standards
- Class O fire rating
- Ecopoints Score of 0.15 (m²) – Very Good Rating
- UKAS Accredited (BRE Cert No. 158/12)

**Quick Check - Phenolic EWI System**

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<tr>
<th>UKAS Accreditation</th>
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<tr>
<td>Substrate Types:</td>
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<td>Decorative Render/Finishes:</td>
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<td>Insulation Thermal Conductivity (W/mK):</td>
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*Reference should be made to Building Regulations Part B Approved Document B. Fire Safety: Non-combustible fire breaks should be introduced at each floor level above second floor level and at compartment walls, etc, as described in the regulations.

**Lamella EWI System**

The PermaRock Lamella external wall insulation (EWI) system incorporates non-combustible fire-safe insulation. PermaRock Lamella Insulation boards have mineral wool fibres oriented perpendicular to the wall surface, an arrangement that enables the insulation boards to be adhesively bonded to suitable wall surfaces using high bond strength PermaRock Lamella Adhesive, making it less reliant on mechanical fixings. This combination produces a high-tensile strength system that is suited for application onto curved surfaces.

**Key Features:**
- Fire-safe mineral fibre based insulation
- Particularly suited for curved surfaces/elevations
- Class O fire rating
- Excellent Fire Performance: non-combustible insulation (Class A1)
- Non-combustible fire-breaks not required within the system
- Thermodynamically stable
- Acoustic benefit over other insulant types

**Quick Check - Lamella EWI System**

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<th>UKAS Accreditation</th>
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<td>Board Size:</td>
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*Reference should be made to Building Regulations Part B Approved Document B. Fire Safety: Non-combustible fire breaks should be introduced at each floor level above second floor level and at compartment walls, etc, as described in the regulations.

(1) Dependant on substrate type, height of structure, location of finish, etc. – please consult PermaRock for advice.

Note: Limitation on use of dark coloured renders: Only decorative finishes with a Lightness Factor (LF) of >20 should be used.

For more detailed information on the PermaRock Lamella EWI System, please view the individual system sheet.
**Track-EPS System (NHBC Compliant)**

The PermaRock Track-EPS system employs a rail (track) fixing mechanism to secure the light-weight EPS insulation panels to the substrate. Furthermore, this approach also enables the creation of a drained cavity space behind the insulation panels to meet the specific requirements of NHBC, Zurich and other building insurers for external wall insulation application to timber and metal frame constructions. The use of rail mounting enables greater flexibility in overcoming deficiencies in irregular or uneven backgrounds, to achieve very flat surfaces upon completion.

**Key Features:**
- Can overcome deficiencies in irregular or uneven backgrounds
- Drained and/or vented cavities can be created
- NHBC/Zurich (and other building insurer) compliant
- Light-weight insulation
- Fire tested in accordance with BS 8414-2: 2005
- Class O fire rating*
- UKAS Accredited (BRE Cert No. 158/12)

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**Quick Check - Track-EPS EWI System**

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*Reference should be made to Building Regulations Part B Approved Document B-Fire Safety. Non combustible fire breaks should be introduced at each floor level above second floor level and at compartment walls, etc, as described in the regulations.

**For more detailed information on the PermaRock Track-EPS EWI System, please view the individual system sheet.**

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If you are looking to specify a non-insulated cladding system that will satisfy the technical requirements of a new building whilst providing almost unlimited aesthetic freedom, then our high performance PermaRend exterior render system is the solution for you.

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**PermaRend Exterior Render Systems**

Our extensive aesthetic range of industry leading renders and finishes are available with our non-insulated systems. These provide effective resistance against water penetration whilst allowing the passage of water vapour, allowing walls to “breathe”.

The incorporation of reinforcing mesh also provides additional resilience and improved anti-crack performance. Mechanical fixing is possible when dealing with irregular or weaker substrates.

It is easy to see why PermaRock render systems are utilised so extensively on a wide array of building types and market sectors.

Two key render systems have been designed for application onto various substrate types, including, PermaRock Exterior Render System for ventilated rendered façades. An introduction to each of the following systems can be found over the following pages:

- PermaRend Exterior Render System
- PermaRend Scratch Render System

The PermaRend Exterior render system is complimented by an extensive range of renders and decorative finishes including acrylic and silicone-based textured renders, metallic-effect renders, brick slips and scratch render finishes.

For more detailed information on our exterior render systems, please view the PermaRend system sheet.
PermaRend Exterior Render System

PermaRend is a leading brand of high impact-resistant, polymer-modified cementitious renders. The PermaRend system is a one, two or three coat, thin render system (up to 5 mm per layer) that provides a high performance tough, durable, lightweight and flexible alternative to traditional sand and cement renders.

Key Features:
- Suitable for brickwork, blockwork or concrete substrates
- Incorporates lightweight reinforcement for additional system durability
- Mechanical fixings can be introduced to enhance bond to the underlying substrate
- Available with SiliconeUltra™ ‘self-cleaning’ render
- 1300+ standard colour shades with Acrylic render
- Trowel or machine applied

The PermaRend system can also be used with PermaRock’s other exciting decorative finishes including ‘metallic effect’ renders, brick slips and stone chip renders.

PermaRend Scratch Render System

PermaRend Scratch Render is a silicone based thick coat render with a scraped or scratch textured surface that is suitable for the creation of simulated blockwork and ashlar detailing.

PermaRend Scratch Render is weatherproof, breathable and incorporates special additives that confer water repellency to the surface, ensuring excellent resistance to dirt pick up.

Key Features:
- Suitable for brickwork, blockwork or concrete substrates
- Incorporates lightweight reinforcement for additional system durability
- Mechanical fixings can be introduced to enhance bond to the underlying substrate
- Excellent resistance to dirt pick-up
- 20 standard colour shades + colour matching available
- Trowel or machine applied

Whether you choose from PermaRock’s palette of over 1300 colours from our 3D-Plus colour range, our exciting ‘metallic effect’ renders, artificial brick slips or our scratch renders, we provide the building designer with unprecedented freedom to create uniquely expressive façades and impressive architectural designs.

All PermaRock decorative aesthetic options can be utilised with our complete range of external wall insulation and exterior render systems. Further dramatic shape and form can be created through simulated blockwork, shadowlines, ashlar effects and architectural profiles to add further expression.

For more detailed information and to view full colour ranges for each of PermaRock’s decorative renders and finishes, please view our individual finishes sheets.
PermaRock has specially developed colour ranges to provide the building designer with the latest offerings in terms of material technology and quality whilst bringing near limitless colour options.

**PermaRock 3D-Plus Range**

PermaRock’s 3D-Plus Colour range, available for use with PermaRock’s Silicone and Acrylic through-coloured renders, offers extensive choice of colour and combinations to the building designer. With an exceptional 1300 colour tones as standard, an emphasis has been placed on architecture related, heavily veiled colour shades across many lightness levels to provide an unprecedented colour palette.

**Key Benefits:**
- For use with PermaRock Silicone & Acrylic through colour renders
- 1300+ colour shades over the colour spectrum
- Good colour brilliance and colour retention, especially when used in conjunction with PermaRock’s Silicone through-coloured renders

**PermaRock Façade A1 Colour Range**

PermaRock’s Façade A1 colour range provides 500 colour shades with the highest colour brilliance and more permanent colour stability. Formulated entirely with inorganic pigments, the colour range is designed to complement PermaRock’s Silicone™ Renders and Façade Coatings which employ unique binder combinations.

This combination of carefully selected materials confers a number of key benefits over standard colour ranges, employed with conventional acrylic and “standard” silicone renders and coatings.

**Key Benefits:**
- 500 balanced colour shades over the colour spectrum
- Inorganic pigments enable deep/dark intensive colour shades to be achieved with low air absorption and lower surface temperatures
- UV absorbing pigments converts aggressive UV to less harmful, longer wavelengths
- Two new inorganic pigments replace UV-unstable orange and blue pigments to provide unprecedented colour fastness in this part of the colour spectrum
- Low lightness factors, light/colour stable shades now available
- Achieves Colour Fastness Code A1 – the highest quality levels for binders (Class A) and pigments (Group 1) are achieved as classified by BFS (Federal Commission for Paint & Property Protection)

**Can’t Find The Colour You Require?**

If you can’t find your exact colour requirements from our extensive colour palettes, PermaRock is able to colour match to RAL and other widely used commercial colour ranges with many of our decorative finishes.

**Specifying Darker Colours**

In relation to colour shades with a Lightness Factor (LF) of 20 or below, there can be issues associated with High Solar Gain and Colour Stability, particularly on Phenolic and EPS based Insulated Render Systems.

Please consult PermaRock should you be looking to utilise such colours.

**Product Samples**

The specifier is frequently called upon to provide samples of decorative finishes for planning applications and to finalise choices of texture and colour. PermaRock can provide samples of the full range of decorative finishes and effects available for any given scheme.

Sample turnaround times do vary, dependant upon a number of factors, consultation should be made with your PermaRock Area Manager to establish sample requirements and availability.
PermaRock SiliconeUltra K-Finish
PermaRock SiliconeUltra R-Finish

PermaRock SiliconeUltra is the ultimate in decorative textured finishes.

Incorporating SiliconeUltra Nano-Quartz ‘self cleaning’ technology helps exterior rendered surfaces to retain their colour and cleanliness for unparalleled periods of time and can also help minimise costs associated with dealing with surface discolouration over the life of the building.

SiliconeUltra is fully breathable, crack resistant, has excellent repellency towards water and dirt and resists aggressive air pollutants and infestation by algae, moss and fungi providing long term decoration and low maintenance protection.

For further information on PermaRock’s SiliconeUltra renders please view our individual finish detail sheets.

SiliconeUltra Particle Sizes

Available for use with selected colour shades in PermaRock’s Façade A1 colour range, PermaRock SiliconeUltra renders are available with a K Finish (stippled/scraped) texture, in 1.5, 2.0 and 3.0 mm grain sizes or with an R-Finish (Rolled/Corrugated) texture in 2.0 and 3.0 mm grain sizes.

Quick Check - PermaRock SiliconeUltra K & R Finish

| Availability - PermaRock EWI / Render Systems | All |
| ‘Self Cleaning’ Nano-Quartz Technology | Yes |
| Resistance to Soiling | Excellent |
| Colour Fastness | Excellent (Group 1 / Class A1) |
| Colour Range | 500 (Façade A1 Colour Range) |
| Colour Options | Special Colours available |
| Number of Textures | 2 (K & R Finishes) in a range of particle sizes |
| Thickness / Coverage | Circa 1.7 – 3.1 kg per m² (dependant upon particle size) |
| Pre-Coat | Sponge Floated Bedding Mortar / K & R Primer (Pre-tinted) |
| Water Repellent | Yes |

Note: Limitation on use of dark coloured renders: Only decorative finishes with Lightness Factor (LF) of >20 should be used.

‘Self Cleaning’ Nano-Quartz Technology - How does it work?

Nano-Quartz technology provides a step change in the performance level of exterior renders and coatings. Organically cross-linked nano-particles form a compact, mineral-hard, three dimensional quartz-matrix structure which protects against soiling and keeps façades cleaner for longer. The special silicone resin/binder combination also generates water repellent, highly water vapour permeable surfaces whilst maintaining a robust weather-proof external façade.

Nano-Quartz technology renders and coatings incorporate inorganic pigments which offer superior light and colour fastness and enable the use of dark colours (lightness factors as low as 5 are now possible) on insulated (external wall insulation) backgrounds.

Key Benefits:

- Self cleaning – the Nano-Quartz lattice surface gives excellent reduction in tendency to accumulate surface soiling. Loosened dirt particles are removed naturally by wind and rain action
- Increased resistance to mould & mildew
- Lasting colour retention – inorganic pigments and nano-technology offer class leading performance in relation to colour depth and longevity
- Achieves Colour Fastness Code A1 – the highest quality levels for binders (Class A) and pigments (Group 1) is achieved (as classified by BFS (Federal Commission for Paint & Property Protection)
- Available in 500 colour shades – for use in conjunction with PermaRock’s A1 colour range
- Highly water vapour permeable – allows the substrate to “breathe”
- Low consumption - up to 20% less material consumption compared to conventional acrylic and silicone renders
- Lower maintenance requirements – compared to standard acrylic and silicone based renders over the lifetime of a cladding system

Nanoparticle Technology - 2 Year Outdoor Weathering Test

The soiling rate can be measured on the basis of the graying of the façade after exposure to natural weathering. The lower the measured value, the lower the graying and therefore the better the resistance to soiling.

PermaRock façade coating with Nano-Quartz Technology – soiling rate 2.3
Conventional acrylic façade coating – soiling rate 10.1

PermaRock Nano-Quartz Technology – SiliconeUltra Renders & Coatings

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PermaRock façade coating with Nano-Quartz Technology – soiling rate 2.3
Conventional acrylic façade coating – soiling rate 10.1
Project Spotlight:
British Geological Survey, Keyworth
PermaRock Acrylic K-Finish

PermaRock Acrylic is a siloxane reinforced, weather resistant, water vapour permeable and crack resistant structured render that offers outstanding performance when compared to traditional renders.

Available in an almost unlimited range of colours from the 3D-Plus Colour System, PermaRock Acrylic renders are available with a K Finish (stippled) texture in 1.5, 2.0 and 3.0 mm particle sizes or with an R Finish (Rolled/Corrugated) texture in 2.0 and 3.0 mm particle sizes.

These finishes can also colour match to RAL, NCS, BS4800 and other widely used commercial colour ranges.

Quick Check - PermaRock Acrylic K & R Finish

| Availability - PermaRock EWI / Render Systems | All* |
| Self Cleaning | No |
| Nano-Quartz Technology | |
| Resistance to Soiling | Good |
| Colour Fastness | Good |
| Colour Range | 1300+ (3D-Plus Colour Range) |
| Colour Options | Colour matching available |
| Number of Textures | 2 (K & R Finishes) with a range of particle sizes |
| Thickness / Coverage | Ca 2.7 – 4.3 kg per m² (dependant upon particle size) |
| Pre-Coat | Sponge Floated Bedding Mortar / K & R Primer (Pre-tinted) |

For further information on PermaRock’s Acrylic K & R Finishes, please view our individual finish sheets.

PermaRock Metallic Render

PermaRock Metallic Render is an aluminium pigmented, synthetic resin bound textured render that creates a rich lustrous metallic effect.

As a result of increased light reflection the surface of PermaRock Metallic Render will heat up less intensively and its lower emissivity will reduce heat loss from the wall surface.

Colour / Texture Options

PermaRock Metallic Render is available as a stippled ‘K’ texture in either 1.5 mm or 2.0 mm particle sizes and is available in 6 colour shades.

Colour matching is available, subject to minimum order quantities.

Quick Check - PermaRock Metallic Render

| Availability - PermaRock EWI / Render Systems | All* |
| Self Cleaning | No |
| Nano-Quartz Technology | |
| Resistance to Soiling | Very Good |
| Colour Fastness | Very Good |
| Colour Range | 6 |
| Colour Options | Colour matching available, subject to minimum order quantities |
| Number of Textures | 1 (K Finish) in a range of particle sizes |
| Thickness / Coverage | Circa 2.0 – 3.0 kg per m² (dependant upon particle size) |
| Pre-Coat | Sponge Floated Bedding Mortar / K & R Primer (Pre-tinted) |

*Note: Limitation on use of dark coloured renders: Only decorative finishes with a Lightness Factor (LF) of >20 should be used.

For further information on PermaRock’s Metallic Render, please view our individual finish sheets.
PermaRock Brick Slips

PermaRock Brick Slips are a lightweight, flexible and breathable synthetic resin brick used to replicate brickwork. PermaRock Brick Slips are the latest advancement in simulated brickwork for building façades. Equally suitable for flat or curved surfaces, they are a cost-effective way to replicate the look, feel, and durability of brick walling.

Facing bricks are available in standard UK sizes of 215 x 65 mm, with corner pieces of 215 x 65 x 102 mm and individual brick slips are approx. 4-6 mm thick.

Bespoke sizes are also available (subject to special order) to create features, quoins and other architectural designs to further enhance the façade.

For further information on PermaRock’s Brick Slips, please view our individual finish sheets.

Quick Check - PermaRock Brick Slips

<table>
<thead>
<tr>
<th>Availability - PermaRock EWI / Render Systems</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Self Cleaning’ Nano-Quartz Technology</td>
<td>No</td>
</tr>
<tr>
<td>Resistance to Soiling</td>
<td>Excellent</td>
</tr>
<tr>
<td>Colour Fastness</td>
<td>Excellent</td>
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<tr>
<td>Colour Range</td>
<td>11</td>
</tr>
<tr>
<td>Colour Options</td>
<td>Special colours available subject to minimum order quantities</td>
</tr>
<tr>
<td>Number of Textures</td>
<td>2</td>
</tr>
<tr>
<td>Thickness / Coverage</td>
<td>Approx 58 slips (215 cm x 65 cm) per m²</td>
</tr>
<tr>
<td>Pre-Coat</td>
<td>K &amp; R Primer (pre-tinted) / Brick Slip Adhesive</td>
</tr>
</tbody>
</table>

PermaRock Scratch Render

PermaRock Scratch Render is a pre-mixed render based on cement, limestone and specially selected, lightfast and UV stable mineral pigments.

 Scratch Render is a ‘thick coat’ render ideally suited to the creation of rustication and ashlar effects. Designed for application at a thickness of typically 12–14 mm, before being scraped back using a nail float to achieve a thickness of approximately 10–12 mm.

PermaRock Scratch Render incorporates a silicone water repellent which imparts a high degree of water repellency to the surface whilst allowing water vapour to pass through, enabling the substrate to breathe.

The water repellent surface reduces water absorption and improves resistance to algae growth and soiling.

For further information on PermaRock’s Scratch Render, please view our individual finish sheets.

Quick Check - PermaRock Scratch Render

<table>
<thead>
<tr>
<th>Availability - PermaRock EWI / Render Systems</th>
<th>All (Masonry Substrates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Self Cleaning’ Nano-Quartz Technology</td>
<td>No</td>
</tr>
<tr>
<td>Resistance to Soiling</td>
<td>Very Good</td>
</tr>
<tr>
<td>Colour Fastness</td>
<td>Very Good</td>
</tr>
<tr>
<td>Colour Range</td>
<td>20</td>
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<tr>
<td>Colour Options</td>
<td>Alternative colours available, subject to minimum order quantities</td>
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<tr>
<td>Number of Textures</td>
<td>1</td>
</tr>
<tr>
<td>Thickness / Coverage</td>
<td>12 – 14 mm (approx. 21 – 25 kg per m² - top coat)</td>
</tr>
<tr>
<td>Pre-Coat</td>
<td>Scratch Render Bedding Mortar</td>
</tr>
</tbody>
</table>

Red Shadow - Please see individual brick slip decorative sheet for full colour range

Cream - Please see individual scratch render decorative sheet for full colour range
Features & Effects

PermaRock decorative finishes can be used to create a variety of effects. These can be introduced in the form of simulated blockwork, ashlar or relief banding to add further expression.

Architectural Profiles

PermaRock offers a range of Architectural Profiles enabling the designer to create traditional architectural detailing and add individual character to a building façade.

In addition to a range of standard profiles, which include keystones, quoins, cornices, consoles and corbels, PermaRock Architectural Profiles can be produced to individual customer designs. The material can be fabricated into almost any shape or profile and can even be used for rosettes, crests or coats of arms, or to provide bespoke lettering across a façade.

The images above provide a small example of the design features that can be produced with our renders and finishes.

Technical & Design Support

One of the most valuable benefits to specifying a PermaRock system is the knowledge that there is an extensive level of support provided alongside our products.

From initial advice, detailing, thermal (U-value) calculations, to specifying the most suitable systems and finishes, we can support our clients through each stage of a project.

Project Guidance

With over 30 years’ experience in the construction industry, early consultation with PermaRock will benefit the development and realisation of the Client and Specifier’s vision of a building.

Type of construction, system choice and decorative finishes combine to create different applications, PermaRock will pro-actively engage in discussions on the development of façades with the project design and construction teams.

Technical & Design Support

PermaRock is able to offer significant technical support and advice on design, thermal and aesthetic qualities to ensure the finish and performance achieved by the specified system are of the highest standard.

Support Includes:

- System and decorative finish guidance
- Thermal calculations
- Standard & bespoke detail drawings
- Specifications
- System and colour samples
- Technical installation training
- Insulation selection guidance
- U-value & condensation risk analysis
- System design & detailing
- Decorative Finish guidance
- Colour / texture selection & specification
- Written project specification & method statement
Support Services

Seminars
To find out more about the theoretical and technical aspects of PermaRock’s range of external wall insulation and render systems, you may wish to arrange for PermaRock to present at your offices.

Undertaken by a PermaRock representative, the presentation, gives a more in-depth look at SiliconeUltra Nano-Quartz technology, as well providing further information on the underlying principles behind external wall insulation and exterior renders.

We have presentations tailored towards both new buildings and existing buildings (refurbishment) sectors and we can also produce bespoke presentations to your specific scheme requirements.

U-value Calculations
PermaRock is able to provide U-value calculations for each project, alongside an assessment of condensation risk, based on the wall construction information provided.

Internal and external environmental conditions can be adjusted to meet specific building use criteria in order for accurate assessments of condensation risk to be provided, therefore tailoring the system accordingly.

Specifications
PermaRock provide full technical specifications for all of its products and systems on a project by project basis. PermaRock specifications provide a detailed description of each system’s components and installation procedures and can include other associated works relevant to the render or external wall insulation scheme.

CAD Detail Drawings
The role of the specifying designer is simplified considerably by the use of PermaRock’s support services. CAD drawings, in .dwg format, can be provided for most standard details, either electronically (via email) or in hard copy format. Project specific details are also available.

BIM objects in IFC format and other major platforms are in development ahead of 2016 when BIM will be mandatory on all public sector contracts.

Product Samples
To assist with planning applications and to finalise choices of texture and colour, PermaRock can provide samples of the full range of decorative finishes and effects available for any given scheme.

Sample turnaround times do vary, depending on request rates, consultation should be made with your PermaRock Area Manager to establish sample requirements.

Approved Installers & On-Site Technical Support
Installation of PermaRock systems is undertaken by our nationwide network of trained and approved installer contractors.

Approved installers receive regular training updates and are kept abreast of the latest innovations and product developments via PermaRock technical bulletins. The performance of the installers is constantly monitored to ensure continuing high levels of quality and performance.

PermaRock operate an Identity Card system for trained external wall insulation site operatives. The cards are monitored and checked by System Technicians during routine site visits to ensure system installation is undertaken by competent personnel and that quality standards are maintained. PermaRock approved installers operate in all areas of the UK.

PermaRock can provide details, on a project by project basis, of approved installers capable of carrying out the installation of any PermaRock system based on project size, location and programme requirements.

Guarantees
Our track record is second to none, with over 30 years’ experience of our external wall insulation and render systems installed in some of the most exposed locations in the UK.

However, for added peace of mind, PermaRock provides as standard, a 10 year materials warranty on every project. We can also offer an added level of assurance to our clients through the PermaGuard® Insurance-backed Guarantee or Latent Defects Insurances for a small one-off premium.

The PermaGuard® Guarantee is available for terms up to 20 years. In the unlikely event of any issue arising, it covers defects which may result from the design, materials or installation of the external wall insulation or render system.

After Sales Service & Maintenance
The successful installation of a PermaRock system is not the end to PermaRock’s involvement with a project. PermaRock provides aftercare manuals for its systems, detailing how maintenance can be carried out for routine tasks such as cleaning, minor repairs, modifying or adding new fixtures and fittings.

PermaRock Sales & Technical Representatives are always available to discuss any aspect of a scheme at any stage and to provide you with the necessary support or assistance for existing projects or when you wish to move on to your next PermaRock scheme.
PermaRock systems are the ideal façade solution for new buildings, they are also equally beneficial in terms of their technical and aesthetic attributes for installation onto existing buildings.

PermaRock external wall insulation systems have been used successfully in the UK for around 30 years both to combat dampness and condensation and to upgrade thermally inefficient buildings. They are particularly suited for application onto solid wall and 'hard to treat' homes that are not able to benefit from other forms of insulation, such as cavity wall insulation.

PermaRock systems are available for all types of construction (traditional and non-traditional), including, solid or cavity wall, concrete, steel or timber frame, dense and no-fines concrete, brick and stone, rendered, metal, tile or timber clad structures. They have also been designed for use on high and low rise buildings and in exposed conditions ranging from sheltered to very severe.

A full overview on the benefits and suitability of PermaRock’s systems for the refurbishment sector can be found in PermaRock’s ‘Existing Buildings’ brochure along with advice on the Green Deal and Energy Company Obligation (ECO) supportive funding.

Please contact PermaRock to receive a copy of PermaRock’s ‘Existing Buildings’ brochure or alternatively visit our website, www.permarock.com, where you can download copies of our literature.