



Rainscreen cladding

insulation solutions

Marley Eternit

Marley Eternit is committed to the cost effective and sustainable manufacture of high quality, high performing cladding systems.

Marley Eternit's range of cladding products are manufactured under quality management systems, which meet the requirements of ISO 9001 and environmental systems which comply with the internationally recognised ISO 14001 standard.

- Natura Pro
- Natura Plus
- Textura
- Pictura
- Operal
- Cedral Weatherboard
- Lamina External

Information for all these products is available on request. See pages 16-17.

Visit www.marleyeternit.co.uk or call 01283 722588.

A+

Marley Eternit's fibre cement cladding can achieve an A+ rating for the lowest environmental impact in the BRE Green Guide to Specification*.

“With the energy saving measures required in today's built environment, rear ventilated cladding systems can bring unique levels of thermal, acoustic and weather-resisting performance to old and new buildings through a range of sectors.”

Rainscreen cladding

Marley Eternit fibre cement cladding systems offer an unparalleled blend of aesthetic and performance characteristics for all types of rainscreen applications across all sectors.

Insulation depths of up to 240mm can be accommodated, acoustics enhanced, thermal bridging minimised and weather resistance, as well as aesthetics improved.

The high Green Guide ratings Marley Eternit claddings achieve will help to comply with the Building Regulations and the Code for Sustainable Homes, or attain a high BREEAM rating, essential in both the public and private sectors.

Cladding is a fast-track, sustainable solution for both refurbishment and new build projects. It is also a dry construction process that aligns well with modern methods of construction, offering both contemporary and flexible design options.

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* Cedral Weatherboard based on generic rating for autoclaved fibre cement (calcium silicate) cladding (Element ref: 806220701, 806220675, 806220676)

Fibre Cement Cladding based on generic rating for autoclaved fibre cement single sheet (Element ref: 80623042, 806230422, 806230447, 806230450)



EMS 56790

Sectors for rainscreen

Commercial

| | |
|----------------------|-------------------------|
| Project: | Atkinsons store |
| Location: | Sheffield |
| Application: | Commercial |
| Product: | Natura Plus |
| Colour: | Opal |
| Project size: | 350m² |
| Specifier: | Above and Beyond |



From offices and supermarkets to retail and sports centres, Marley Eternit cladding can be used to create unique aesthetic solutions incorporating pristine lines as well as providing levels of thermal and acoustic insulation that allow the designer to achieve the highest BREEAM ratings.

Textura, Offices, Germany



Natura Pro, 3 Assembly Square, Cardiff



Natura Pro, Hunslett Wharf, Leeds

Housing



Opera, low rise apartments, Hart Road



Cadral Weatherboard, windmill conversion, Sheerness, Kent

Marley Eternit systems can be used for individual houses, low rise and high rise apartment projects, where overcladding is commonly used as an effective means of visual and thermal upgrade. Many solutions are A⁺ rated by the Green Guide and will help achieve higher code levels in the Code for Sustainable Homes.



Cadral Weatherboard, luxury apartments, Aberystwyth

Sectors for rainscreen

Education

Natura, Elmgreen School, London (Achieved a BREEAM "Very Good" rating)



Natura Plus, University of Suffolk



Textura, Kendal College, Lake District

In schools and universities, thermal performance is of paramount importance, but so are other issues such as those of impact resistance, low maintenance and 'high value aesthetics' which go together to create effective and efficient learning environments that the students respect and enjoy. Marley Eternit cladding systems combine all of these characteristics in a range of easy to install options.

With its UV coating, Natura Pro offers protection against graffiti – making it ideal for educational environments.

| | |
|----------------------|----------------------------------|
| Project: | Manchester Academy |
| Location: | Manchester |
| Product: | Natura Plus |
| Colours: | Amber, Ivory, Cement Grey |
| Project size: | 500m² |
| Specifier: | Britch |
| Installer: | Carlton Cladding |



Prior to overcladding



After overcladding

Healthcare

Natura, Singleton Hospital, Swansea



Local Health Authorities are under ever-greater constraints to procure buildings that offer the very highest standards of thermal efficiency and sustainability, often coupled with the need to built rapidly. Marley Eternit rainscreen cladding systems, which, with the inclusion of high levels of insulation, can achieve A⁺ ratings in the Green Guide and can be installed quickly with no compromise to future durability.



Natura, Caerphilly Hospital, Wales

Rainscreen cladding

principles and benefits

The past

The rainscreen principle is not new, nor is the idea of rainscreen applied to wall design.

For centuries in Norway, drained and back-ventilated claddings were used with both closed and open joints but without any scientific, systematic foundation.

Gradually, on buildings with timber claddings, closed joints were adopted, and openings at both the top and bottom of the cladding allowed for drainage and evaporation of any penetrating rainwater.

By the 1980's, rainscreen was understood and widely used in Canada and Europe. Architects and specifiers have been using rainscreen systems, including those from Marley Eternit, for a wide range of building types across a number of sectors.

Rainscreen cladding

Today's rainscreen systems offer unique aesthetic and performance benefits:

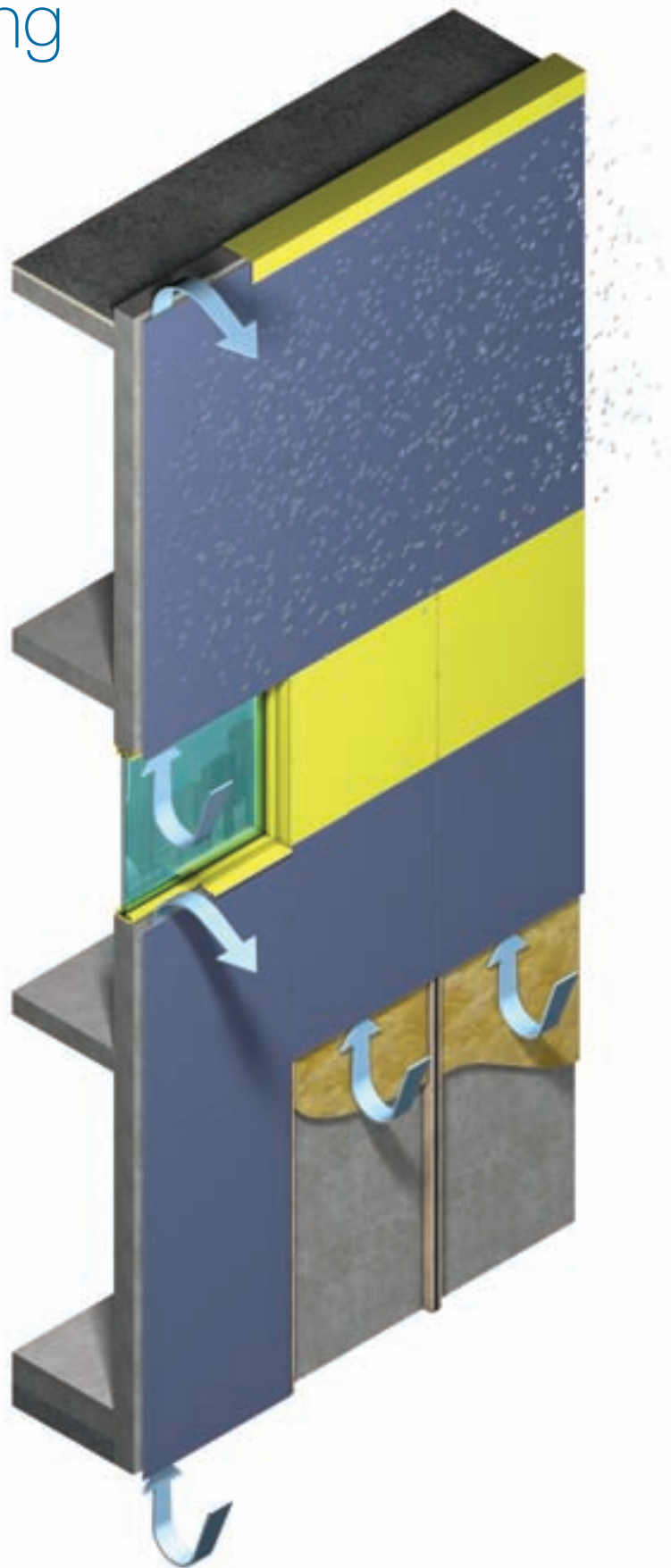
- Contemporary, crisp elevations
- The ability to 'overclad' existing buildings
- Excellent levels of thermal insulation
- Improved acoustics for building users
- Excellent weather resistance

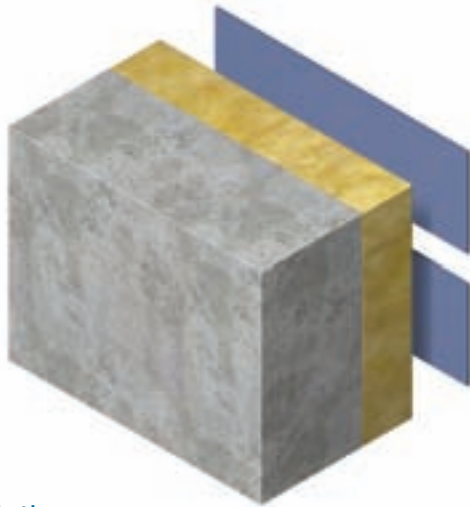
A special characteristic of the rear ventilated cladding system is its guaranteed performance. The system's effectiveness is maintained even when unfavourable internal or external atmospheric conditions are experienced, e.g. in the textile industry, swimming pools, breweries etc. No other wall construction is currently able to fulfil the growing requirements for heat, moisture, noise insulation, and fire protection.

The system works by the provision of ventilation openings at the base and top of the cladding area, avoiding any interruptions, windows, other openings etc. These openings are protected by mesh or purpose-made closures to prevent entry by birds, vermin or insects. Inlet and outlet gaps should be provided according to the following minimum.

- Up to five storeys – 10mm continuous
- Five to fifteen storeys – 15mm continuous
- Above fifteen storeys – 20mm continuous

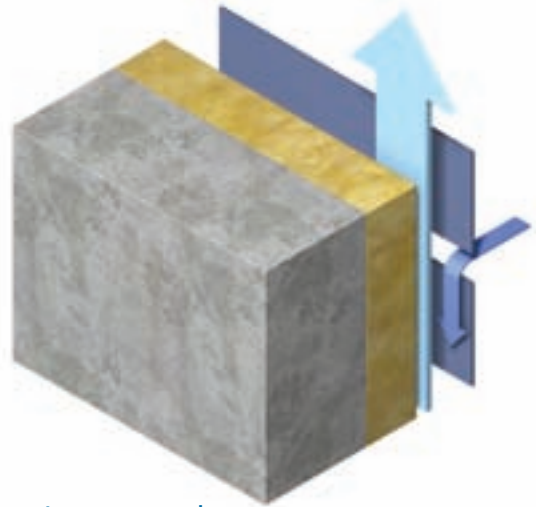
A clear minimum cavity of 30mm should be provided continuously behind the cladding panels. Any moisture penetrating the various joints in the main cladding screen will then be effectively removed by the provision of uninterrupted ventilation paths the full height of the cladding.





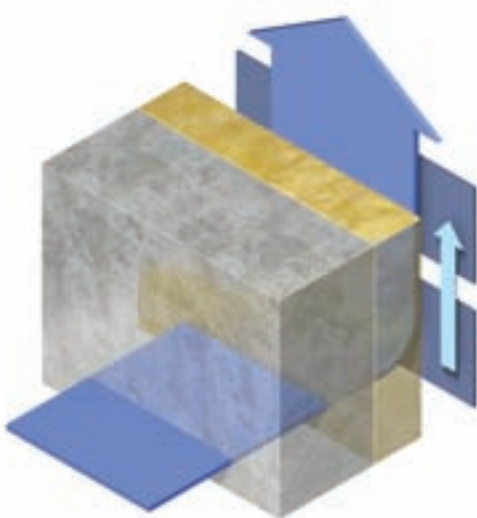
Insulation

- Insulation of up to 240mm thickness can be accommodated using a Marley Eternit framing system
- All types of insulation can be used – from rigid PUR to mineral wool
- Insulation positioned against substrate maximises heat retention and minimises condensation issues
- Externally located insulation maximises internal floor space
- Mineral wool insulation allows moisture to pass through to the cavity where passage of air evaporates it



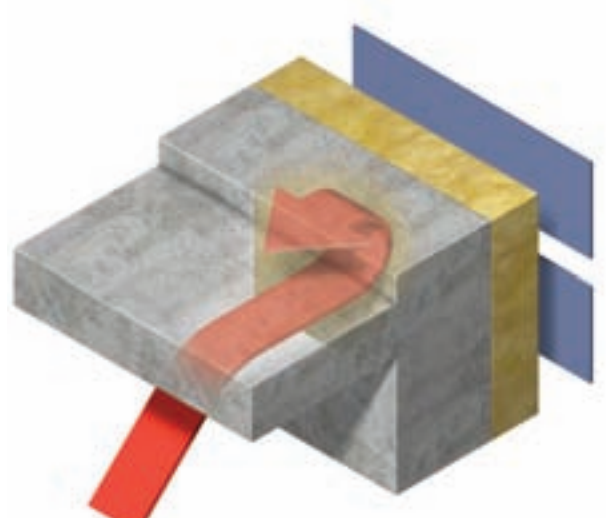
Rainwater removal

- Cladding prevents penetration of most rainwater
- Natural ventilation – stack effect – evaporates penetrating rain
- Residual rainwater drains harmlessly and evacuates at base of system
- Pressure equalised system naturally inhibits ingress of driven rain



Removal of interstitial condensation

- Thermally efficient system
- Any interstitial condensation kept to outside of structure
- Quickly removed via evaporation
- Structure maintained at even temperature
- Structure temperature kept above dew point



Minimisation of thermal bridging

- Continuous insulation envelope possible
- Insulation is external, so no thermal breaks required to accommodate internal structural elements such as floors and beams

Rainscreen and overcladding

The aesthetic, remedial and thermal solution

One of the key ways in which rainscreen can benefit existing buildings is through overcladding.

Apartment and office blocks, retail and commercial establishments etc. may well require both remedial and aesthetic work to make them suitable for today's environment.

On top of this, the thermal inefficiencies inherent in this legacy building stock will almost certainly need radically upgrading to meet today's exacting regulations.

Overcladding with rainscreen cladding systems achieves all three key requirements:

- Remedial
- Aesthetic
- Thermal

Other benefits

Minimising disturbance

Overcladding is carried out entirely from the outside, so there is usually minimal disruption.

Balconies

Balconies and walkways can be fully enclosed to create buffer zones. If external wall insulation is not considered then enclosing the balconies etc. will also reduce the effect of the thermal bridges associated with them.

Vandalism

Those external wall surfaces prone to vandalism and graffiti – for instance, at ground floor level – can be clad with more robust material or one such as Natura Pro with its UV coating offering good protection against graffiti.

Maintenance

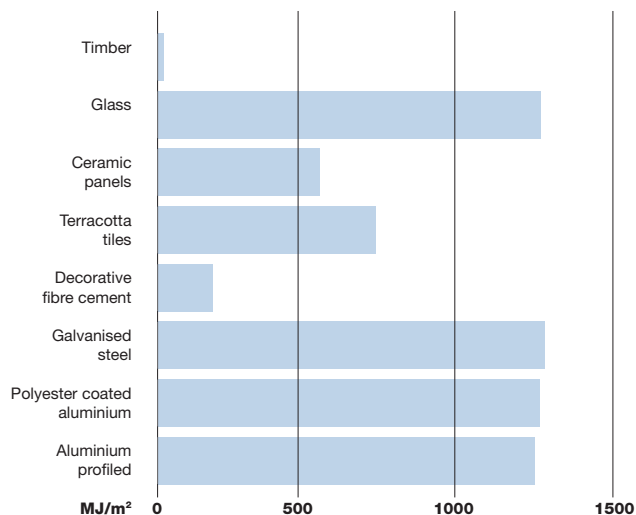
As a non-loadbearing extra 'skin', fixed to the substrate, maintenance or replacement of panels is straight-forward and non-invasive, as is access to the loadbearing structure i.e., columns, beams and slabs.

Building life

Whilst overcladding will not reinstate structural integrity of a building, it will, if designed and installed correctly, extend its life by improving weather resistance.

Embodied energy for cladding materials

The table below shows embodied energy for various cladding materials. Lower embodied energy will allow the designer to achieve a higher BREEAM rating.



Key features for overcladding

- Restoration of existing facade
- Extending the life of the building
- Improving appearance and image
- Provide thermal insulation and weather-tightness
- Improve acoustical performance of the building
- Lower maintenance cost

Natura Plus, Atkinson's Store, Sheffield



Rainscreen and wall insulation

Providing thermal insulation for walls

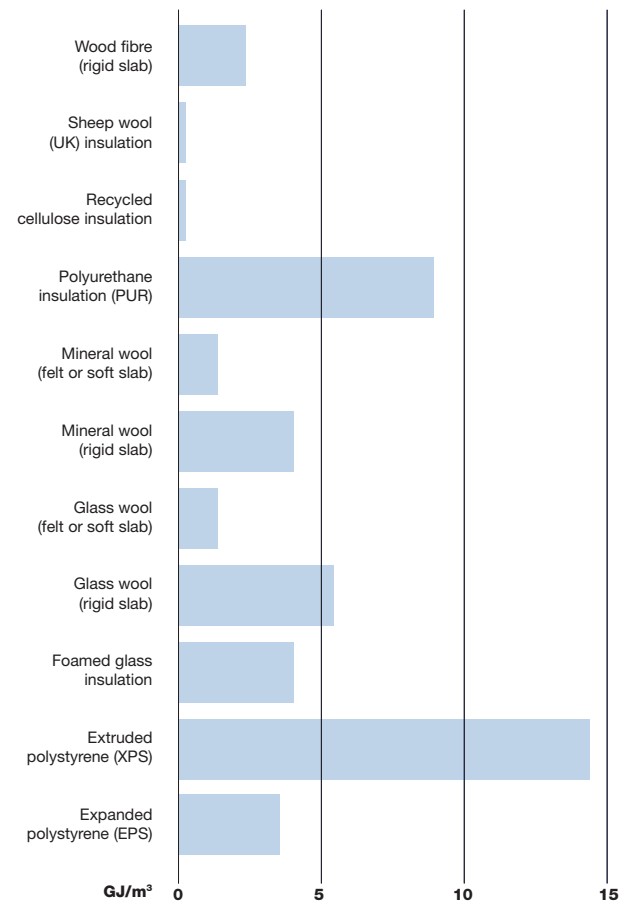
Rainscreen is a relatively high-benefit, low-cost method of providing thermal insulation to external walls for both refurb (overclad) and new projects. It can also help minimise cold-bridging.

Adding insulation to the external surface of the loadbearing structure has three key benefits:

- Increased thermal efficiency – dependent on the fixing system used. Up to 240mm of insulation can be added using a Marley Eternit framing system
- No loss of internal space - insulation added to wall cavities or inner leaf inevitably consumes internal habitable space
- Light weight and easy to fix – insulation can be rapidly and easily fixed to the exterior substrate and adds very little loading to the rainscreen support system

Embodied energy for insulation

The table below shows embodied energy for various insulation products. Lower embodied energy will allow the designer to achieve a higher BREEAM rating.



Cedral Weatherboard, Wansley Street, London

Thermal design details

Marley Eternit products, used in an external rainscreen cladding system can accommodate a wide range of insulation types and thicknesses to help meet the requirements of Part L, both for new build and refurbishment construction.

Building Regulations

The relevant documents are Approved Document L1A 'Conservation of fuel and power in new dwellings'; L1B 'Conservation of fuel and power in existing dwellings'; L2A 'Conservation of fuel and power in new buildings other than dwellings' and L2B 'Conservation of fuel and power in existing buildings other than dwellings' for England and Wales and Section 6 'Energy' (domestic and non-domestic) for Scotland.

The Building Regulations prescribe high standards of building fabric insulation for floors, walls and roofs as well as space heating, lighting and hot water controls so as to limit the heat loss from the building.

The following sections briefly summarise the content of the four parts of Part L:

Part L1A 'New dwellings'



The target CO₂ Emission Rate for dwellings up to 450m² is calculated using SAP (Standard Assessment Procedure) 2005 for a 'notional' dwelling of the same size and shape as the 'actual' dwelling (based on set construction rules).

The Simplified Building Energy Model (SBEM) will be used for larger dwellings.

The Dwelling Emissions Rate (DER) must be no higher than the target. Two phases of calculation for the DER are required:

- 1 Design calculations presented in a report to Building Control that defines the critical design features
- 2 Following dwelling pressure testing, a final calculation to confirm that the building complies 'as built'

Part L1B 'Existing dwellings'

This includes most extensions, material changes of use, material alterations, provision of controlled fittings and services and provision or renovation of a thermal element. The recommended maximum U-values for an extension may be varied on condition that it is no worse overall than a similar extension built to the standards and that the defined maximum U-values are not exceeded.



SAP 2005 can be used to demonstrate that CO₂ emissions from a dwelling plus an extension taken together are no worse than that of the dwelling complying with regulations plus a separate extension complying with regulations. This process may involve improvements to the existing thermal elements, such as walls, roofs and floors, which must comply with Part L1B standards.

Part L2A 'New non-dwellings'



There are 5 key criteria for compliance:

- 1 CO₂ emissions must be less than target value.
- 2 The thermal performance of building fabric and services must satisfy minimum standards.
- 3 Summer time solar gains must be controlled.
- 4 Pressure testing and 'Quality of Construction' will be mandatory.
- 5 Building users should be supplied with sufficient information to operate the building in the most energy efficient manner.

Significant improvements in carbon dioxide emissions are required when comparing the notional and actual results. In general terms these represent the improvements to the levels stated in the 2002 regulations:

Heated and naturally ventilated: 23.5%

Heated and mechanically ventilated: 28%

Air conditioned: 28%

Again, two phases of calculation for emissions rate are required:

- 1 Design calculations presented in a report to Building Control
- 2 Following full building pressure testing, a final calculation to confirm that the building complies 'as built'.

Part L2B 'Existing non-dwellings'



This applies to extensions and subsequent fit out works, change of use, material changes, work on controlled services etc. New building fit outs for existing buildings should comply with new building regulations.

Part L 2006 introduces 'Consequential Improvements' which may in some situations require the upgrading of windows, boilers, air-conditioning and lighting as well as the inclusion of energy metering systems.

Thermal design details

upgrading existing structures and overcladding

Brickwork wall

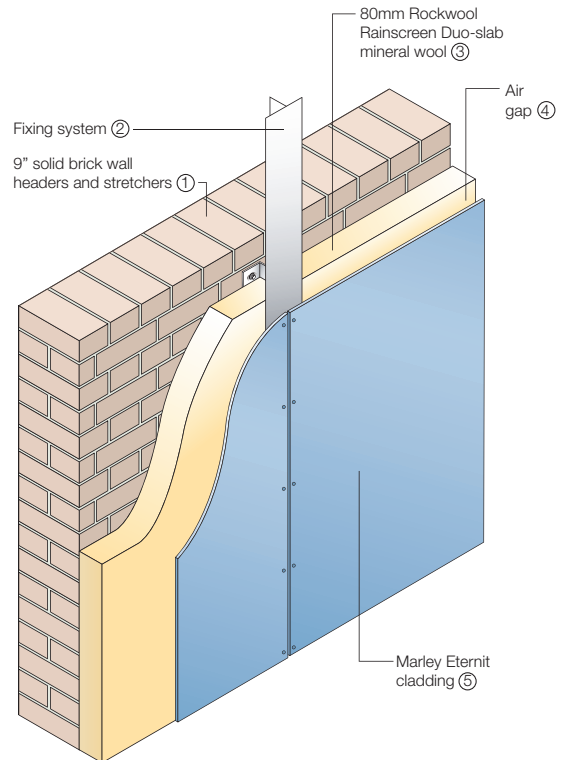
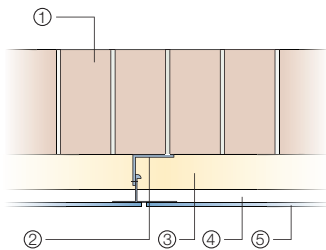
- Marley Eternit external cladding
- Ventisol fixing system
- Air gap
- 80mm Rockwool Rainscreen Duo-slab mineral wool
- 9" solid brick wall (laid as headers and stretchers)

Notes:

- 9" solid walls are common in pre-1930 house construction and the brick bonding can be in a number of configurations
- U-values of these types of wall are typically 1.9-2.2 W/m²K
- Other fixing systems can also be used
- Greater (or lesser) depths of insulant can be accommodated

0.35
u-value

↑
upgrade
2.00
u-value



Block and brickwork wall

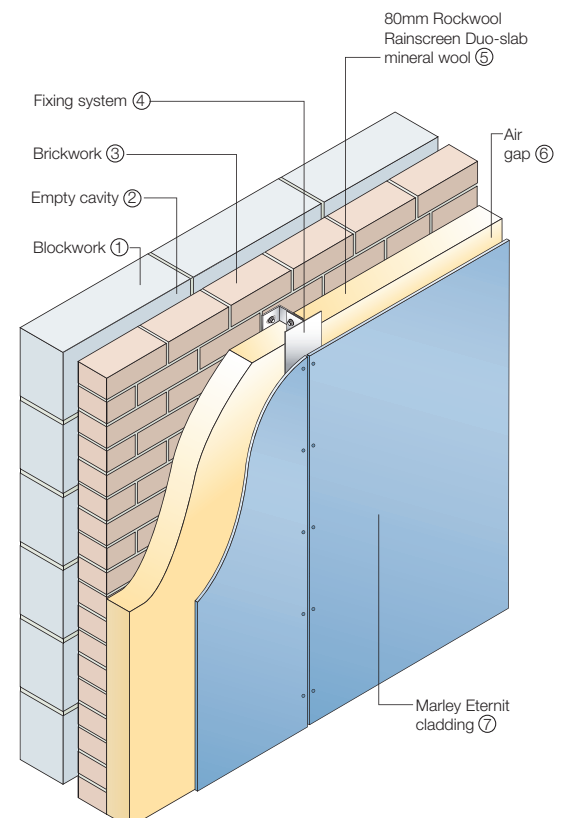
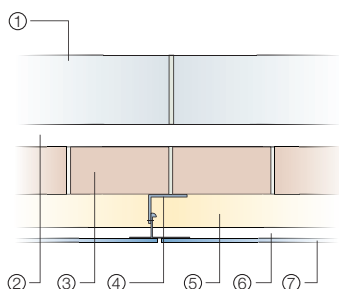
- Marley Eternit external cladding
- Ventisol fixing system
- Air gap
- 80mm Rockwool Rainscreen Duo-slab mineral wool
- Brick outer skin
- Cavity not insulated
- Brick inner skin

Notes:

- U-values of these types of un-insulated wall are typically 1.0-1.6 W/m²K
- Other fixing systems can also be used
- Greater (or lesser) depths of insulant can be accommodated

0.33
u-value

↑
upgrade
1.50
u-value



Thermal design details

new structures – housing

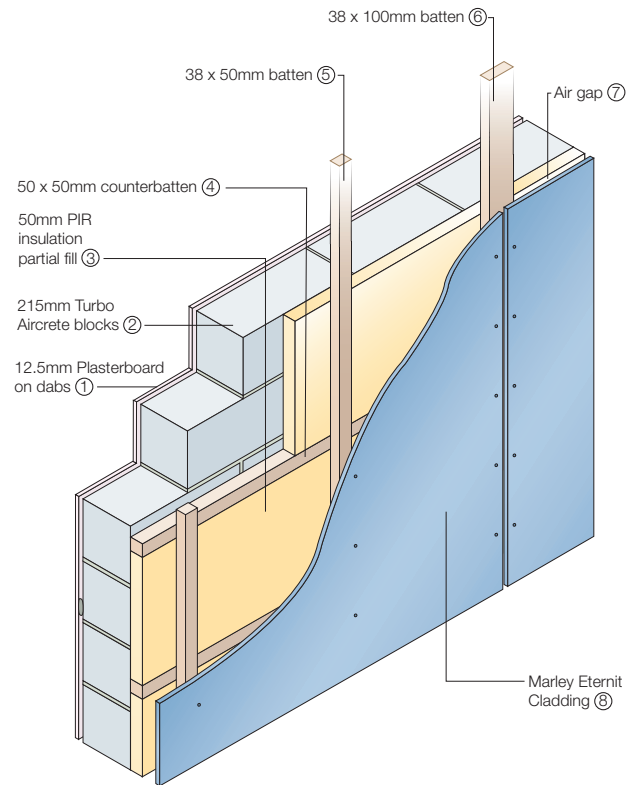
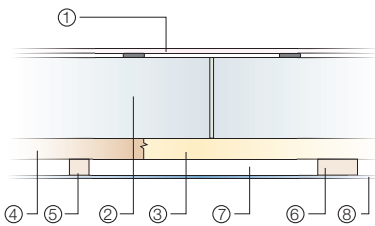
Blockwork wall

- Marley Eternit external cladding
- 38 x 50mm and 38 x 100mm timber battens
- Counterbattens 50 x 50mm
- Single skin 440 x 215mm Aircrete blocks
- 50mm PIR insulation

Notes

- Internal wall should be 12.5mm plasterboard on dabs

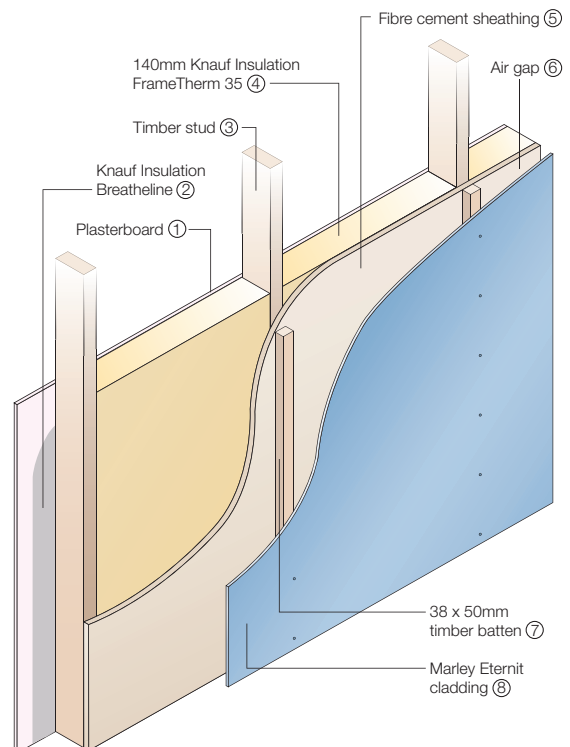
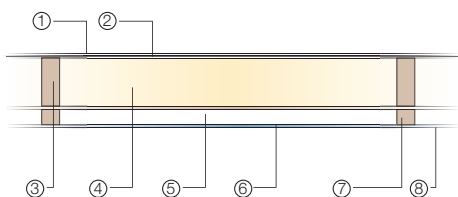
0.25
u-value



Timber frame wall

- Marley Eternit external cladding
- 38 x 50mm timber battens
- 140 x 60mm timber studs
- 140mm Knauf FrameTherm 35 insulation between studs
- Knauf Insulation Breatheline vapour control layer between plasterboard and timber studs

0.29
u-value



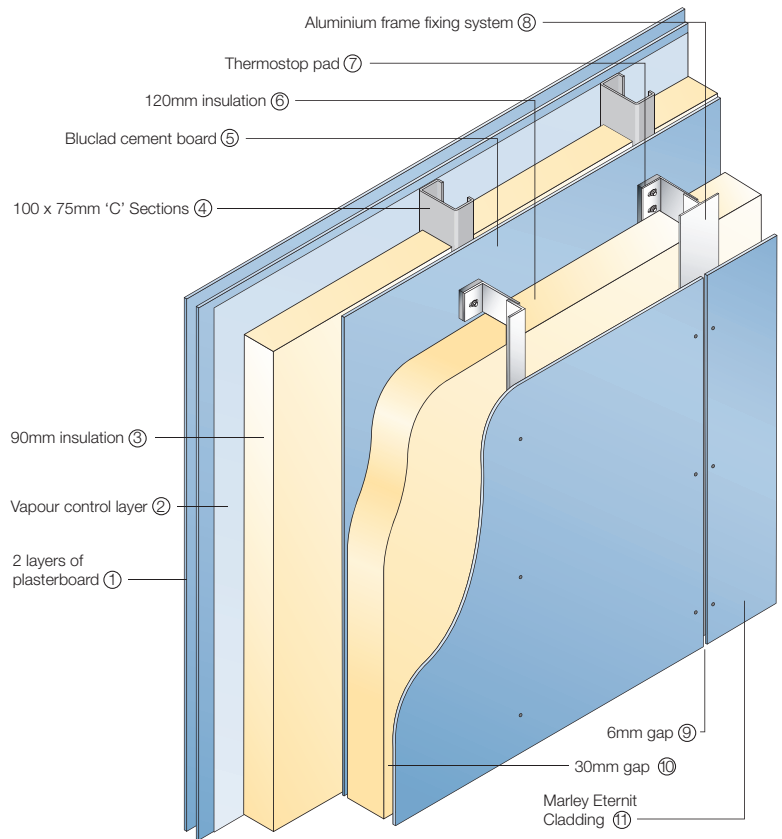
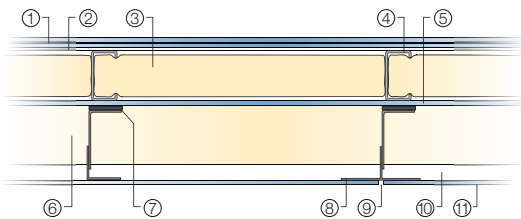
Thermal design details

new structures – commercial, education or healthcare

Lightweight steel frame

- Marley Eternit external cladding
- 125mm stone mineral wool
- Ventisol or similar framing system
- Bluclad cement board
- 100 x 75mm 'C' sections
- 90mm glass mineral wool
- Vapour control layer
- Internal wall should be 2 layers of 12.5mm plasterboard on dabs

0.23
u-value



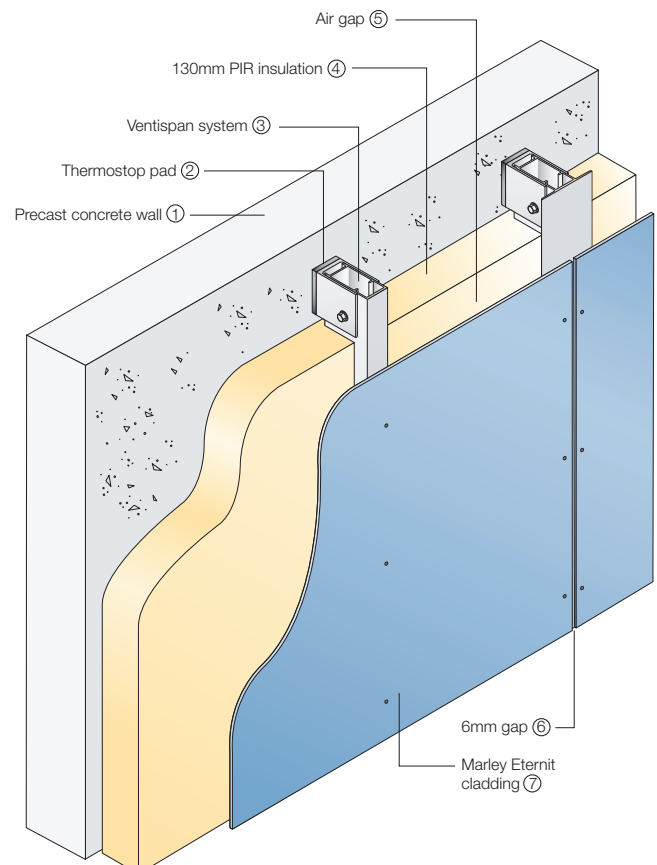
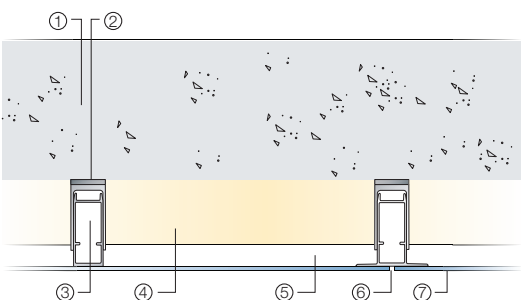
Concrete wall construction

- Marley Eternit external cladding
- Ventispan framing system
- 130mm PIR insulation
- Structural concrete slab
- Steel framing infill system (between floors)

0.14
u-value

Notes

- A very wide variety of internal wall finishing options are available, many of which will incorporate further layers of insulation.



Types of rainscreen cladding



Natura Pro

Tactile, smooth surface with a UV coating to protect against many types of staining.

- Can achieve A⁺ rating as defined in the BRE Green Guide*
- Anti graffiti protection
- Variegated fibre cement finish
- Choice of subtly pigmented surfaces
- Class 0 fire performance
- Economical
- Secret fix system
- Natura Pro panels have an installed life expectancy of at least 50 years
- Easy to fix
- Designed for rainscreen cladding systems
- Excellent weather resistance
- Resistant to insects, mould growth and fungi
- No routine maintenance necessary
- Natura Pro panels are suitable for a wide range of high quality facade applications
- BBA certificate No. 06/4355



Natura Plus

Beautiful, smooth and solid cladding panel with a through-coloured core and natural fibre cement finish.

- Can achieve A⁺ rating as defined in the BRE Green Guide*
- Natural fibre cement appearance
- Choice of through-coloured panels
- Class 0 fire performance
- Economical
- Secret fix system
- Natura Plus panels have an installed life expectancy of at least 50 years
- Easy to fix
- Incorporating 'Swiss Pearl' technology
- Designed for rainscreen cladding systems
- Excellent weather resistance
- Resistant to insects, mould growth and fungi
- No routine maintenance necessary
- Natura Plus panels are suitable for a wide range of high quality facade applications
- BBA certificate No. 06/4355



Textura

Fully compressed fibre cement cladding with glazed, granular finish and wide range of colours, including factory-approved RAL colours.

- Can achieve A⁺ rating as defined in the BRE Green Guide*
- Available in any factory-approved RAL colour (subject to minimum order)
- Textura panels have an installed life expectancy of at least 50 years
- Granular finish
- Fully compressed fibre cement panel
- Class 0 fire performance
- Resistant to impact damage
- Secret mechanical fixing system
- Frost proof
- Resistant to weather and atmospheric pollutants
- Excellent fire performance
- Will not support mould growth or fungi
- No routine maintenance necessary
- Textura cladding panels are suitable for a wide range of high quality facade applications
- BBA Certificate No. 06/4355





Pictura

Pictura's coating system incorporates an additional surface treatment for fibre cement panels resulting in a hard, smooth, silky matt surface.

- Can achieve A+ rating as defined in the BRE Green Guide*
- Pictura panels have an installed life expectancy of at least 50 years
- Non-combustible
- Good noise insulation properties
- Weather resistant
- Waterproof
- Resistant against living organisms (mould, bacteria, insects, etc.)
- Chemical resistant
- Environmentally friendly, no harmful gas emissions
- Strong and rigid panels
- Frost resistant
- Anti graffiti protection
- No routine maintenance necessary
- BBA Certificate No. 06/4355



Operal

Economical, simple to fix, external grade fibre cement sheeting.

- Can achieve A+ rating as defined in the BRE Green Guide*
- Operal panels have an installed life expectancy of at least 50 years
- Lightweight
- Easy to fix
- Class 0 fire performance
- No routine maintenance necessary
- Operal is ideal for:
 - Soffits and fascias
 - Balcony panels
 - Infill panels
 - Dormer cheeks
 - General cladding
- BBA Certificate No. 06/4355



Cedral Weatherboard

A low maintenance, fibre cement, textured plank offering a rot-free alternative to timber weatherboarding.

- Can achieve A+ rating as defined in the BRE Green Guide*
- Cedral Weatherboard panels have an installed life expectancy of at least 50 years
- Excellent aesthetics
- Resistant to rot and maintains its looks
- No routine maintenance necessary
- Easy to install
- Use in the same way as wood
- Stands up to the harshest weather conditions
- Class 0 fire performance
- Immune to attack by pests and insects
- Cedral Weatherboard is ideal for use where traditional timber boards might be considered especially for facades and window and door surrounds
- BBA Certificate No. 06/4299



Lamina External, Bluebird Lodge, Ipswich



Other claddings

- Lamina External
- Blucad
- Profiled Sheeting
- Vertical tile hanging

→ More

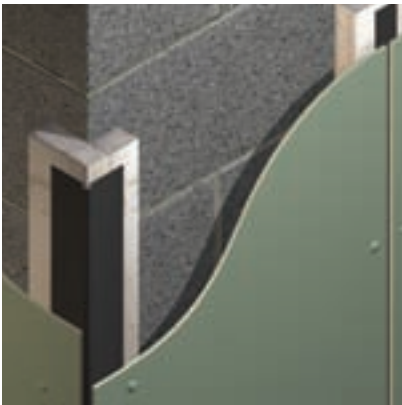
samples Tel 01283 722588
 e-mail cladding@marleyeternit.co.uk
 web marleyeternit.co.uk

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 Fibre Cement Cladding based on generic rating for autoclaved fibre cement single sheet (Element ref: 80623042, 806230422, 806230447, 806230450)

Fixing systems

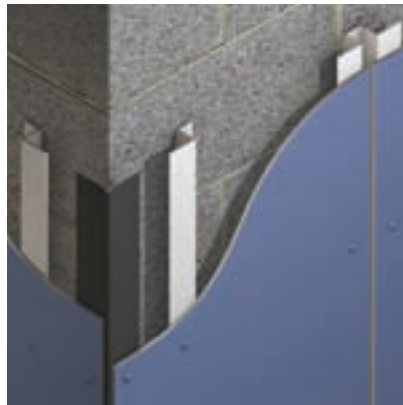
The variety of cladding panels available from Marley Eternit is matched by a comprehensive range of fixing systems.

The interchangeability of panel and system offers wide-ranging design permutations, and careful choice of product and system will allow almost any aesthetic and performance specification to be met.



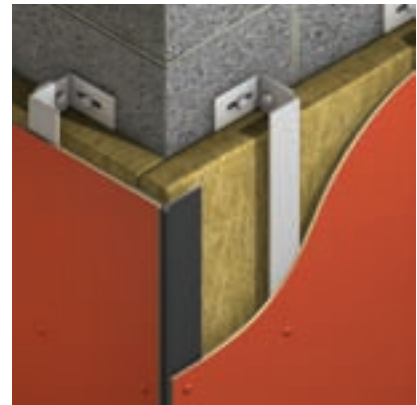
Timber battens

Economical and durable, timber battens are widely used for all applications from fascias and soffits to total cladding.



Omega and Zed

A simple metal component system installed in a similar way to timber battens with the added benefit of non-combustibility and a completely rot-proof construction.



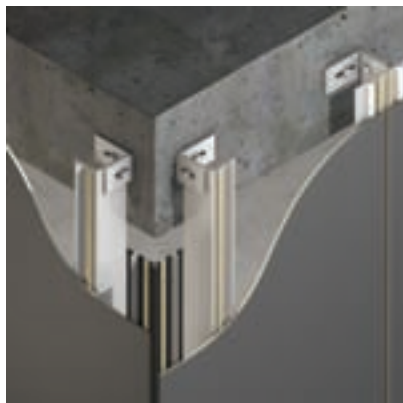
Ventisol

A highly engineered system for fixing to new or existing structures. The adjustable components allow a true plane to be easily achieved for the new cladding facade.



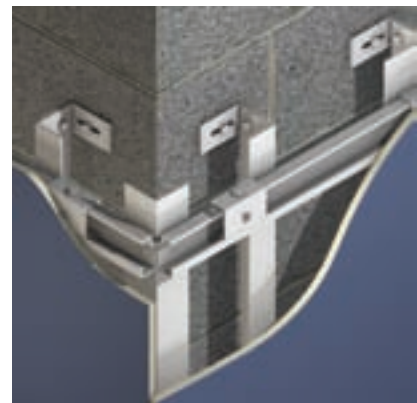
Ventispan

Framework for the cladding of both concrete and steel framed structures, anchored to the structure at each floor level with vertical profiles spanning from floor to floor.



Structural bonding

The structural bonding system utilises structural adhesives to fix internal and external cladding panels for a secret fix system.



Mechanical secret fix

Suitable for use with 12mm thick fibre cement panels and supports the cladding panels by means of aluminium profiles.



Natura Plus, White River Place, St Austell



Natura Plus and Textura, OrbisEnergy centre, Lowestoft, Suffolk



This publication is based on the latest data available at the time of printing. Due to product changes, improvements and other factors, the Company reserves the right to change or withdraw information contained herein without prior notice. For specific applications users should refer to the Technical Advisory Service and relevant Standards and Codes of Practice for guidance.

The photography shown in the document should not necessarily be taken as recommendations of good practice. The printing process restricts the exact representation of colours. For true colour reference, please request product samples.

Services & support



Customer Services

Marley Eternit is committed to providing outstanding customer care and is staffed by experienced personnel in departments dedicated to providing the following services:

Advice, literature and samples

→ All current product and technical literature can be downloaded from www.marleyeternit.co.uk/downloads

To request samples and advice:

→ **T** 01283 722588 **E** cladding@marleyeternit.co.uk

Quotations and ordering information

→ **T** 01283 722588 **E** cladding@marleyeternit.co.uk

Stockist information

To find details for stockists of Marley Eternit products:

→ **T** 01283 722588 **E** cladding@marleyeternit.co.uk



Technical Advisory Service

Marley Eternit provides a free Technical Advisory Service which is staffed by personnel with specialist knowledge of the use of all Marley Eternit products and systems.

To request Technical Advice:

→ **T** 01283 722588

E cladding@marleyeternit.co.uk

Marley Eternit offer a comprehensive range of products, including:

- ✓ Clay and concrete plain and interlocking tiles
- ✓ Fibre cement slates
- ✓ Interlocking slates
- ✓ Ventilation and dry fix accessories
- ✓ Decorative cladding
- ✓ Profiled sheeting
- ✓ High performing interior and exterior building boards

Information for all these products is available on request.

→ www.marleyeternit.co.uk **T** 01283 722588

Customer Services

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