The charm and appearance of a natural slate roof is combined with the economical, functional and environmental attributes of modern slate technology.
Why choose fibre cement slates?

> BES 6001 ‘Very Good’
> A+ rated in the BRE Green Guide*
> Can be used for both roofs and facades
> 15° low pitch options available
> Full range of fittings and accessories
> Environmental Product Declarations (EPDs) available
> BIM objects available for the full range of fibre cement slates
> Wide range of shapes and colours available
> Responsibly sourced

* Element ref: 812410008
Fibre cement slates

The appearance of the slated roof has been part of the built environment since time immemorial. As well as adorning some of the nation’s most important historic buildings and being a staple of vernacular architecture in many parts of the UK, slated roofs are used increasingly in design-led projects for the commercial, public, leisure and retail sectors.

Introduction
Marley Eternit fibre cement slates provide the charm of a natural slate roof with all the economical, functional and environmentally friendly attributes of modern slate technology.

Quality and sustainability
An A+ rating (the lowest environmental impact) in the Building Research Establishment’s Green Guide to Specification can be achieved using Marley Eternit’s fibre cement slates, concrete and clay tiles.

Marley Eternit operate a Quality System to BS EN ISO 9001 and comply with the Environmental Standard BS EN ISO 14001 (independently assessed by BSI), Health and Safety Standard OHSAS 18001 and are also certified with a ‘Very Good’ rating to BES 6001: Responsible Sourcing.
Rivendale slates
A finely detailed surface and dressed edges that together reproduce the attractive appearance of natural slate.

Project: Cwmaman Infant School    Location: Aberdare, Wales    Application: Education    Product: Rivendale fibre cement slates in Blue/Black
Specifier: Rhondda Cynon Taf Council

For advice, literature and samples Tel 01283 722588 or visit marleyeternit.co.uk
Rivendale

- **Size of slate**: 600mm x 300mm
- **Minimum pitch**
  - Moderate exposure: 22.5° (100mm lap)
  - Severe exposure: 25° (100mm lap)
- **Maximum pitch**: 90°
- **Typical laps**: 100, 110mm
- **Maximum gauge**: 245-250mm
- **Slate thickness**: 4mm
- **Covering capacity**
  - (net): 13.4 slates/m² at 100mm lap
  - (approx.): 13.6 slates/m² at 110mm lap
- **Weight of slating**
  - (approx.): 20.4 kg/m² (0.20 kN/m²) at 100mm lap
  - (approx.): 20.9 kg/m² (0.20 kN/m²) at 110mm lap
- **Battens required**
  - (net): 4.09 lin.m/m² at 100mm lap
  - (net): 4.08 lin.m/m² at 110mm lap
- **Batten size recommended** (fixed to BS 5534)
  - 38 x 25mm for rafters/supports not exceeding 450mm centres
  - 50 x 25mm for rafters/supports not exceeding 600mm centres
- **Fixings**
  - Slate nails (30 x 2.65mm)
  - Copper disc rivets (19mm dia. x 2mm stem)
  - 14 gauge self sealing fittings screws
- **Authority**: BS 59-492

Marley Eternit fibre cement slates meet the strength requirement of BS 59-492, achieving an average bending movement greater than 50 NM/M (Class B). The slates also have a minimum density of 1700 kg/m³ and a nominal thickness of 4mm.

**The minimum recommended pitch and lap may be influenced by special circumstances, please contact the Technical Advisory Service for further information.**

**Sustainability**
- **Green guide rating**: A+ (Element Ref: 812410008)
- **BES 6001**: Very good – can achieve 3 credits
- **EPD available for Rivendale slates**
Birkdale slates
A smooth surface and dressed edges offer a traditional and pleasing look.

Project: Tally Ho Police Training Centre    Location: Birmingham    Application: Public Sector    Product: Birkdale fibre cement slates in Blue/Black   Specifier: Nicol Thomas

For advice, literature and samples Tel 01283 722588 or visit marleyeternit.co.uk
### Birkdale

<table>
<thead>
<tr>
<th>Fixing method</th>
<th>Nail and rivet</th>
<th>Slate hooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of slate</td>
<td>600mm x 300mm</td>
<td>600mm x 300mm</td>
</tr>
<tr>
<td>Minimum pitch</td>
<td>Moderate exposure 22.5° (100mm lap)</td>
<td>15° (150mm lap, max. 6m rafter length)</td>
</tr>
<tr>
<td></td>
<td>Severe exposure 25° (100mm lap)</td>
<td>17.5° (150mm lap, max. 9m rafter length)</td>
</tr>
<tr>
<td>Maximum pitch</td>
<td>90°</td>
<td>90°</td>
</tr>
<tr>
<td>Typical laps</td>
<td>100, 110mm</td>
<td>150mm</td>
</tr>
<tr>
<td>Maximum gauge</td>
<td>245-250mm</td>
<td>225mm</td>
</tr>
<tr>
<td>Slate thickness</td>
<td>4mm</td>
<td>4mm</td>
</tr>
<tr>
<td>Covering capacity</td>
<td>13.4 slates/m² at 100mm lap</td>
<td>14.8 slates/m² at 150mm lap</td>
</tr>
<tr>
<td></td>
<td>13.6 slates/m² at 110mm lap</td>
<td></td>
</tr>
<tr>
<td>Weight of slating</td>
<td>20.4 kg/m² (0.20 kN/m²) at 100mm lap</td>
<td>22.8 kg/m² at 150mm lap</td>
</tr>
<tr>
<td></td>
<td>20.9 kg/m² (0.20 kN/m²) at 110mm lap</td>
<td></td>
</tr>
<tr>
<td>Battens required</td>
<td>4.00 lin.m/m² at 100mm lap</td>
<td>4.45 lin.m/m² at 150mm lap</td>
</tr>
<tr>
<td></td>
<td>4.08 lin.m/m² at 110mm lap</td>
<td></td>
</tr>
<tr>
<td>Batten size recommended for rafters/supports not exceeding 450mm centres</td>
<td>38 x 25mm</td>
<td>40 x 25mm</td>
</tr>
<tr>
<td></td>
<td>(fixed to BIS 5534)</td>
<td></td>
</tr>
<tr>
<td>Fixings</td>
<td>Slate nails</td>
<td>Slate hooks (150mm)</td>
</tr>
<tr>
<td></td>
<td>Copper disc rivets (19mm dia. x 2mm stem)</td>
<td>Copper disc rivets (19mm dia. x 2mm stem)</td>
</tr>
<tr>
<td>Fittings screws</td>
<td>14 gauge self sealing</td>
<td>14 gauge self sealing</td>
</tr>
<tr>
<td>Authority</td>
<td>BSI EN 492</td>
<td>BSI EN 492</td>
</tr>
</tbody>
</table>

**Marley® fibre cement slates meet the strength requirement of BSI EN 492, achieving an average bending moment greater than 50 N.M/M (Class B). The slates also have a minimum density of 1750 kg/m³ and a nominal thickness of 4mm.**

**The minimum recommended pitch and lap may be influenced by special circumstances, please contact the Technical Advisory Service for further information.**

### Sustainability

<table>
<thead>
<tr>
<th>Green guide rating</th>
<th>A* (Element Ref: 8132410009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BES 6001</td>
<td>Very good – can achieve 3 credits</td>
</tr>
<tr>
<td>EPD available</td>
<td>for Birkdale slates</td>
</tr>
</tbody>
</table>

64 Fibre cement slates
Garsdale slates
A detailed surface and square edge closely resembles natural slate but is easier and faster to install.

<table>
<thead>
<tr>
<th>Size of slate</th>
<th>600mm x 300mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum pitch**</td>
<td>22.5° (100mm lap)</td>
</tr>
<tr>
<td></td>
<td>20° (110mm lap)</td>
</tr>
<tr>
<td>Severe exposure</td>
<td>25° (100mm lap)</td>
</tr>
<tr>
<td></td>
<td>22.5° (110mm lap)</td>
</tr>
<tr>
<td>Maximum pitch</td>
<td>90°</td>
</tr>
<tr>
<td>Typical laps</td>
<td>100, 110mm</td>
</tr>
<tr>
<td>Maximum gauge</td>
<td>245-250mm</td>
</tr>
<tr>
<td>Slate thickness</td>
<td>4mm</td>
</tr>
<tr>
<td>Covering capacity</td>
<td>13.4 slates/m² at 100mm lap</td>
</tr>
<tr>
<td></td>
<td>13.6 slates/m² at 110mm lap</td>
</tr>
<tr>
<td>Weight of slating</td>
<td>20.4 kg/m² (0.20 kN/m²) at 100mm lap</td>
</tr>
<tr>
<td></td>
<td>20.9 kg/m² (0.20 kN/m²) at 110mm lap</td>
</tr>
<tr>
<td>Battens required</td>
<td>4.00 lin.m/m² at 100mm lap</td>
</tr>
<tr>
<td></td>
<td>4.08 lin.m/m² at 110mm lap</td>
</tr>
<tr>
<td>Batten size</td>
<td>38 x 25mm for rafters/supports not exceeding 450mm centres</td>
</tr>
<tr>
<td></td>
<td>50 x 25mm for rafters/supports not exceeding 600mm centres</td>
</tr>
<tr>
<td>Fixings</td>
<td>Slate nails (30 x 2.65mm)</td>
</tr>
<tr>
<td></td>
<td>Copper disc rivets (19mm dia. x 2mm stem)</td>
</tr>
<tr>
<td>Authority</td>
<td>BS EN 492</td>
</tr>
</tbody>
</table>

** Marley Eternit fibre cement slates meet the strength requirement of BS EN 492, achieving an average bending movement greater than 50 NM/M (Class B). The slates also have a minimum density of 1700 kg/m³ and a nominal thickness of 4mm.

* The minimum recommended pitch and lap may be influenced by special circumstances, please contact the Technical Advisory Service for further information.

**Sustainability**

<table>
<thead>
<tr>
<th>Green guide rating</th>
<th>A+ (Element Ref: 812410008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BES 6001</td>
<td>Very good – can achieve 3 credits</td>
</tr>
<tr>
<td>EPD available for Garsdale slates</td>
<td></td>
</tr>
</tbody>
</table>
Thrutone slates
a low profile slate, at an economical price, which is suited to complex roof geometries.


For advice, literature and samples Tel 01283 722588 or visit marleyeternit.co.uk
Thrutone

Size of slate
600mm x 300mm
500mm x 250mm

Minimum pitch
Moderate exposure
22.5° (100mm lap)
20° (110mm lap)

Severe exposure
25° (100mm lap)
22.5° (110mm lap)

4m max. rafter length
15°-17.5° (110mm lap)

6m max. rafter length
17.5°-20° (110mm lap)

Max. pitch
90°

Typical laps
100, 110mm
100mm

Max. gauge
246-259mm
250mm

Slate thickness
4mm
4mm

Covering capacity
13.4 slates/m² at 100mm lap
13.6 slates/m² at 110mm lap
20.3 slates/m² at 100mm lap

Weight of slating
20.4 kg/m² (0.20 kN/m²) at 100mm lap
20.9 kg/m² (0.21 kN/m²) at 110mm lap
21.3 kg/m² at 100mm lap
21.3 kg/m² at 110mm lap

Battens required
4.00 lin.m/m² at 100mm lap
4.08 lin.m/m² at 110mm lap

Batten size
38 x 25mm for rafters/supports not exceeding 450mm centres
50 x 25mm for rafters/supports not exceeding 600mm centres

Fixings
Slate nails
Copper disc rivets
(Fixed to BS 5534)
(19mm dia. x 2mm stem)

Fittings screws
14 gauge self sealing

Authority
BS EN 492

Sustainability
Green guide rating A+ (Element Ref: 812410008)
BES 6001 Very good – can achieve 3 credits

EPD available for Thrutone slates
† Made to order

† Marley Eternit fibre cement slates meet the strength requirement of BS EN 492, achieving an average bending movement greater than 50 NM/M (Class B). The slates also have a minimum density of 1750 kg/m³ and a nominal thickness of 4mm.

‡ The minimum recommended pitch and lap may be influenced by special circumstances, please contact the Technical Advisory Service for further information.

Fibre cement slates
Fibre cement slates
Tally Ho Police Training College

case study

“A combination of Birkdale’s colour, edge finish, modular scale size and design flexibility supported our design vision to use a traditional material in a contemporary and unusual manner.”

Rob Martin, Architect at Nichol Thomas

Project information

Location: Birmingham
Application: Public sector
Product: Birkdale slates
Specifier: Nichol Thomas
Contractor: Dent and Partners

Marley Eternit’s Birkdale fibre cement slate was chosen as the perfect answer to fulfil part of a complex and challenging rainscreen design.

The new single storey training centre, which will be used by the West Midlands police force, consists of a fully grassed roof with ‘basket weave’ Birkdale slates used as a form of a raked rainscreen cladding to elevate the building.

Architect Rob Martin: “The fact that the building sits in a greenfield site meant that the choice of materials was critical in enabling the scheme to appropriately respond to its context. We had to find a solution which would also respond to the surrounding urban environment and would naturally ‘bed’ into the landscape. The familiarity of the traditional slate look of the tile helps the building settle well into its surrounding urban environment, whilst the green tile and the use of the zoomorphic basket weave creates a softer ‘naturalistic’ feel which we felt lent itself to the grassy site in which it lays. The naturalisation of the building is completed with the introduction of the grass roof which, due to its sunken position, can be visible from the nearby roadside.”

Looking for inspiration?
To see more projects, visit marleyeternit.co.uk/casestudies

For advice, literature and samples Tel 01283 722588 or visit marleyeternit.co.uk
Fittings and accessories for fibre cement slates

Fibre cement fittings

Available in Blue/Black.

<table>
<thead>
<tr>
<th>Description</th>
<th>Duo ridge**</th>
<th>Stop end for duo pitch ridge**</th>
<th>Mono pitch ridge**</th>
<th>Stop end for mono pitch ridge**</th>
<th>In-line ridge ventilator plus extension sleeve*</th>
</tr>
</thead>
</table>

Description

- Fibre cement ridge roll
- In-line ridge ventilator stepped adaptor
- Also available: Ridge vent pipe adaptor
- Flexible pipe
- In-line slate ventilator

Relative pitches of fibre cement ridge and hip cappings

<table>
<thead>
<tr>
<th>Design pitch main roof</th>
<th>15°</th>
<th>20°</th>
<th>22.5°</th>
<th>25°</th>
<th>27.5°</th>
<th>30°</th>
<th>35°</th>
<th>40°</th>
<th>45°</th>
<th>50°</th>
<th>55°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch of ridge capping</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
<td>15°</td>
</tr>
<tr>
<td>Effective pitch at hip</td>
<td>14°</td>
<td>15°</td>
<td>17.5°</td>
<td>15°</td>
<td>20°</td>
<td>24°</td>
<td>27°</td>
<td>30°</td>
<td>33°</td>
<td>35°</td>
<td>35°</td>
</tr>
</tbody>
</table>

Recommended pitch of duo pitch hip cappings

|                           | 15° | 15° | 20° | 20° | 25° | 25° | 30° | 30° | 35° | 35° | 35° |

The above table assumes that pitches on each side are identical and that slopes intersect at right angles on plan.

Marley Eternit dry fix and ventilation systems

Marley Eternit has developed a range of dry fix and ventilation accessories that combine discreet and aesthetic solutions with the highly efficient removal of moisture-laden air and gases, and improve the speed and economy of roof construction by providing easy to fix alternatives to traditional mortar bedding.

These systems are fully compatible with Marley Eternit products, and Universal systems can be used with other manufacturers’ products too.

When correctly installed, our systems are designed to satisfy the requirements of BS 5534, BS 5250 and those of the Building Regulations. See pages 126-131 for more information.
Available in a range of colours. Crested ridges and finials are available in Smooth Grey, Smooth Brown, Old English Dark Red, Mosborough Red. All other colours made to order. Mortar bedded security ridge kits are available (see page 150).

<table>
<thead>
<tr>
<th>Description</th>
<th>Mono ridge</th>
<th>Modern ridge</th>
<th>Modern block and ridge</th>
<th>Modern mono ridge</th>
<th>Modern mono block end ridge</th>
<th>90° Angle/Security angle ridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch range</td>
<td>30-45°</td>
<td>30-45°</td>
<td>30-50°</td>
<td>30-45°</td>
<td>30-50°</td>
<td>45-50°</td>
</tr>
</tbody>
</table>

Can be used with Ventilated dry ridge system
- Universal RidgeFast
- Universal HipFast

Concrete fittings

Available in a range of colours and angles. Security fixing is available for all ridges. For details of the full range, please contact the Technical Advisory Service. All other colours made to order. Mortar bedded security ridge kits are available (see page 150).

<table>
<thead>
<tr>
<th>Description</th>
<th>125° Angle/Security angle ridge</th>
<th>Segmental ridge</th>
<th>Segmental mono ridge</th>
<th>Gas vent ridge terminal</th>
<th>Ridge vent terminal</th>
</tr>
</thead>
</table>

Can be used with Ventilated dry ridge system
- Universal RidgeFast
- Universal HipFast

Clay fittings

Available in a range of colours and angles. Security fixing is available for all ridges. For details of the full range, please contact the Technical Advisory Service. All other colours made to order. Mortar bedded security ridge kits are available (see page 150).

<table>
<thead>
<tr>
<th>Description</th>
<th>Mono ridge</th>
<th>Capped angular ridge</th>
<th>Angular ridge</th>
<th>Angular ridge hip end</th>
<th>Angular ridge stop end</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch range</td>
<td>30-45°</td>
<td>30-45°</td>
<td>30-50°</td>
<td>30-50°</td>
<td>30-50°</td>
</tr>
</tbody>
</table>

Made to order (subject to minimum order quantities).

Maximum pitch may vary depending on product and system used. Please contact the Technical Advisory Service for more information.
The range of Marley Eternit blue/black fibre cement slates have been tested by Birmingham City Council Laboratories and approved for use on Birmingham City Council projects.

Fibre cement slates are also rated ‘Very Good’ to BES 6001 Framework Standard for Responsible Sourcing of Construction Products.

Batch coding
In accordance with the requirements of the product standard EN492: 2012, a manufacturing code is marked on the underside of a minimum of 15% of slates in the following format (e.g. T 2 14 20 C1 NT) – where the first character signifies the factory of origin; the second gives the specific coating line used; the next 6 characters denote the year, week and shift of manufacture as well as product type; the code ends with “NT”.

Carbon footprinting
Fibre cement slates can have a carbon footprint figure of as low as 13 CO₂e/m².

Recyclability
At 'end of life' crushed fibre cement products can be recycled without need for further processing, as a raw material for use in Portland clinker.

Composition and manufacture
Fibre cement slates are manufactured from cement, water, selected cellulose and polymeric fibres, sheet formers and fillers which are all bonded together using the Hathschek rotational cylinder process. Slates are cut from formed base sheets, pressed and cured and in a separate process, cured slates are sealed on the reverse, sprayed with an acrylic coating, cooled and stacked.

Properties and performance for fibre cement slates

Features of fibre cement slates
- Low pitch options down to 15°
- Can achieve an A* rating in the BRE Green Guide
- BES 6001 certified
- Proven in application to last in excess of 60 years
- Clean, low energy production process
- Fully recyclable

Authority
Fibre cement slates are manufactured in accordance with a quality management system registered by BSI to BS EN ISO 9001 ‘Quality Management Systems requirements’ for products manufactured to BS EN 492 “Fibre cement slates and fittings – Product specification and test methods”.

Fibre cement slates are also designed to meet the relevant performance requirements of BS 5534 ‘Code of practice for slating and tiling (including shingles)’.

Additionally, the manufacturing location operates an environmental management system, registered with the BSI as meeting the requirements of BS EN ISO 14001 ‘Environmental management systems – Specification with guidance for use’ and Health and Safety Standard OHSAS 18001.
Density and thickness
The slates also have a minimum apparent density of 1700kg/m³ when tested to BS EN 492 and a nominal thickness of 4mm.

Performance
The slates are tested for resistance to wind driven rain and meet the requirements of BS 5534 ‘Code of practice for slating and tiling (including shingles)’ with respect to windloading, when fixed in accordance with our recommendations.

Strength and durability
Fibre cement slates meet the strength requirements of BS EN 492, achieving an average bending moment greater than 50Nm/m (Class B).

Fire resistance
Fibre cement slates are non-combustible and considered ‘deemed to satisfy without the need for further testing’ in relation to the requirements for external fire performance when tested for fire protection and spread of flame to BS EN 1187 ‘Test methods for external fire exposure to roofs’ (BS 476-3).

There are no restrictions on their use under the Building Regulations and they achieve a Class 1 surface spread of flame when tested to BS 476-7 and are classified Class O. A roof incorporating the slates is designated AA as referred to in Table A5 of Notional designations of roof coverings.

Environmental effects
Thermal
The thermal resistance (R) of fibre cement slates when dry is 0.011m²K/W.

For the purpose of thermal transmittance calculations, the ‘R’ value above should be substituted by a figure of 0.12m²K/W which includes the roof covering and airspace behind the tiles or slates. An ‘R’ value of 0.002m²K/W should be added for the roof underlay.

Heat
After an initial period of stabilisation, slates are normally unaffected by the range of climatic temperatueres (-20°C to +70°C). Slates should be laid with a maximum gap of 5mm to accommodate any movement induced by changes in temperature and to facilitate the fitting of the tile rivet.

Frost
Unaffected by frost and meets the requirements of BS EN 492.

Sunlight
The acrylic coating used on the slate surface has good colour stability proven over long periods of exposure to UV and sunlight. Some lightening may occur over a period of exposure to sunlight and normal weathering, which may affect the surface coating. This gradual lightening is similar to that experienced with natural slate.

Atmospheric pollution
Suitable for most rural, marine and normal industrial environments. Avoid discharge of gases or liquids from chemical processes onto the surface of the slates. Resistant to all but the most highly polluted atmospheres where sulphur dioxide levels exceed 70 micrograms/m³ of air.

For advice on the suitability of application, please contact the Technical Advisory Service.

Electricity
Fibre cement slates are electronically insulating. Reference should be made to BS 6651 for recommendations on the protection of buildings against lightning strikes.

Biological effects
Birds and rodents
Not affected or degraded by birds, rodents or insects.

Mosses and lichens
Water absorption of the slates is around 18%. The growth of mosses and lichens may occur over time, but does not adversely affect their performance. The acrylic coating helps to inhibit organic growth on the surface for a period of 5 to 15 years. Removal may only be required if they affect the drainage of water from the roof.

Health and safety Guidance Sheets
Fibre cement slates can be simply scored and snapped with no dust creation, or cut with standard hand tools without requiring compliance with Health and Safety Guidance Sheet S (August 2012). If cutting slates with machine tools, measures to reduce the effect of dust should be taken in accordance with the HSE Guidance Note EH 40 ‘Occupational Exposure Limits’ and EH 44 ‘Dust in the workplace: general principles of protection’.

Fixing specification
Slates should be fixed in accordance with the recommendations of BS 5534. The Technical Advisory Service can provide a fixing specification, given the relevant criteria relating to type of slate, site location, topography, and building/roof dimensions. Fixing specifications can also be completed on line at www.marleyeternit.co.uk/tilefix.

Consideration should be given to sealing any cut edges to prevent potential efflorescence showing. Please contact the Technical Advisory Service for more details.

For advice, literature and samples Tel 01283 722588 or visit marleyeternit.co.uk