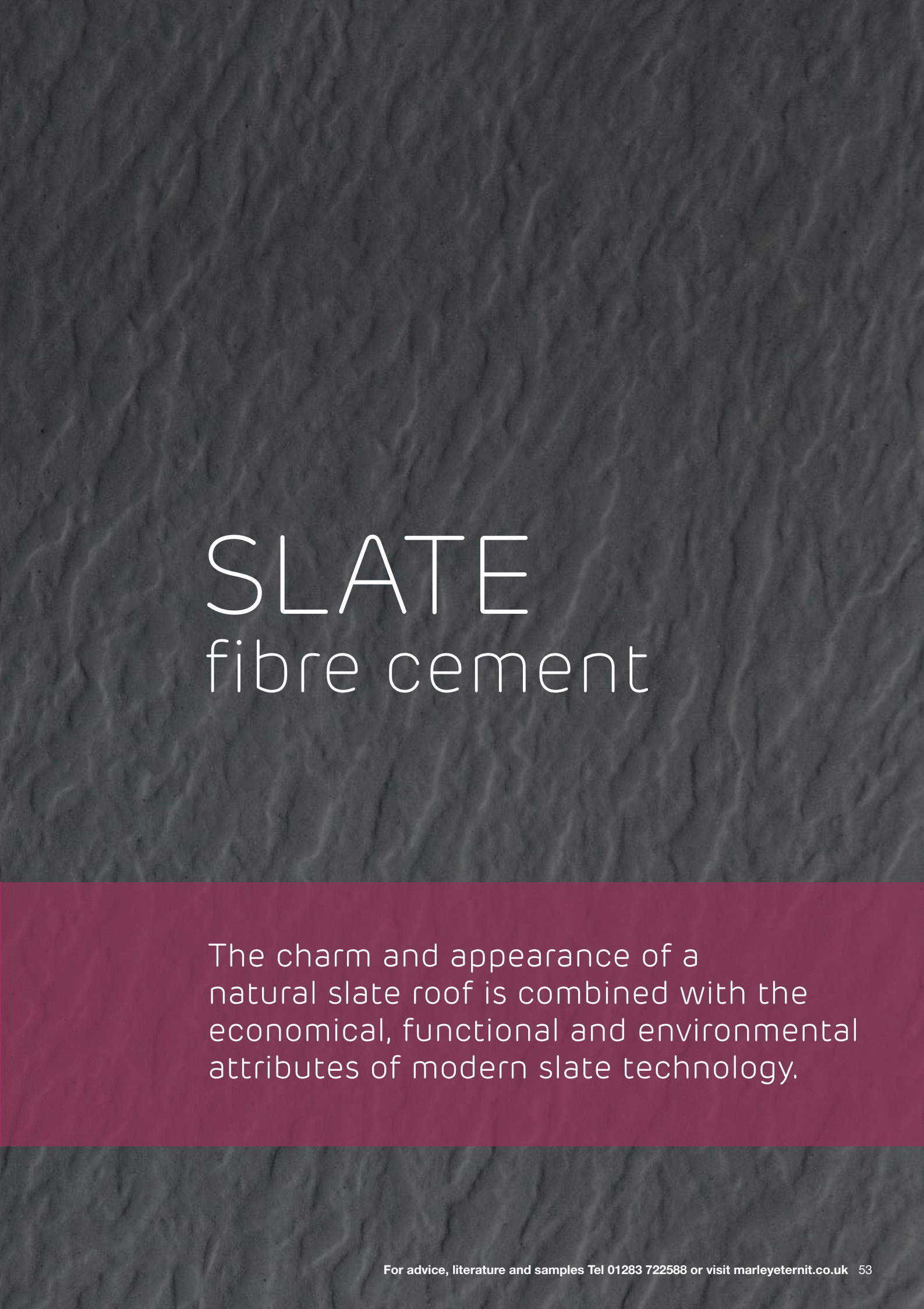


SLATE
fibre cement

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

Project: Tickford Park Primary School
Location: Newport Pagnell
Application: Education
Product: Thrutone fibre cement slates in Blue/Black
Specifier: Milton Keynes Council

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.

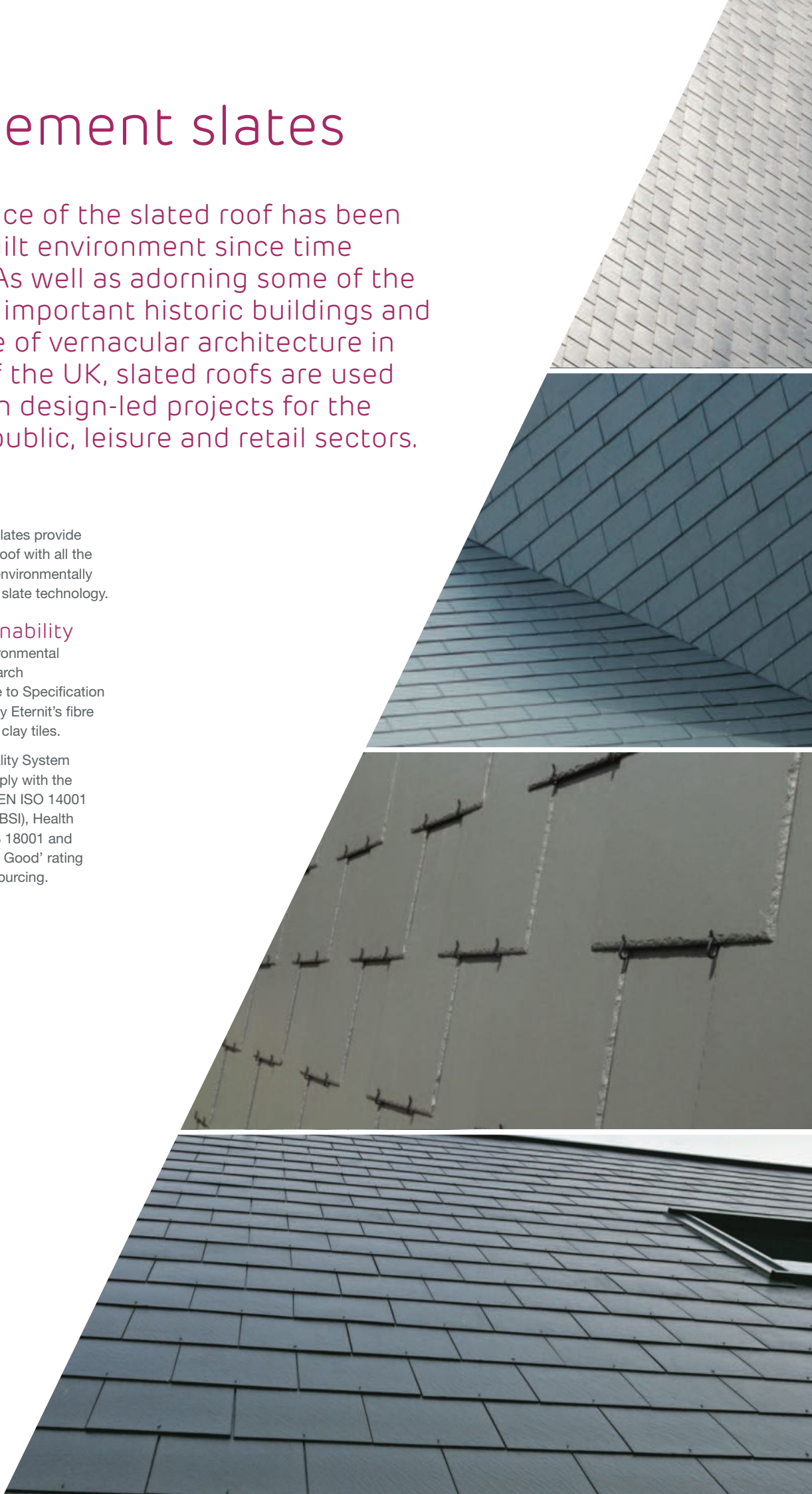
Introduction

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

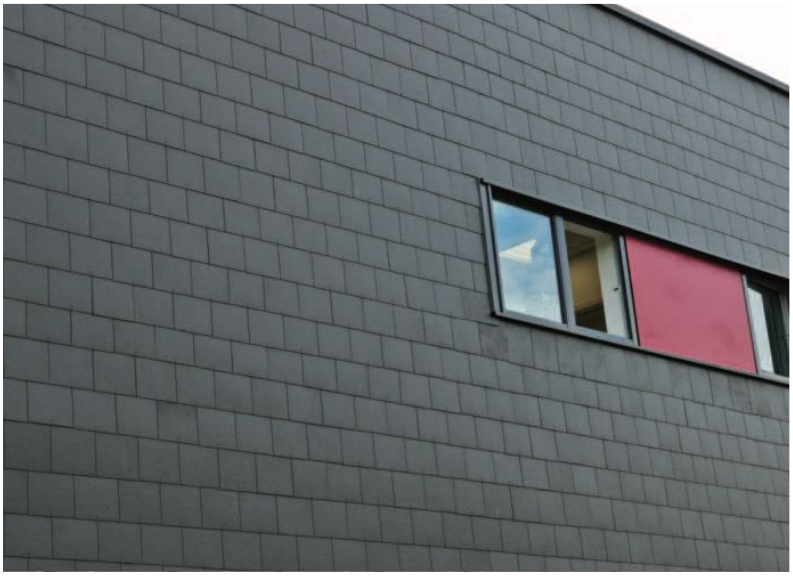
An A+ rating (the lowest environmental impact) in the Building Research Establishment's Green Guide to Specification can be achieved using Marley Eternit's fibre cement slates, concrete and clay tiles.

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.





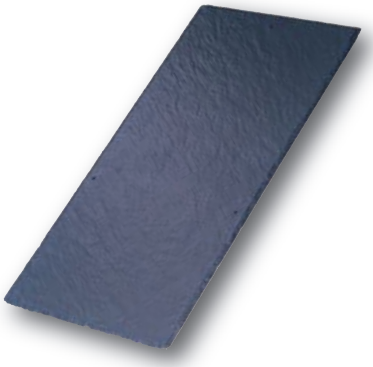





Rivendale slates

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



Rivendale

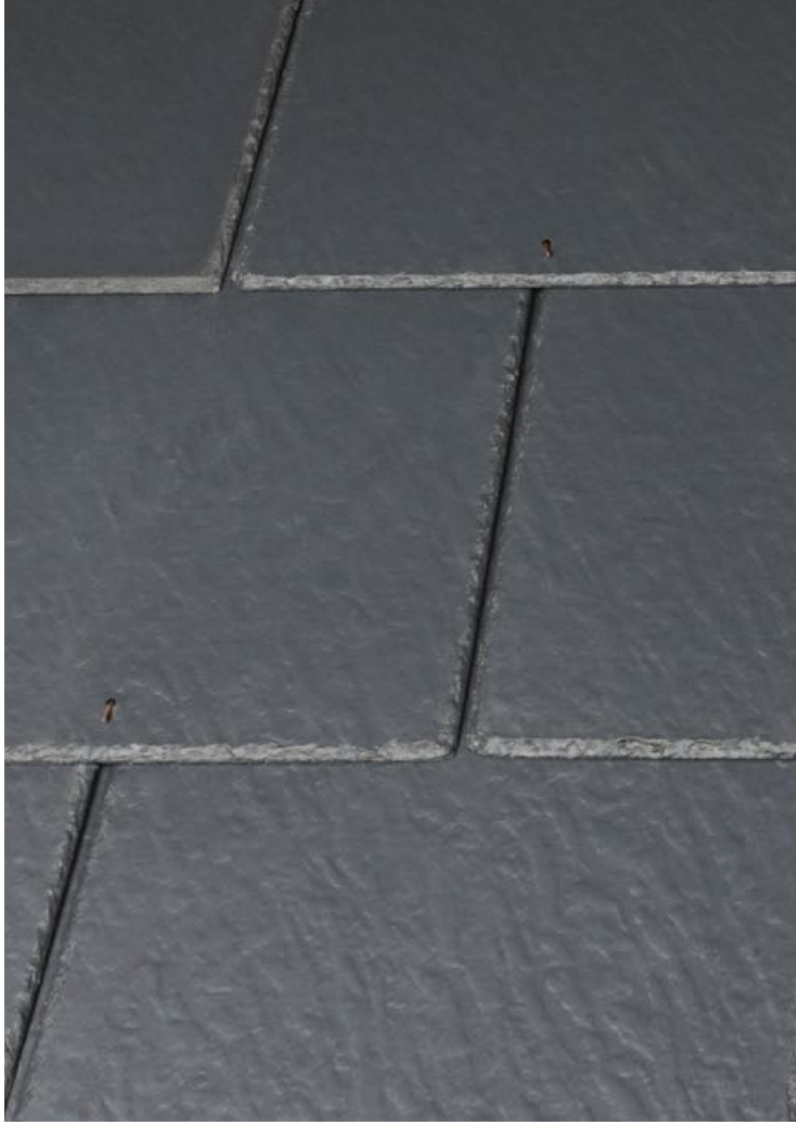
Size of slate	600mm x 300mm	
Minimum pitch**	Moderate exposure	22.5° (100mm lap) 20° (110mm lap)
	Severe exposure	25° (100mm lap) 22.5° (110mm lap)
Maximum pitch	90°	
Typical laps	100, 110mm	
Maximum gauge	245-250mm	
Slate thickness	4mm	
Covering capacity (net)	13.4 slates/m^2 at 100mm lap 13.6 slates/m^2 at 110mm lap	
Weight of slating (approx.)	20.4 kg/m^2 (0.20 kN/m^2) at 100mm lap 20.9 kg/m^2 (0.20 kN/m^2) at 110mm lap	
Battens required (net)	4.00 lin.m/m^2 at 100mm lap 4.08 lin.m/m^2 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)	
Fittings screws	14 gauge self sealing	
Authority	BS EN 492	

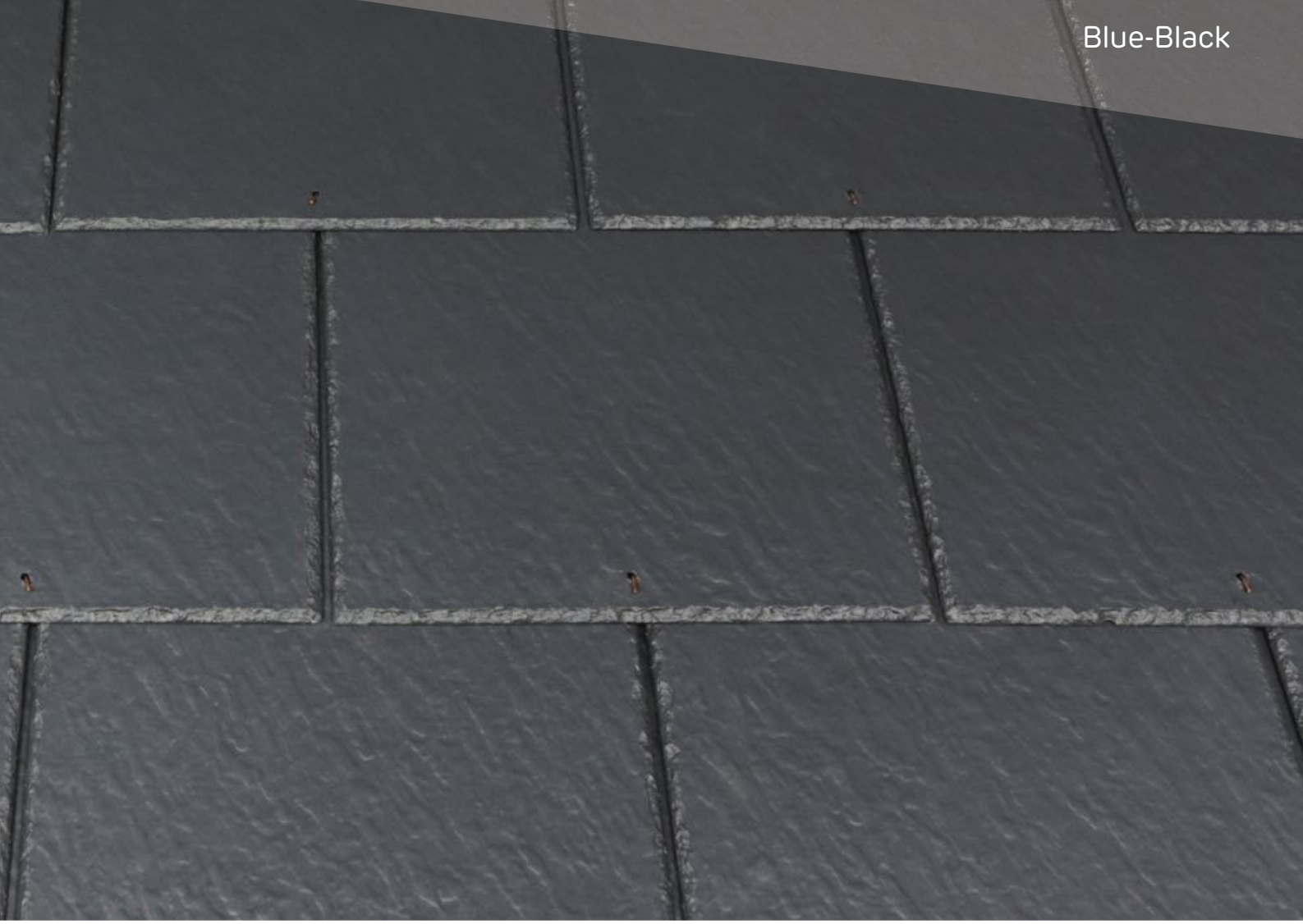
* Marley Eternit fibre cement slates meet the strength requirement of BS EN 492, achieving an average bending movement greater than 50 NM/M (Class B). The slates also have a minimum density of 1700 kg/m^3 and a nominal thickness of 4mm.

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

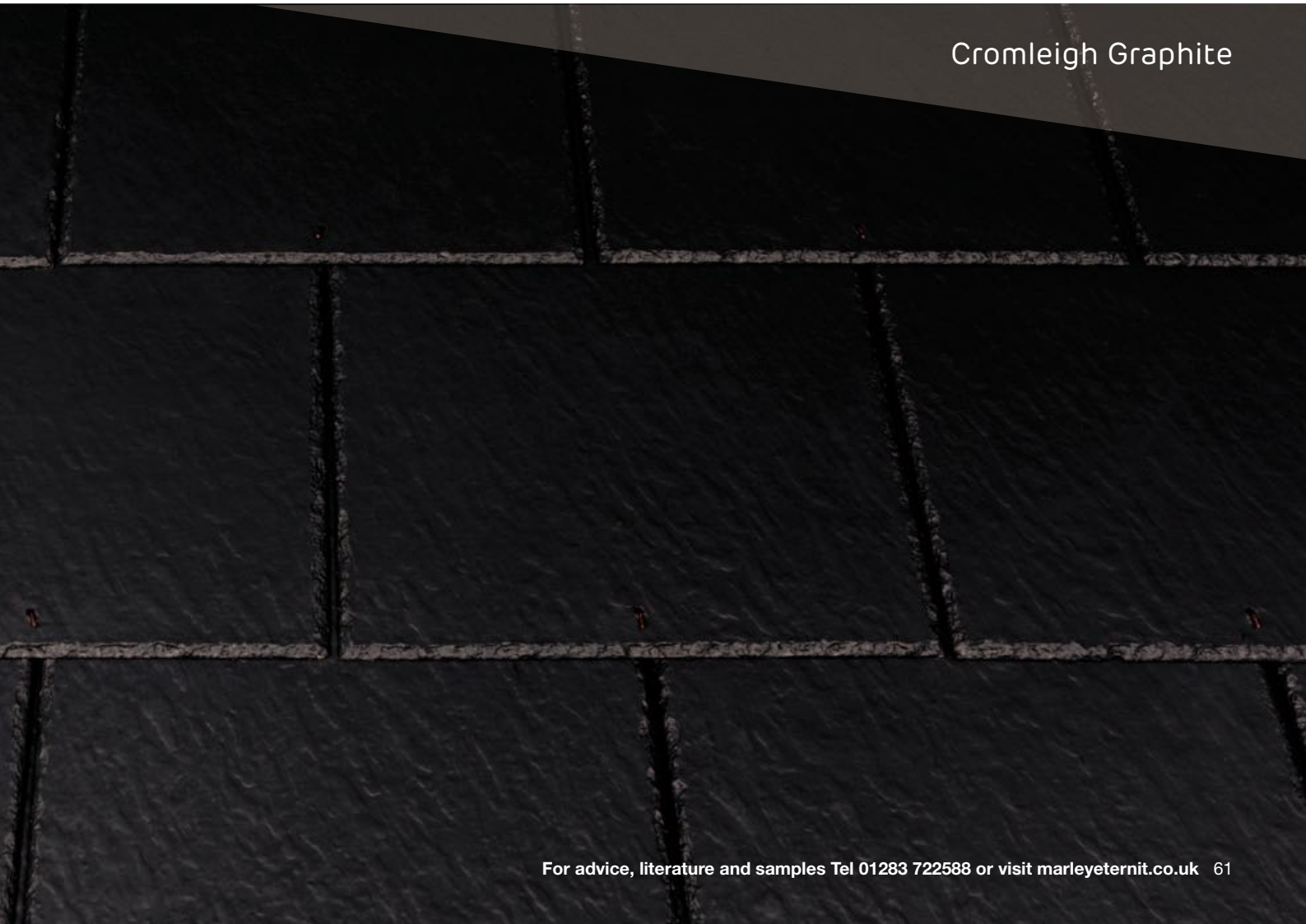
Sustainability

Green guide rating	A^+ (Element Ref: 812410008)
BES 6001	Very good – can achieve 3 credits
EPD available for Rivendale slates	

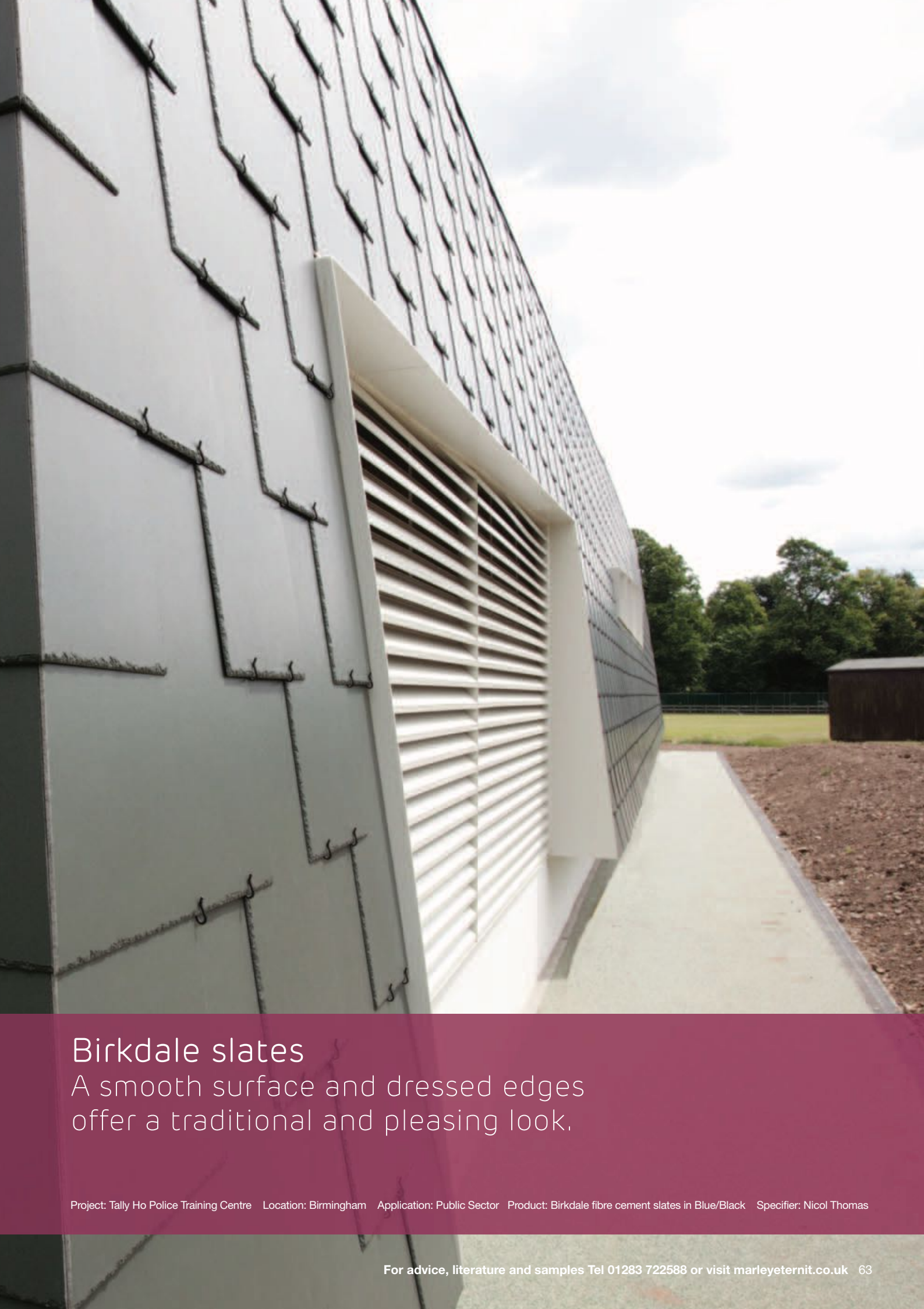




Blue-Black



Cromleigh Graphite



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

Watch a quick video on hook fixing at www.marleyeternit.co.uk/birkdale or scan the QR code above.

Birkdale

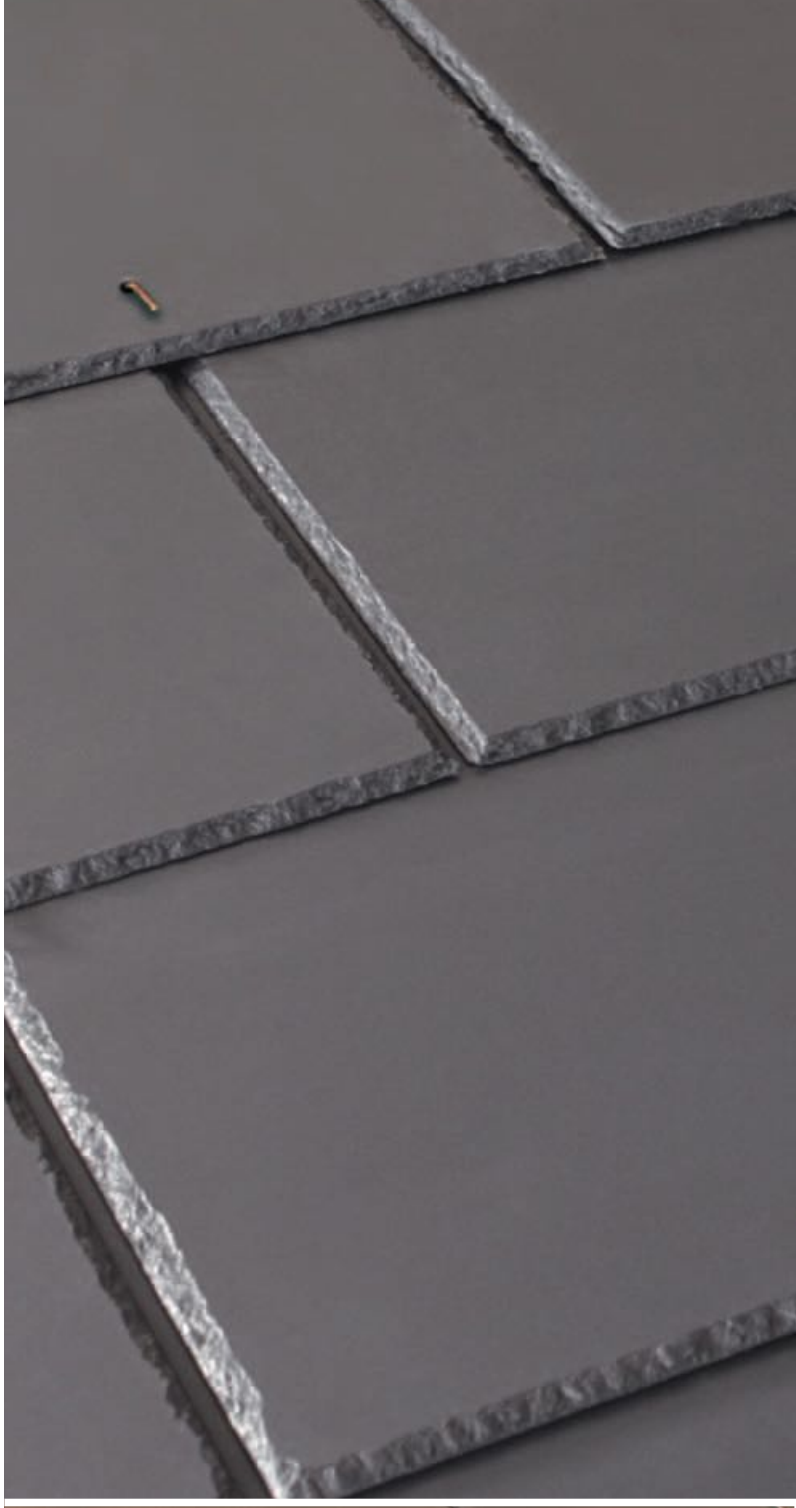
Fixing method	Nail and rivet	Slate hooks
Size of slate	600mm x 300mm	600mm x 300mm
Minimum pitch**		
Moderate exposure	22.5° (100mm lap) 20° (110mm lap)	15° (150mm lap, max. 6m rafter length)
Severe exposure	25° (100mm lap) 22.5° (110mm lap)	17.5° (150mm lap, max. 9m rafter length)
Maximum pitch	90°	90°
Typical laps	100, 110mm	150mm
Maximum gauge	245-250mm	225mm
Slate thickness	4mm	4mm
Covering capacity (net)	13.4 slates/m^2 at 100mm lap 13.6 slates/m^2 at 110mm lap	14.8 slates/m^2 at 150mm lap
Weight of slating (approx.)	20.4 kg/m^2 (0.20 kN/m^2) at 100mm lap 20.9 kg/m^2 (0.20 kN/m^2) at 110mm lap	22.8 kg/m^2 at 150mm lap
Battens required (net)	4.00 lin.m/m^2 at 100mm lap 4.08 lin.m/m^2 at 110mm lap	4.45 lin.m/m^2 at 150mm 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)	Slate hooks (150mm) Slate nails for local areas of roof (30x.2.65mm) Copper disc rivets (19mm dia. x 2mm stem)
Fittings screws	14 gauge self sealing	14 gauge self sealing
Authority	BS EN 492	BS EN 492

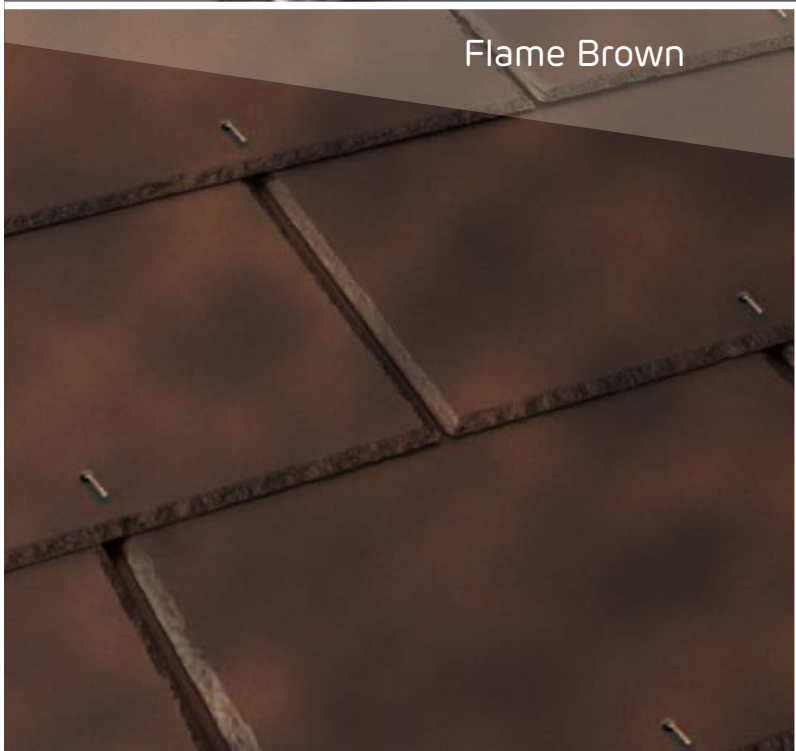
* Marley Eternit fibre cement slates meet the strength requirement of BS EN 492, achieving an average bending movement greater than 50 NM/M (Class B). The slates also have a minimum density of 1700 kg/m^3 and a nominal thickness of 4mm.

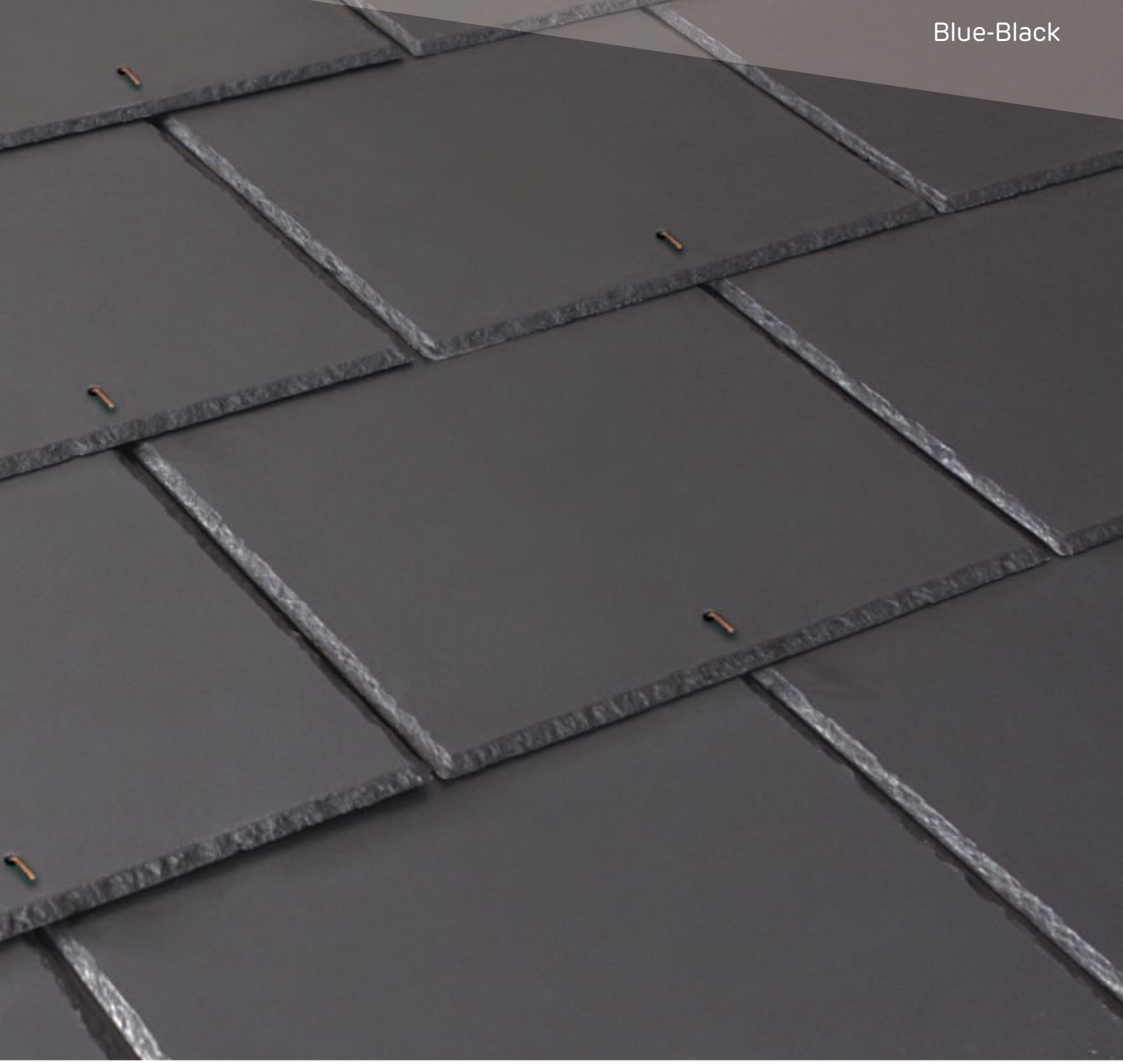
** The minimum recommended pitch and lap may be influenced by special circumstances, please contact the Technical Advisory Service for further information.

Sustainability

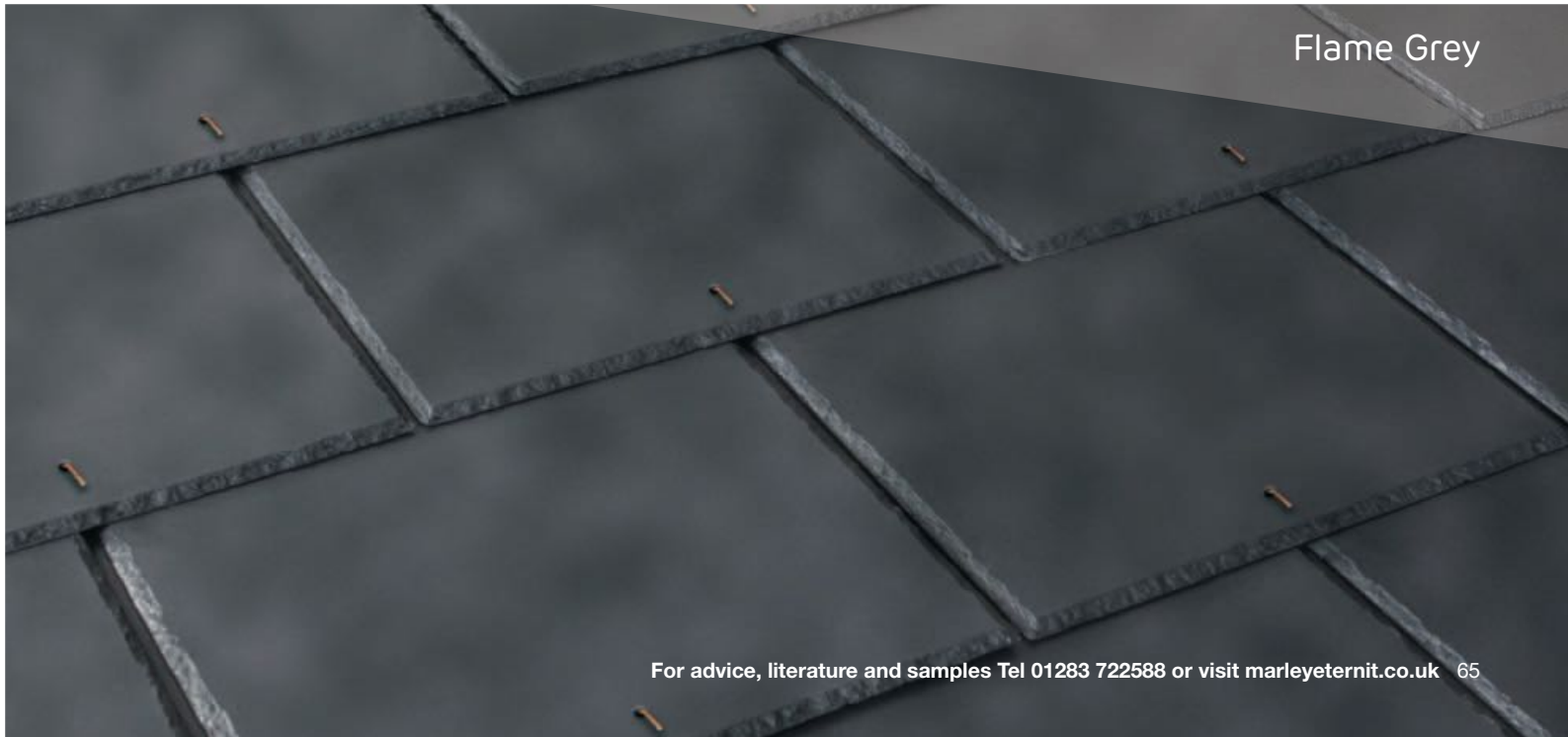
Green guide rating	A+ (Element Ref: 812410008)
BES 6001	Very good – can achieve 3 credits
EPD available for Birkdale slates	







Blue-Black

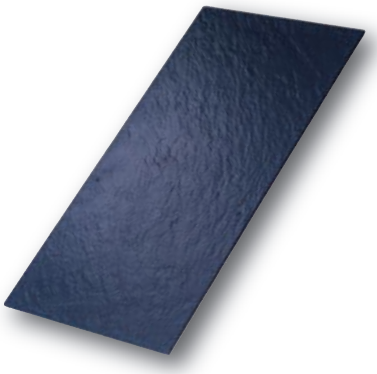


Flame Grey

Garsdale slates

A detailed surface and square edge closely resembles natural slate but is easier and faster to install.

Project: Letham Housing Location: Letham, Scotland Application: Residential Product: Garsdale fibre cement slates in Blue/Black Specifier: Perth & Kinross Council



Garsdale

Size of slate	600mm x 300mm	
Minimum pitch**	Moderate exposure	22.5° (100mm lap) 20° (110mm lap)
	Severe exposure	25° (100mm lap) 22.5° (110mm lap)
Maximum pitch	90°	
Typical laps	100, 110mm	
Maximum gauge	245-250mm	
Slate thickness	4mm	
Covering capacity (net)	13.4 slates/m^2 at 100mm lap 13.6 slates/m^2 at 110mm lap	
Weight of slating (approx.)	20.4 kg/m^2 (0.20 kN/m^2) at 100mm lap 20.9 kg/m^2 (0.20 kN/m^2) at 110mm lap	
Battens required (net)	4.00 lin.m/m^2 at 100mm lap 4.08 lin.m/m^2 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)	
Fittings screws	14 gauge self sealing	
Authority	BS EN 492	

* 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/m^3 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 Garsdale slates	

Thrutone slates

a low profile slate, at an economical price, which is suited to complex roof geometries.

Project: The Cavell Centre Location: Peterborough Application: Healthcare Product: Thrutone fibre cement slates in Blue/Black Specifier: Brookfield Multiplex

Watch a quick video on how to fit low pitch Thrutone slates at marleyeternit.co.uk/thrutone

Thrutone

Size of slate	600mm x 300mm	500mm x 250mm
Minimum pitch**		
Moderate exposure	22.5° (100mm lap) 20° (110mm lap)	22.5° (100mm lap)
Severe exposure	25° (100mm lap) 22.5° (110mm lap)	25° (100mm lap)
4m max. rafter length	15°-17.5° (110mm lap)	–
6m max. rafter length	17.5°-20° (110mm lap)	–
Maximum pitch	90°	90°
Typical laps	100, 110mm	100mm
Maximum gauge	245-250mm	200mm
Slate thickness	4mm	4mm
Covering capacity (net)	13.4 slates/m^2 at 100mm lap 13.6 slates/m^2 at 110mm lap	20.0 slates/m^2 at 100mm lap
Weight of slating (approx.)	20.4 kg/m^2 (0.20 kN/m^2) at 100mm lap 20.9 kg/m^2 (0.20 kN/m^2) at 110mm lap	21.3 kg/m^2 at 100mm lap
Battens required (net)	4.00 lin.m/m^2 at 100mm lap 4.08 lin.m/m^2 at 110mm lap	5.00 lin.m/m^2 at 100mm 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)	Slate nails (30 x 2.65mm) Copper disc rivets (19mm dia. x 2mm stem)
Fittings screws	14 gauge self sealing	14 gauge self sealing
Authority	BS EN 492	BS EN 492

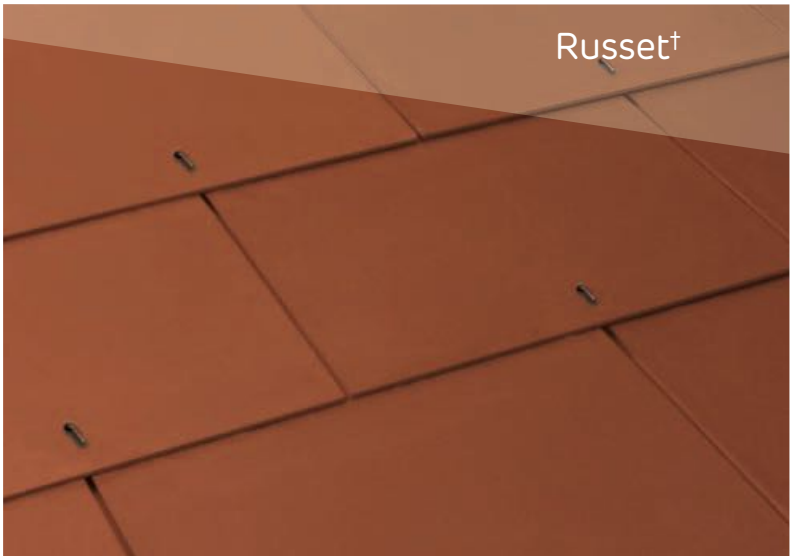
* Marley Eternit fibre cement slates meet the strength requirement of BS EN 492, achieving an average bending movement greater than 50 NM/M (Class B). The slates also have a minimum density of 1700 kg/m^3 and a nominal thickness of 4mm.

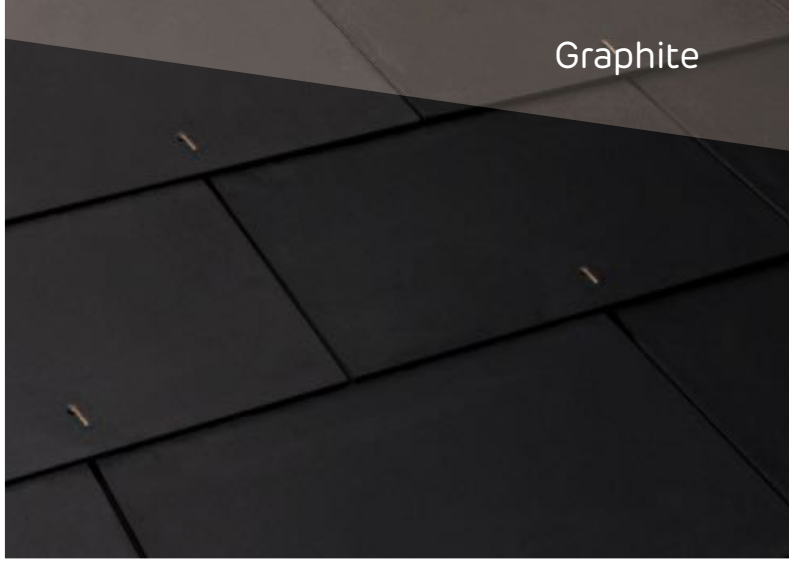
** The minimum recommended pitch and lap may be influenced by special circumstances, please contact the Technical Advisory Service for further information.

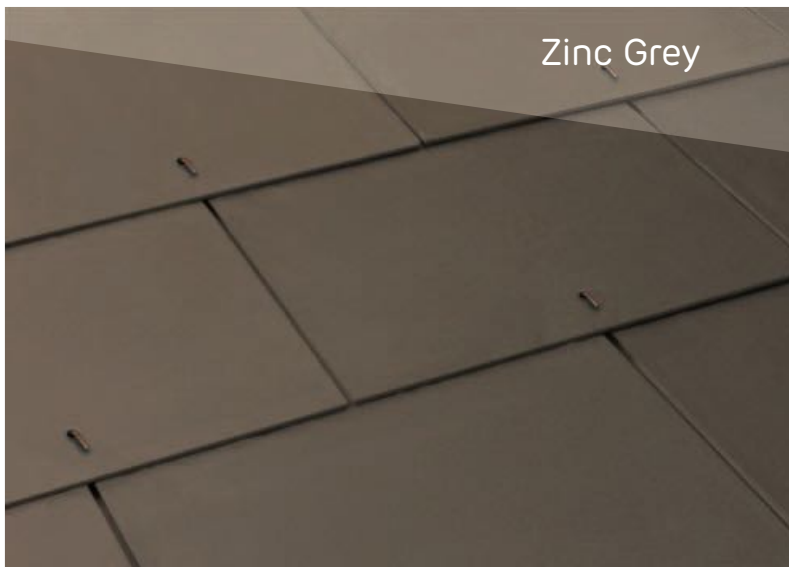
Sustainability

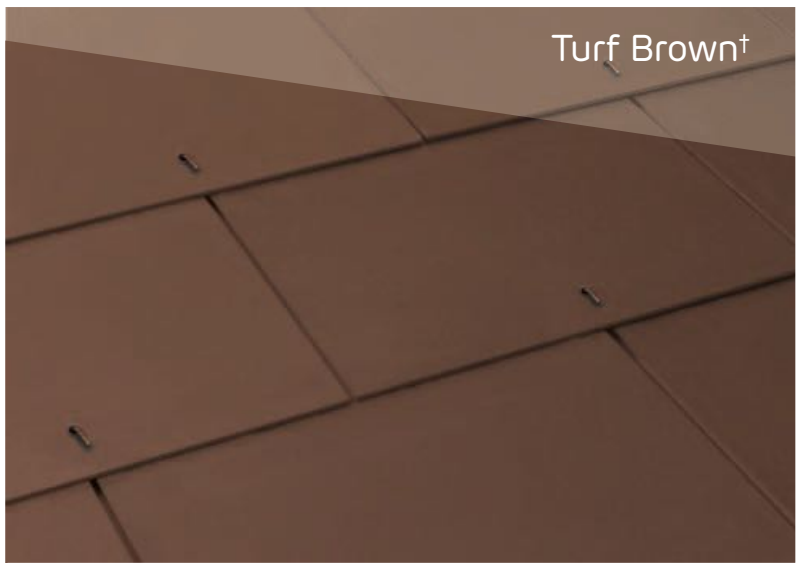
Green guide rating	A$^+$ (Element Ref: 812410008)
BES 6001	Very good – can achieve 3 credits
EPD available for Thrutone slates	

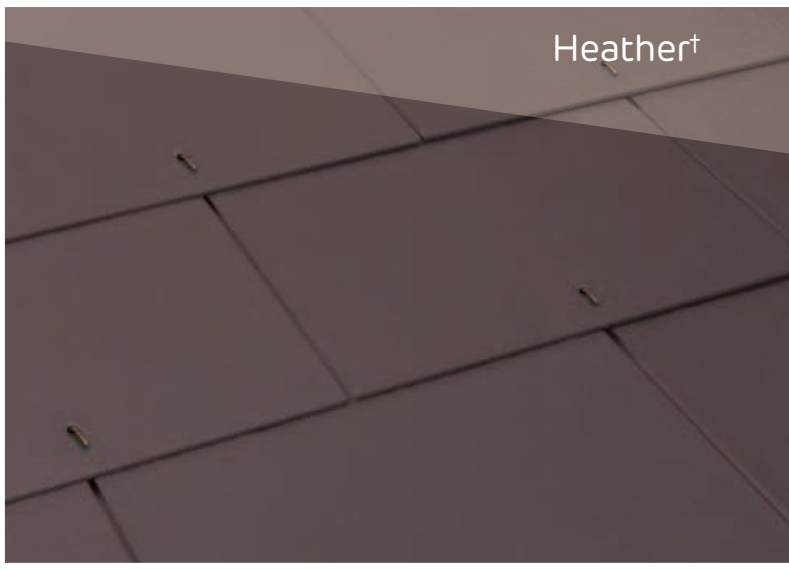
† Made to order

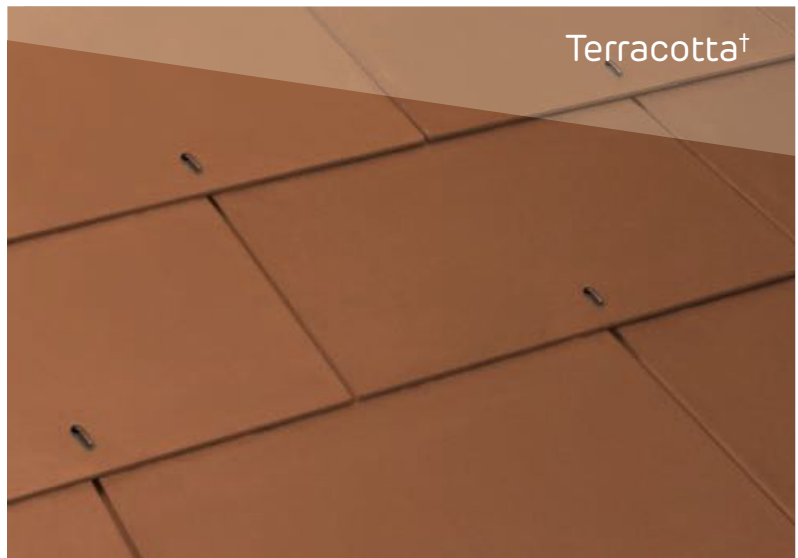












Shape availability

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."

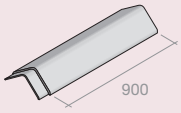
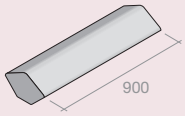
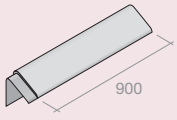
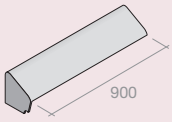
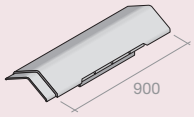
Looking for inspiration?

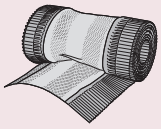
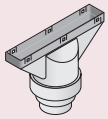
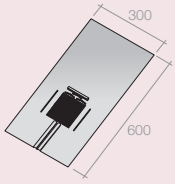
To see more projects, visit marleyeternit.co.uk/casestudies

Fittings and accessories
for fibre cement slates

Fibre cement fittings

Available in Blue/Black.

					
Description	Duo ridge**	Stop end for duo pitch ridge**	Mono pitch ridge**	Stop end for mono pitch ridge**	In-line ridge ventilator plus extension sleeve*
Pitch range	15-60°	15-55°	15-45°	15-45°	20-45°

				
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

Design pitch main roof	**15°**	**20°**	**22.5°**	**25°**	**27.5°**	**30°**	**35°**	**40°**	**45°**	**50°**	**55°**
Pitch of ridge cappings	***	20°	25°	25°	30°	30°	35°	40°	45°	50°	55°
Effective pitch at hip	***	14°	15°	17.5°	19°	20°	24°	27°	30°	33°	35°
Recommended pitch of duo pitch hip cappings	***	15°	15°	20°	20°	20°	25°	30°	30°	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.

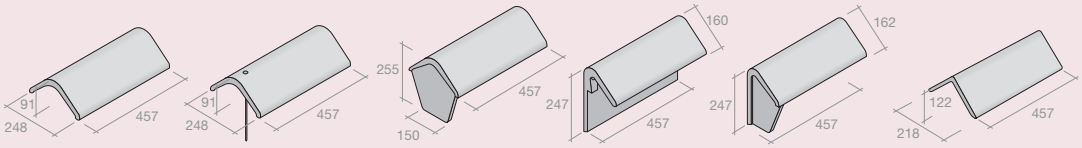
These systems are fully compatible with Marley Eternit products, and Universal systems can be used with other manufacturers' products too.

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.**

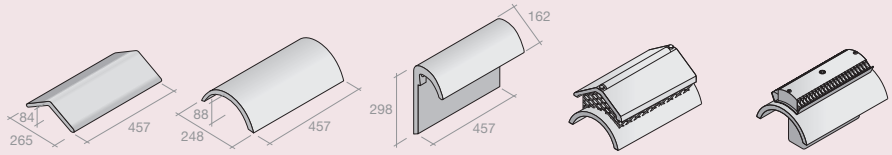
BS 5534 compliant

Concrete fittings

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).



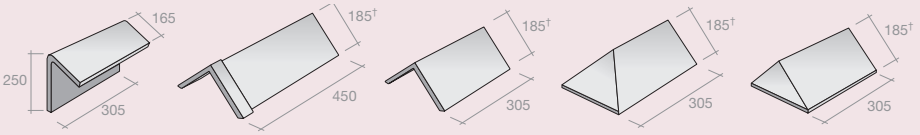
Description	Modern ridge	Modern security ridge	Modern block end ridge	Modern mono ridge	Modern mono block end ridge	90° Angle/Security angle ridge
Pitch range‡	15-55° dry ridge	15-45° bedded	15-55° dry ridge	15-45° bedded	15-45°	45-50°
Can be used with						
Ventilated dry ridge system	✓	–	✓	–	–	–
Universal RidgeFast	✓	–	✓	–	–	✓
Universal HipFast	✓	–	–	–	–	–



Description	125° Angle/Security angle ridge/hip Also available: 145° Angle ridge/hip and Security 145° angle ridge/hip	Segmental ridge	Segmental mono ridge	Gas vent ridge terminal Also available: Gas vent ridge for condensing boilers (use with concrete ridges only)	Ridge vent terminal
Pitch range	15-25° 15-22.5°	15-55° dry ridge	15-55° dry ridge	15-55° dry ridge	15-55° dry ridge
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).



Description	Mono ridge	Capped angular ridge	Angular ridge	Angular ridge hip end	Angular ridge stop end
Pitch range	30-45°	30-50°	30-50°	30-50°	30-50°

* Made to order (subject to minimum order quantities)
** 6m ventilated ridge roll is available to provide continuous ventilation.
*** Please contact the Technical Advisory Service

† Angle ridge wing length will vary depending on ridge angle
‡ Maximum pitch may vary depending on product and system used. Please contact the Technical Advisory Service for more information.

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.

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 CO_2e/m^2.

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 Hatschek 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.

Anatomy of a fibre cement slate

Fibre cement slate coatings
01 UV-resistant acrylic coating

02 Primer coating

03 Secondary coating (cement/pigment/iron oxide)

04 Fibre cement base sheet

05 Clear wax coating

BES 6001 Responsible Sourcing
www.greenbooklive.com

CE

Manufacture of fibre cement

To see how fibre cement is produced visit marleyeternit.co.uk/fibre-cement or scan the QR code to the right.

Density and thickness

The slates also have a minimum apparent density of 1700kg/m^3 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 0.011m^{2}K/W.

For the purpose of thermal transmittance calculations, the 'R' value above should be substituted by a figure of 0.12m^{2}K/W which includes the roof covering and airspace behind the tiles or slates. An 'R' value of 0.002m^{2}K/W should be added for the roof underlay.

Heat

After an initial period of stabilisation, slates are normally unaffected by the range of climatic temperatures (-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 tail 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/m^3 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.