

Forticrete[®]roofing

Redefining traditional products



HARDROW[®] SLATES *Solos* and HARDROW[®] SLATES *Harmonies* roofing slates

Creating a tradition on British roofs
for over 80 years



Hardrow® Solos™ Light Grey,
at Forest Road, Loughborough.

Creating an appearance with traditional character

Hardrow® Slates offer virtually the same architectural properties and aesthetic appeal as natural stone or slate. Formed from concrete, they retain a characteristic that mellows with age and can also be laid in either random widths or diminishing courses for an authentic traditional appearance.

Front cover

Hardrow® Slates Solos™,
in a mix of Yellow,
Orange, Red and Brown,
Solent Hotel, Fareham.

Hardrow® Slates
Harmonies® in Overture,
William Davis Homes,
Loughborough.



The Solos™ are a range of 10 subtle, 'natural' colours all carefully balanced to suit regional preferences. As with natural stone, the individual colouring of Hardrow® Solos™ varies slightly from slate-to-slate, recreating that traditional appearance so hard to achieve within tight budgets.

Hardrow® Solos™ are not made to be uniform in appearance and are manufactured to be slightly irregular in size, thickness and shape. This is intentional and is designed to enhance the laid character of the roof.



The simple way to create unique mixed stone patterns

With such a broad range of 'natural' colours available, Hardrow® Slates offer the opportunity to create the appearance of true 'mixed stone slate' roofs, either to blend into the local vernacular or to make bold statements in the urban environment.

Harmonies® is a selected blend of 'mixed colour' designs, each one unique to Hardrow® Slates, which has been created to simplify the specification process, enabling you to benefit from our experience and to select an expressive blend from the Solos™ range which is proven in use and the beauty of which can be seen in practice.

The ten colours provided by the range can be used to create contrasting patterns or distinctive features across a roof elevation.

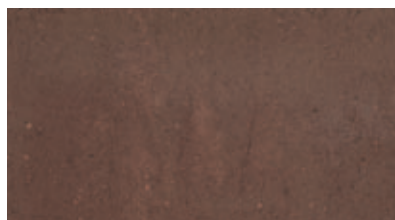


Hardrow® Slates qualify as an ECOSLATE® under Forticrete's unique marking scheme, signifying that it conforms to a specified range of environmental criteria.

Guarantee

The colour of Hardrow® Slates will change with natural weathering, but the integrity of the slate carries a 30-year guarantee from date of supply, subject to the company's normal terms. Forticrete® Roofing Products' policy is one of continuous improvement and the Company reserves the right to change specifications and designs at any time without notice. **Where an exact colour match is critical, you are advised to view actual tile samples.**

Colour range



Brown



Orange



Red



Yellow



Hardrow® Slates Harmonies® in Concerto, Orion Homes, Adel, Leeds.



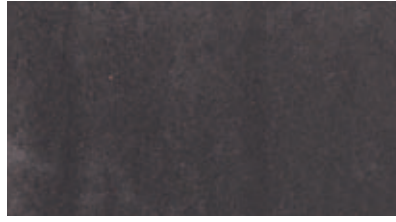
Hardrow® Slates Solos™ Old Stone at North Nibley, Gloucestershire.



Hardrow® Slates Harmonies® in Symphony, Bridport Community Hospital.



Moss



Thatch



Green



Light Grey



Dark Grey



Old Stone

The traditional appeal of natural stone or slate

Designing with Hardrow® Slates enables an abundance of creativeness and great flexibility for the specifier. The slates are available in a variety of sizes for both roofing and vertical cladding. The most popular sizes range from 457mm x 305mm (min pitch 25°) right up to the imposing 610mm x 457mm which can be laid at pitches as low as 17.5°, creating a bold appearance.

Duo-pitch ridges, mono-pitch ridges, stop-end ridges, hip slates, valley slates and mansards are all available, as is a range of ornamental slates to create striking detailing and features on both pitched roofing and vertical cladding.

Creating an impression

A range of purpose designed ventilating products include a gas terminal ridge, tested to comply with BS 1289:Part 1,1986; and both Lo-Vent slates and ridges for clean air and soiled air ventilation. Splays, special mansards, pyramid caps, all are achievable to give you complete flexibility in design.

Should you be concerned about the feasibility of an idea, or be unsure about precisely how to achieve that special effect, there's a helpful technical advisory service to offer advice and guidance based on years of experience.



Hardrow® Slates Harmonies® in Concerto, Orion Homes.
Vertical tile cladding and external angles.



Hardrow® Slates Collyweston mix at
Kier Homes, Stamford, Lincs.

- Stone slate appearance
- Double lap offers flexibility of roof design
- Manufactured since 1928
- Choice of 10 Solos™, 5 Harmonies® blends and 5 other mixes - detailed overleaf
- Extensive pitch capability
- Purpose made fittings to suit roof detailing
- Wide range of sizes
- Through coloured
- Available in diminishing courses and random widths (*for an additional charge*)
- Exceptional water resistance
- Kitemarked to BS EN 490:2002
- Full range of dry fix systems available
- Full range of ventilation products

Colour mixes - Select from **Concerto**, an autumnal blend of Brown, Yellow and Orange shades or you may choose **Sonata**, a distinctively warmer mix of Red, Brown and Yellow. For a slightly cooler feel, you can design with **Symphony**, with its predominant Brown brightened by yellow and cooled by Light Grey. For a more muted effect, **Overture** is a subtle combination of Light Grey, Dark Grey and Thatch, while **Melody** offers a beautifully balanced blend of Light Grey, Moss and Thatch.

Harmonies range



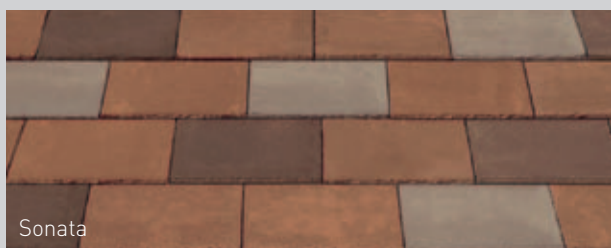
MIX	60%	20%	20%
	Light Grey	Moss	Thatch



MIX	60%	20%	20%
	Brown	Yellow	Light Grey



MIX	60%	20%	20%
	Light Grey	Dark Grey	Thatch



MIX	60%	20%	20%
	Red	Brown	Yellow



MIX	60%	20%	20%
	Brown	Yellow	Orange

The ten colours in the Solo Range provide limitless combinations of colour mixes; above are a few of the more popular colour blends. If you are feeling more adventurous you can mix four or even five colours together in the 18x12's, or create a more dramatic effect by using a larger slate size.

Other popular mixes



MIX	50%	25%	25%
	Dark Grey	Moss	Thatch



MIX	60%	20%	20%
	Light Grey	Dark Grey	Moss



MIX	55%	40%	5%
	Light Grey	Yellow	Brown



MIX	7%	55%	12%	26%
	Orange	Yellow	Brown	Light Grey



MIX	20%	40%	30%	10%
	Brown	Light Grey	Yellow	Thatch

Note: Mixes are blended ON SITE by the roofing contractor.

Hardrow® Slates dimensions and specifications

Standard roofing slates

Nominal slate size	381mm x 229mm (15" x 9")	457mm x 305mm (18" x 12")	457mm x 457mm (18" x 18")		610mm x 457mm (24" x 18")		
Pitch	30° & above	25° & above	20°-24.5°	25° & above	17.5 -19.5°	20°-24.5°	25° & above
Max gauge	150mm (6")	191mm (7 1/2")	178mm (7")	191mm (7 1/2")	241mm (9 1/2")	255mm (10")	267mm (10 1/2")
Minimum headlap	75mm (3")	75mm (3")	102mm (4")	75mm (3")	127mm (5")	100mm (4")	75mm (3")
Min side lap	95mm (3 3/4")	95mm (3 3/4")	89mm (3 1/2")	75mm (3")	121mm (4 3/4")	102mm (4")	107mm (4")
Cover width	232mm	311mm	464mm	464mm	468mm	468mm	468mm
Nominal hanging length	331mm	407mm	407mm	407mm	560mm	560mm	560mm
Nominal thickness	14mm (5/16")	14mm (5/16")	14mm (5/16")	14mm (5/16")	16mm (5/8")	16mm (5/8")	16mm (5/8")
Mass per 1000 slates	3.0 tonnes	4.8 tonnes	7.2 tonnes	7.2 tonnes	10.6 tonnes	10.6 tonnes	10.6 tonnes
Number per m ²	29.1	17.22	12.3	11.5	9.07	8.61	8.2
Weight per m ²	87 kg	83 kg	88 kg	83 kg	96 kg	91 kg	87 kg
Batten required lin m/m ²	6.7	5.24	5.62	5.24	4.15	3.92	3.75
Verge slates	381mm x 343mm (15" x 13 1/2")	457mm x 457mm (18" x 18")	457mm x 686mm (18" x 27")		610mm x 686mm (24" x 27")		
Eaves & tops	254mm x 229mm (10" x 9")	330mm x 305mm (13" x 12")	305mm x 457mm (12" x 18")		457mm x 457mm (18" x 18")		

Note: The minimum pitch is based on a maximum rafter length of 10m. For rafter lengths greater than this, please contact the Forticrete Technical Advisory Service.
Batten size: 50mm x 25mm for all rafter centres up to 600mm graded timber in accordance with BS 5534:2003.

Standard vertical cladding slates

Nominal Slate Size		Cover Width	Nominal Hanging Length	Standard Headlap	Standard Gauge	Number per m ² at Standard Headlap	Mass per m ² at Standard Headlap	Mass (approx) per 1000 Slates	Nominal Thickness	Verge Slates		Eaves & Tops			
mm	in	Cw	mm	mm	in		kg	Tonnes	mm	in	mm	in			
330 x 229	13 x 9	232	280	50	2	140 5/2	31.2	81	2.6	14	5/16	330 x 343	13 x 13 1/2	229 x 229	9 x 9
*381 x 229	15 x 9	232	331	50	2	165 6/2	26.5	80	3.0	14	5/16	*381 x 343	15 x 13 1/2	254 x 229	10 x 9
330 x 305	13 x 12	311	280	50	2	140 5/2	23.4	81	3.5	14	5/16	330 x 457	13 x 18	229 x 305	9 x 12
457 x 305	18 x 12	311	407	50	2	203 8	16.2	78	4.8	14	5/16	457 x 457	18 x 18	330 x 305	13 x 12

*Also available to order as Ornamental Slates.

Diminishing courses

Slates are available in the following sizes: (length x width):
381 x 457mm; 457 x 457mm; 533 x 457mm; 610 x 457mm

Note: Slate and a half slates are supplied for all these sizes:
Under Eave: 457 x 457mm Tops: 305 x 457mm

Number of courses of each size of slate - The percentage number of different length slates on the rafter is dependant on the rafter length. Where the size of slate changes the gauge should be gradually diminished, so it blends into the next size of slate with the reduced gauge.

Number and weights of diminishing slates Per square metre at 75mm (3in) head lap

Length x Width	Gauge mm	Number	Weight kg
381 x 457	152	14.4	86
457 x 457	190	11.5	83
533 x 457	229	9.6	81
610 x 457	267	8.2	87

Roof pitch - It is recommended that Hardrow Diminishing Course Slates should be laid to a minimum pitch of 30° and a maximum pitch of 47 1/2°.

Designation of standard slates

Nominal Slate Size mm	in	Designation No.
Standard roofing slates		
381 x 229	15 x 9	T - EN 490 - NL - 0 - IF - 232 - / - / - (331) - 3,00
457 x 305	18 x 12	T - EN 490 - NL - 0 - IF - 311 - / - / - (407) - 4,80
457 x 457	18 x 18	T - EN 490 - NL - 0 - IF - 464 - / - / - (407) - 7,20
610 x 457	24 x 18	T - EN 490 - NL - 0 - IF - 468 - / - / - (560) - 10,60

Standard fittings - Hips, valleys and mansard slates are available to order to cover the full range of roof pitches.

Working procedures, safety & general precautions

Slates must be fixed in accordance with BS 5534. Forticrete recommend that installers of all slates regard the products as fragile as stated in BS8000:Pt6:1990 Section 5. During installation of the products, the correct setting out and working procedures should be employed to avoid walking directly on to products which have been fixed or are on any completed area of a roof. Should it be necessary to gain access via the roof where battens of adequate strength cannot be used as footholds, this should not be attempted without the use of adequate protection to the tiles or slates including the required number of crawling boards, ladders and cat ladders.

Hardrow Slates® Roofing Systems & Technical enquiries:

Forticrete Limited,
Boss Avenue, off Grovebury Road,
Leighton Buzzard, Beds LU7 4SD

Tel: 01525 244900

Fax: 01525 850432

E-mail: roofing@forticrete.com

Information on the complete range of Forticrete products can be found on the Internet at www.forticrete.co.uk

Forticrete, Hardrow and Harmonies, Ecoslate, the Plus device and the E device are registered trademarks of Forticrete Ltd.

CRH is a registered trademark of CRH plc.

The 'F' Logo and Solos are trademarks of Forticrete Ltd.

This document does not form part of any contract and Forticrete cannot accept liability for any errors or omissions.

In order to maintain its position as a market leader, Forticrete operates a policy of continuous product development and therefore reserves the right to alter specifications without notice.

Random width slates

Slates are available in the following sizes: (l x w): 457 x 305mm; 457 x 381mm; 457 x 457mm

Verge slates: 457 x 686mm
Under Eaves: 305 x 457mm
Top Course: 330 x 305mm
Numbers per size: Random a third of each size.
Minimum pitch: 25°

Headlap: All sizes 75mm. Gauge common to all sizes 191mm maximum.
Side lap: Never less than 100mm.
Weight of random slates: 83kg per square metre.
Hips and valleys: Purpose made to pitch.

Tile Fixing

Each slate must be secured with two 40mm x 3.35mm aluminium nails. For the 610 x 457 slate, above 30° the nail should be 40mm x 4mm. At pitches below 40°, depending on the exposure, it may be possible to hang slates. The nail hole diameter is approximately 5mm with the holes being positioned c. 50mm from the head and edge of the slate. Nail specification may alter for marine environments, and you should seek advice from the Technical Advisory Service.

Tile Hanging on a sloping elevation

If hanging slates over the battens, an additional batten should be fixed above all parent batten spanning over at least two rafters to provide a mechanical fixing at the verge. Depending on the span of the gable overhang, secondary battening may be required to add additional strength to carry the weight of the slates. If hanging the slates under eaves, 1st course and last course of main slates must be nailed into the batten. Top tile clips are available for fixing the top slates to the adjacent main slates. CURVED ROOFS - please contact the Technical Advisory Service for specification advice

Designation of standard slates

Standard vertical cladding slates		
330 x 229	13 x 9	T - EN 490 - NL - 0 - IF - 232 - / - / - (280) - 2,60
381 x 229	15 x 9	T - EN 490 - NL - 0 - IF - 232 - / - / - (331) - 3,00
330 x 305	13 x 12	T - EN 490 - NL - 0 - IF - 311 - / - / - (280) - 3,50
457 x 305	18 x 12	T - EN 490 - NL - 0 - IF - 311 - / - / - (407) - 4,80

Non standard fittings - Non standard fittings can be made to order to suit special applications. Please consult our Technical Advisory Service for help and advice.

Please note that where there is a change of pitch, packing may be required between crawling boards, cat ladders and the surface of the tiles or slates to avoid damage to the product. Fixers should note that Forticrete do not recommend the practice of cutting tiles or slates in-situ. Other information can be obtained from the Health and Safety in Roof Work publication HSG33 and in the 'Working on Roofs' publication INDG284. When unpacking the slates from the pallets, please cut the shrink wrap as instructed and maintain even distribution of the slates on the pallet to avoid tipping.

Reference should also be made to the Forticrete Technical Literature and Fixing Instructions.

Although the instructions contained in this publication and any other information published by Forticrete are believed to be accurate at the date of publication, they are strictly for guidance only and Forticrete accepts no liability in relation to their use or for any losses, howsoever caused. You are responsible for taking all reasonable steps to ensure your use of the goods/products conforms to all applicable health and safety requirements from time to time. If in doubt, please consult appropriately qualified persons. All products sold by Forticrete are sold subject to Forticrete's Terms and Conditions of Sale, a copy of which is available on request.

© Forticrete Ltd. 2012. All rights reserved.

