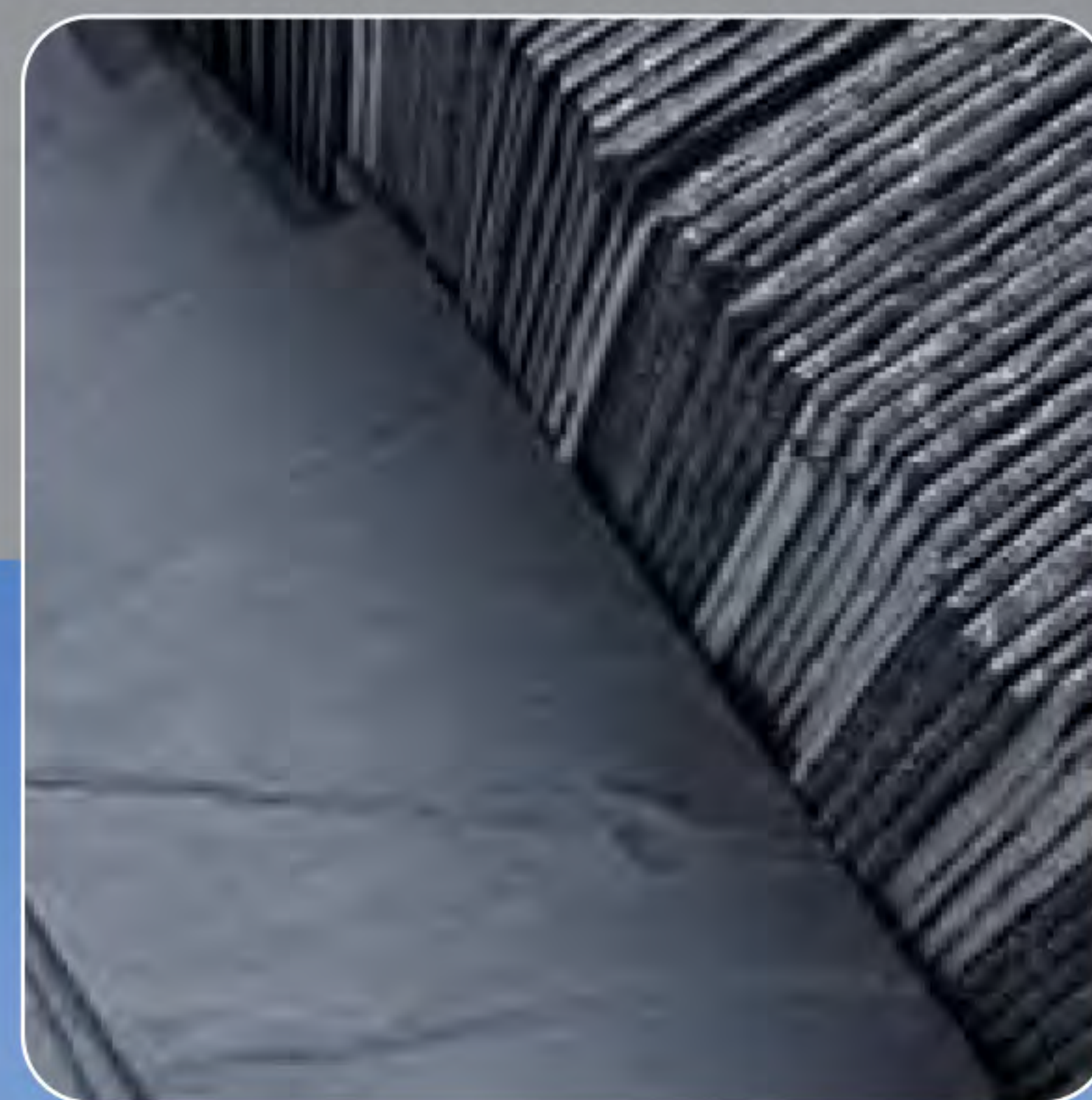




Specialists in Supply Solutions



Roofing
Slate

TECHNICAL MANUAL



Roofing Supply Solutions

www.ebpbuilding.com

The logo for EBP Roofing, featuring the letters "EBP" in a bold, yellow, sans-serif font. The letters are set against a black rectangular background. The "E" and "B" are connected, and the "P" has a distinctive shape with a curved bottom.

EBP

ROOFING

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EBP

ROOFING

Roofing Supply Solutions

WE MAKE
IT HAPPEN



Roofing Supply Solutions

WE HAVE IT COVERED

Having specialised in the supply of natural roofing slates since 1929, our reputation speaks for itself and our depth of knowledge is unbeatable.

In the early days our company was one of only a handful of original Main Agents appointed by the Welsh & Westmorland Quarries. These days however, Spain rather than Wales is the world's largest producer of natural roofing slate, with China fast emerging as a strong contender for this Crown. The general growth of imported products throughout the UK since the early 1970's, propagated by strong customer demand, has seen a switch in our companies emphasis and focus. Our credentials are time served and proven having imported Spanish roof slates since 1976 and Chinese roof slates since 1999.

To assist in the development and management of our co-operation with China, we have our own registered company based in Xiamen, South East China,

ensuring all goods are competitively priced and produced to meet exacting specifications and quality control procedures. Our ongoing programme of investment in capital equipment together with the people involved through the processes, ensure peace of mind for our customers.

Our imported range of slate is branded Sobrano™, a derivative of the Spanish word meaning 'the best', and is exclusive to EBP Building Products. Only by insisting on Sobrano™ Natural Roofing Slates can designers, distributors and installers alike be assured of a proven quality and pedigree, which is simply unmatched by other so called importers and distributors.

All Sobrano™ Spanish and Chinese Natural Roofing Slates are compliant with European Construction Products Regulation EU305/2011 and are CE marked.



MEAN RESULTS OF SOBRANO SLATES

TEST	CHINESE	SPANISH
WATER ABSORPTION	A1	A1
THERMAL CYCLING	T1	T1
CARBONATE CONTENT	>20%	1%
SULPHUR DIOXIDE	S1-S3	S1

SLATE TESTING AT A GLANCE

Water Absorption relates to the slate's absorbency; the lower the better and if higher than 0.6% then slates should be subjected to a separate freeze/thaw test. A1 is the highest rating achievable.

Thermal Cycling relates to the stability of pyrite content in the slate and whether it is likely to oxidise or rust. T1 is the highest rating achievable and denotes 'no change in appearance'; T3 is the lowest rating and denotes 'oxidisation or appearance changes of metallic minerals that penetrate the slate and risk forming holes'.

Carbonate Content relates to how much carbonate is present in the slate; the lower the better to reduce risk of accelerated weathering, fading and colour change.

Sulphur Dioxide Exposure indicates how slates are likely to perform in acidic or polluted environments. S1 is the highest rating though both S2 and S3 are within the scope of the European Standard BS EN 12326 and can be used in areas of moderate/light atmospheric pollution, which applies to most areas of the UK and Ireland.

Roofing Supply Solutions



SOBRANO™ - CHINESE NATURAL ROOFING SLATES

If cost is the main driver then Chinese Slate is the product of choice. Most of the industry is made up of parasitic so-called importers that dabble in sourcing slates from non-reputable sources in China. We think that's a mistake. Importing and distributing Chinese slates in the UK is a different business. It takes a greater level of expertise; it also requires a different team with a proficient and high level of experience and expertise. Having imported directly from China since 1999 and with our own registered company based in Xiamen, no other importer and distributor can offer a better understanding of the Chinese quarry network, which in turn benefits our clients as follows:

- The depth of stock on the ground
- The extensive range of sizes we offer, including slate and halves
- Different types of slate to suit design criteria, be it price, consistency of thickness and appearance or a more rustic, natural look
- Consistent quality and promotion of ethical working conditions
- Sturdiness of crates and packaging, thereby minimising the level of breakages that can occur in transit.

As specialist bulk importers, we stock the most varied and comprehensive range of natural roofing slates available in the UK. This enables us to supply any quantity, of any grade, at the most competitive price.

We have an extensive choice of colours, sizes, grades and thicknesses, including slate and halves, double and eaves slates, backed up with relevant industry testing and performance guarantees up to 50 years.

SOBRANO™

PREMIER CHINESE

A low cost charcoal/grey slate that is uniform in thickness, texture and appearance. A feature of this particular slate is its tendency to naturally weather relatively quickly, thereby creating the appearance of a more established, mature and naturally aged roof that blends well with existing roofs in the surrounding area. Unlike second hand slates it comes with a performance warranty and is the ideal choice where low price is the main criteria.

WIDE RANGE OF SIZES

AVAILABLE FROM STOCK

Our direct relationship with a number of Chinese slate producers enables us to offer an outstanding range which is unmatched by our rivals. All our slate range is available to order from stock.



SIZES

- 610 x 355 mm
 - 500 x 300 mm
 - 450 x 250 mm
- 600 x 300 mm
 - 500 x 250 mm
 - 400 x 300 mm
- 560 x 305 mm
 - 450 x 300 mm
 - 400 x 250 mm

A full range of slate and halves, double slates, eaves slates are also available off-the-shelf.

CE Authorised Quarry Quarry Representative:		Ensor Holdings Plc., F21/A, Yu Bincheng A, No 21 Southpark Road, Xiamen City, Fujian Province, P.R. China			
Product Specification:		EN 12326-1:2004			
Product Description:		Roofing and External Cladding Slate			
Dimensions and dimensional variation:		Complies (deviation < +/- 5 mm)			
Nominal thickness and variation:		6 mm (< +/- 35%)			
Mechanical resistance	Characteristic MoR	Transverse:	40.65MPa	Longitudinal:	57.57MPa
	Mean failure load	Transverse:	669.7N	Longitudinal:	1852.9N
Water permeability - water absorption:		Complies <0.6% Code A1			
Carbonate content:		Complies <20%			
Durability water absorption:		Complies <0.6% Code A1			
Durability freeze thaw cycling:		Not required			
Durability thermal cycling:		Complies with Code T1			
Durability sulphur dioxide exposure:		Complies with Code S1			
Durability non-carbonate carbon content:		Complies <2%			
Release of dangerous substances:		None in conditions as roofing or external cladding			
External fire performance:		Deemed to satisfy			
Reaction to fire:		Deemed to satisfy Class A1			



SOBRANOTM - SPANISH NATURAL ROOFING SLATES

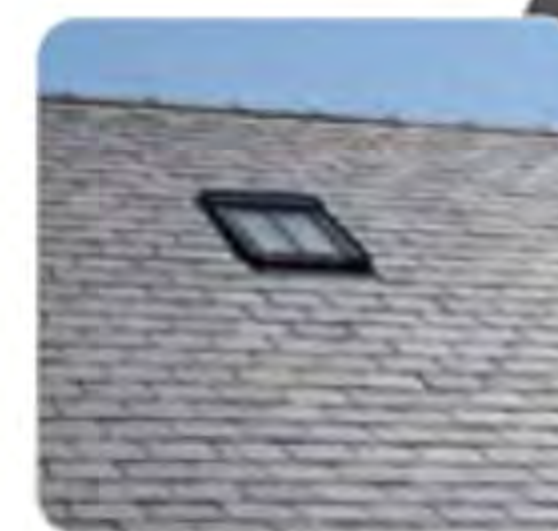
As specialist importers and distributors for over thirty years, we offer unrivalled experience in terms of supplying Spanish Natural Roofing Slates for the UK market. 90% of Europe's natural slate used for roofing originates from the slate industry in Spain with Galicia being the primary source of production. Traditionally, the UK slate market has offered a wide variety of different types of slate. Each UK importer has their own commercial references depending on the characteristics of its sources, which leads to general confusion in the market place. The first class slate from a company may be very different from the first class of other company. In general, the quality criteria are similar for the entire sector (no alterable minerals, adequate thickness, uniform exfoliation, etc.), although it is the final use of the slate tiles which really define the specific requirements.

At EBP we believe in cutting through the misleading dogma and nonsense that exists out in the market place and by keeping things simple for everyone concerned. Given our experience and pedigree, you can be sure that we offer the right product at the right price.

The NHBC deem that the change from the British Standard, BS680 to European Standard BS EN 12326-1 and -2 has resulted in a need for the user or specifier to specify what level of performance and durability they want. Regardless of specification, slate is a natural product and minor aesthetic changes can occur following installation, which will not affect their durability or functionality. If you are in doubt or have a specific requirement please contact our technical sales team for advice.

SOBRANO™ MATIZ GOLD

MATIZ GOLD + is a premier grade product; uniform in surface appearance and best graded selection in the crates i.e. minimal variation in thickness



SOBRANO™ MATIZ GOLD

MATIZ GOLD has a more textured surface appearance with generally no surface pyrites and standard graded selection in the crates i.e. reasonable variation in thickness.



SOBRANO™ MANO

MANO slate contains generally benign surface pyrites and as a result is lower in price. Whilst rare, surface pyrites can oxidise and cause staining to the surrounding slates through this will not affect their functionality or durability.



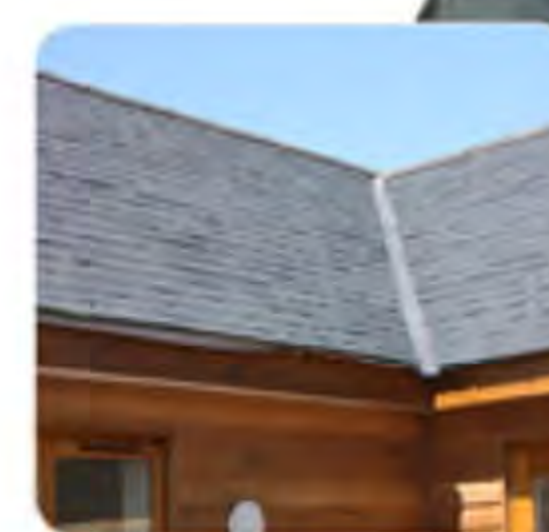
SOBRANO™ BRAZILIAN

BRAZILIAN slate has a natural flatness, ease of maintenance and an affordable price. Available in both light grey and dark grey the slate stands out aesthetically.



SOBRANO™ PREMIER CHINESE

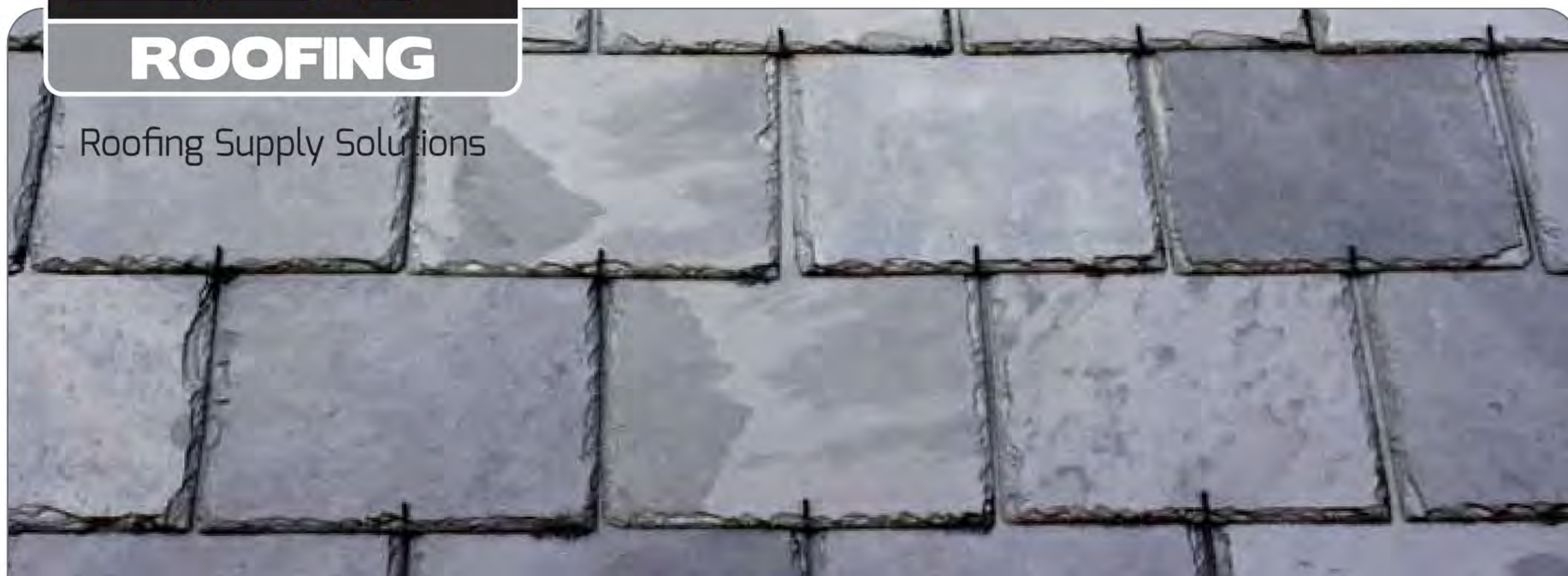
PREMIER CHINESE is a low cost slate that is uniform in thickness, texture and appearance. A feature of this particular slate is its tendency to naturally weather relatively quickly, thereby creating the appearance of a more established, mature and naturally aged roof.



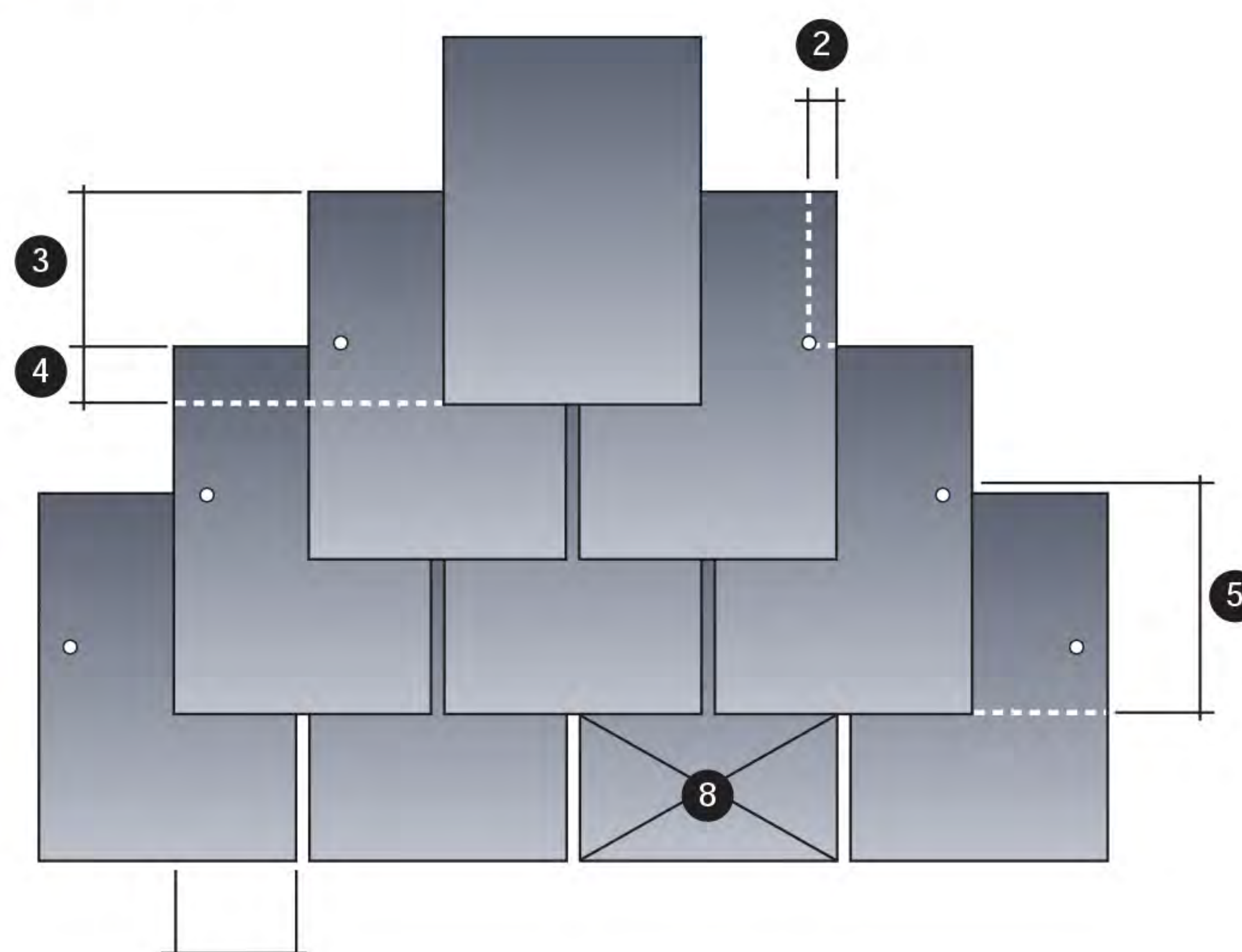
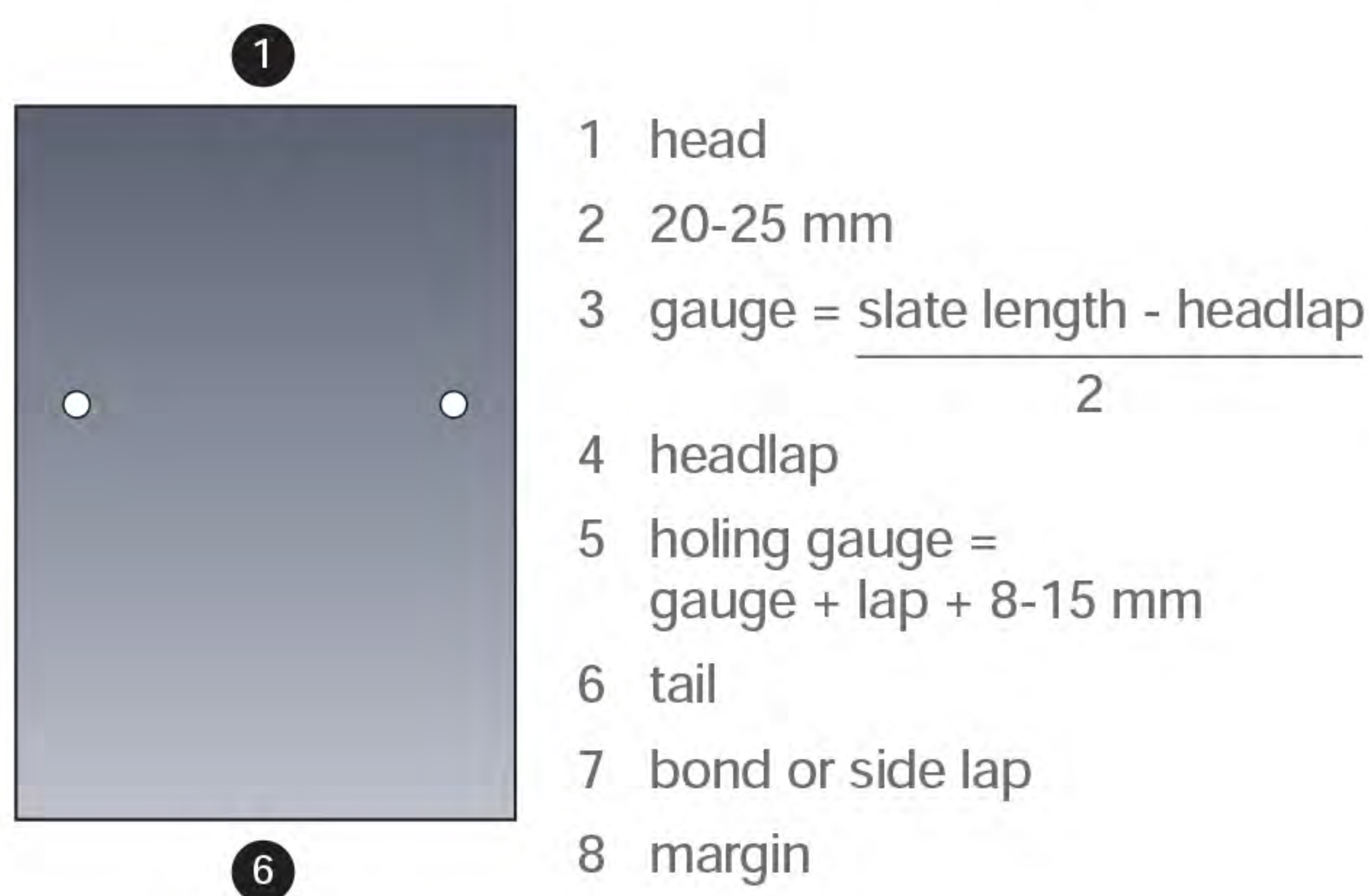
The NHBC deem that the change from British Standard BS680 to European Standard BS EN 12326-1 and -2 has resulted in a need for the customer, installer and specifier to take responsibility for specifying what level of performance and durability they want. Regardless of specification, slate is a natural product and minor aesthetic changes can occur following installation, which will not affect their durability or functionality. If you are in doubt or have a specific requirement please contact our technical sales team for advise.

ROOFING

Roofing Supply Solutions



SLATING TERMINOLOGY



APPLICATION

Full details of the roof slating process are given in the code of practice for slating and tiling BS5534: 2003 and Workmanship on Building Sites BS8000: part 6: 1990. However the main stages are outlined below.

1. Sort and hole slates to the correct gauge, measuring from the tail of the slate. At the time sort the slates into three or four groups of equal thickness.
2. Fix underlay as specified.
3. Mark out the roof to the correct gauge. The gauge may be adjusted to divide the slope length into equal number of courses provided the specified lap is not reduced.
4. Batten the roof (see battening gauge table).
5. Check width of slates and mark out the slate joints (perpend). It is generally necessary to mark only every second perpend.
6. Load slates onto the roof so that the thickest slates are in the lower courses and the thinnest are nearer the ridge.
7. Fix undereaves courses bed up.
8. Fix slates to perpend lines, cutting slates as necessary to hips and valleys. All slates must be fixed with two nails.

Please note that slate is a natural product therefore please take into account that variations in shading, texture and thickness can occur. Exact conformity to any samples provided cannot be guaranteed.

Sobrano slates are graded at the quarry to avoid excessive variation in thickness within individual crates; however it is recommended and indeed good practice for installers to further examine the slates for any latent cracks which can occur during transportation prior to fixing and to sort the slates into three or four groups of similar thickness. The thickest slates should then be used in the courses nearest the eaves, with the thinner slates being used towards the upper courses, so as to give an even overall appearance to the roof.

Warranties only apply providing slates are fixed in accordance with the relevant industry standards - Code of Practice for Slating & Tiling BS5534: 2003 and Workmanship on Building Sites for Slating & Tiling of Roofs & Cladding BS8000 part 6: 1990.

SLATE INFORMATION

SLATE COVERAGE

Coverage Slates per m ²																			
Size (Nominal)	Lap mm																		
mm	50	65	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155
600x300	11.9	12.3	12.5	12.6	12.7	12.9	13.0	13.1	13.2	13.4	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7
500x300	14.6	15.1	15.4	15.6	15.8	16.0	16.2	16.4	16.6	16.8	17.0	17.3	17.5	17.7	18.0	18.2	18.5	18.7	19.0
500x250	17.4	18.0	18.5	18.7	18.9	19.1	19.4	19.6	19.9	20.1	20.4	20.6	20.9	21.2	21.5	21.8	22.1	22.4	22.7
460x225	16.4	17.0	17.5	17.7	18.0	18.2	18.5	18.7	19.0	19.3	19.6	19.9	20.2	20.5	20.8	21.2	21.5	21.9	-
400x250	22.4	23.4	24.1	24.5	24.9	25.3	25.7	26.1	26.6	27.0	27.5	28.0	28.5	29.0	-	-	-	-	-
400x200	27.9	29.1	30.0	30.5	31.0	31.5	32.0	32.5	33.1	33.6	34.2	34.8	35.5	36.1	-	-	-	-	-
350x250	26.1	27.5	28.5	29.0	29.6	30.2	30.8	31.4	32.0	32.7	33.4	-	-	-	-	-	-	-	-
350x200	32.5	34.2	35.5	36.1	36.8	37.5	38.3	39.0	39.8	40.7	41.5	-	-	-	-	-	-	-	-
300x200	39.0	41.5	43.4	44.3	45.4	46.5	47.6	48.8	-	-	-	-	-	-	-	-	-	-	-

Values calculated using nominal sizes and incorporating a 5 mm joint gap as per BS8000: part 6: 1990. We recommend the addition of at least 5% wastage allowance.

COVERAGE AND COST

The actual cost of a roof per unit floor area of the building is determined by a number of factors, including roof pitch, slate size and headlap. By taking advantage of the various sizes and types of ecns roofing slate, considerable cost savings can be made.

ROOF PITCH AND LAP

The shallower the roof pitch, the smaller the area of the roof slopes. This area reduction, however, does not automatically lead to a cost reduction because lower pitches can require larger slates and laps. The full cost advantage can be taken by adjusting the lap to the minimum required, for the pitch of the roof.

FIXING

BOARDED ROOFS - Square edged sarking board or battens to be used with vapour permeable or bitumen felt underlay to BS5534.

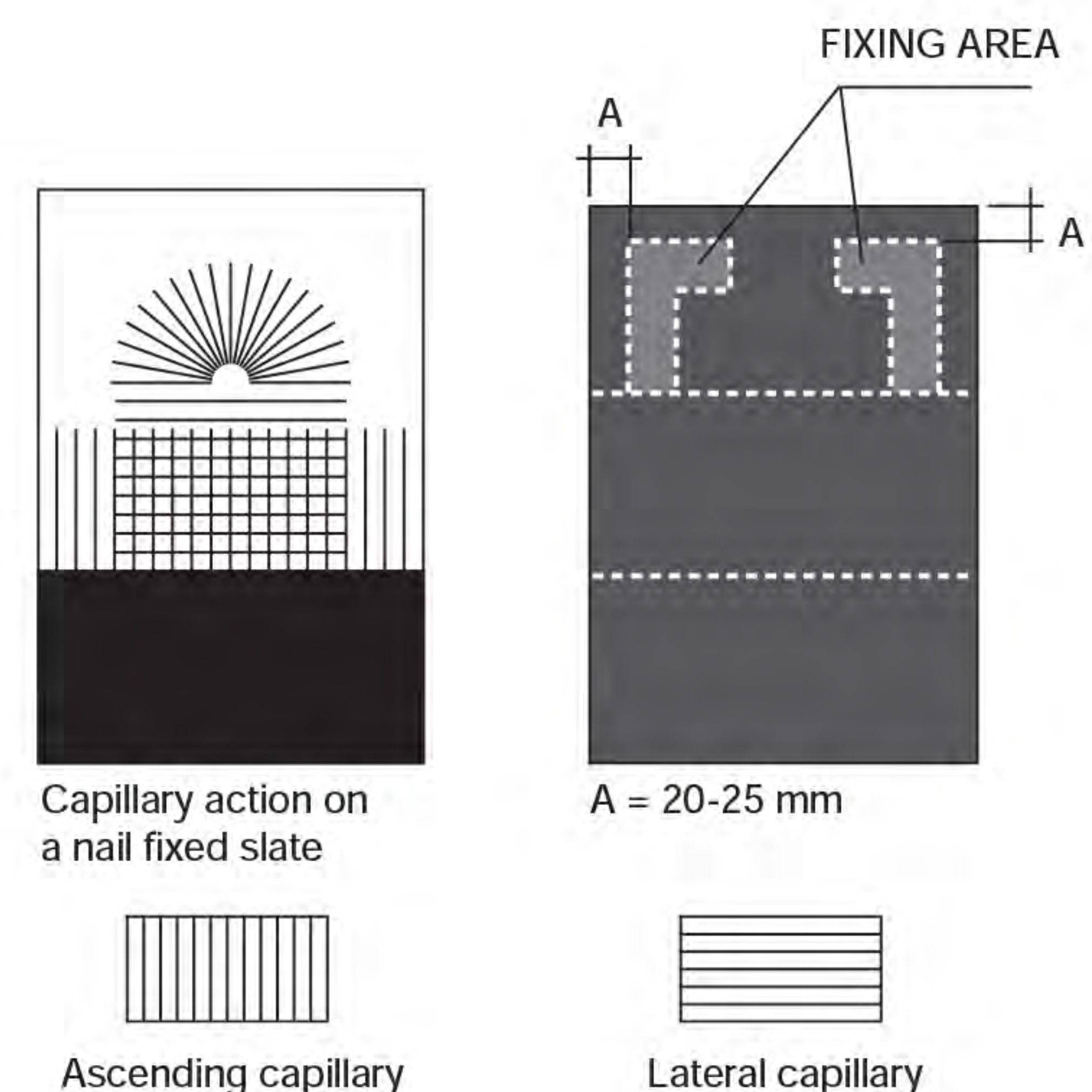
SLATE NAILS - All slates must be fixed with two nails. (Alternatively stainless steel can be used). Slate or clout nails should be aluminium to BS1202: Part 3, or copper to BS1202: Part 2 or silicon bronze.

If slates are to be fixed in corrosive or marine atmospheres copper nails are preferable and in severe conditions silicon-bronze nails should be used. If stainless steel hooks are considered they should be 18/10/3 marine grade in accordance with relevant British Standard.

HOLING SLATES - Slates should be holed from the underside - as a result the spalling on the upper surface forms a countersink for the nail head. Holing gauge calculations is as follows; gauge + lap + 8-15 mm see table on page 12 and BS5534 Section 33.

CUTTING SLATES

To maintain adequate laps and allow for proper fixing slates must not be cut too narrow. As a general rule no slate should be less than 150 mm wide. At verges and abutments, alternative courses should be started with half-width or slate-and-a-half to maintain a proper bond. Where a slate is less than 150 mm wide, slate-and-a-half widths must be used. At valleys, hips and other places where slates must be cut on the rake, wider slates are essential to maintain an adequate width of the head or tail. It is recommended that slate-and-a-half is used on every course when cutting for mitred hips or valleys.



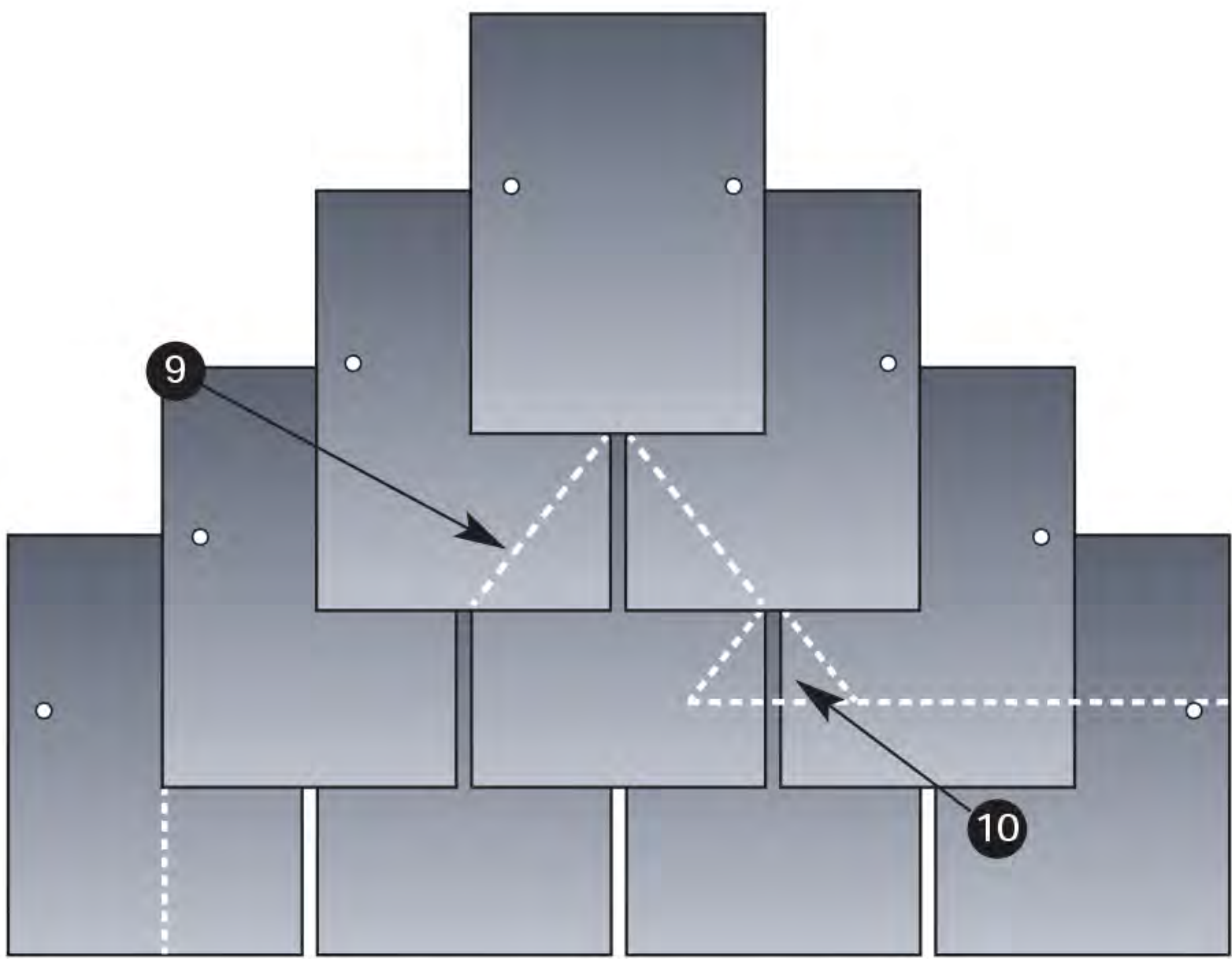
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ANGLE OF CREEP

Rainwater running down the gaps between slates is drawn outwards due to capillary action. Nail holes in the slates must be outside this area. Side lap should be half the slate width but in order to provide adequate weather resistance at the side lap in relation to the laps of successive courses and the position of the nail hole (where slates are centre nailed), the width of the slate W should be less than: $(L - 31) \tan \theta + 2t$.

WHERE

- L is length of slate.
- l is headlap.
- θ is the angle of creep, i.e. the angle between the butt joint and a line joining the highest exposed point of the butt joint to a point directly below the nail hole at the head of the slate below (centre nailing).
- t is the distance of nail-hole from the side of slate.



(9) area of capillary spread (10) angle of creep θ

HEADLAP

Where slates are head or shoulder nailed the value of its is zero. The angle of creep should be taken to the side edge of the slate at the top of the lap below.

For given pitch, exposure and slate size, the minimum headlap can be calculated from.

$$l = \frac{L - \left[\frac{W + 2t}{\tan \theta} \right]}{3}$$

RECOMMENDED LAP AND ANGLE OF CREEP

Rafter pitch not less than	Lap mm	510	Slate length less than 510
MODERATE EXPOSURE	Angle of creep		
SEVERE EXPOSURE			
45°	55	26°	26°
	70	32°	36°
40°	60	26°	26°
	80	35°	48°
35°	70	26°	29°
	90	40°	57°
30°	80	32°	32°
	100	44°	60°
27.5°	85	36°	48°
	110	47°	-
25°	95	40°	-
	120	50°	-
22.5°	105	47°	-
	130	60°	-
20°	115	56°	-
	-	-	-



ANNUAL DRIVING RAIN INDEX EXPOSURE GRADINGS

MODERATE EXPOSURE less than 56.5 l/m² per spell

SEVERE EXPOSURE 56.5 l/m² or greater per spell



MINIMUM RECOMMENDED HEADLAPS



MODERATE EXPOSURE
less than 56.5 l/m² per spell

Size (Nominal) mm	Minimum Rafter Pitch								
	20°	22.5°	25°	27.5°	30°	35°	40°	45° to 75°	85°
600 x 300	-	-	95	85	80	70	60	55	-
500 x 300	115	105	95	85	80	70	60	55	-
500 x 250	-	-	95	85	80	70	60	55	50
460 x 225	-	-	-	-	80	70	60	55	50
400 x 250	-	-	-	-	80	70	60	55	50
400 x 200	-	-	-	-	80	70	60	55	50
350 x 250	-	-	-	-	80	70	60	55	50
350 x 200	-	-	-	-	80	70	60	55	50
300 x 200	-	-	-	-	80	70	60	55	50



SEVERE EXPOSURE
56.5 l/m² or greater per spell

Size (Nominal) mm	Minimum Rafter Pitch								
	20°	22.5°	25°	27.5°	30°	35°	40°	45° to 75°	85°
600 x 300	-	-	-	-	100	90	80	70	-
500 x 300	-	130	120	110	100	90	80	70	-
500 x 250	-	-	-	110	100	90	80	70	65
460 x 225	-	-	-	-	100	90	80	70	65
400 x 250	-	-	-	-	100	90	80	70	65
400 x 200	-	-	-	-	100	90	80	70	65
350 x 250	-	-	-	-	100	90	80	70	65
350 x 200	-	-	-	-	100	90	80	70	65
300 x 200	-	-	-	-	100	90	80	70	65

(Based on BS5534: 2003 - All headlaps have been rounded up to the nearest 5 mm)

WIND LOADS AND WEATHER RESISTANCE

Slates fixed in accordance with the details given in this guide will have adequate resistance to wind loads, wind uplift and rain penetration under most conditions. The tables above give minimum recommended laps according to exposure, roof pitch and slate size. Detailed guidance on wind load calculations is given in BS5534: 2003 and BS6399, Part 2: 1997 and Part 3: 1998.

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BATTENING AND HOLING GAUGES

	Battening m batten Holing			Battening m batten Holing			Battening m batten Holing			Battening m batten Holing		
	Gauge mm	Per m ²	Gauge mm	Gauge mm	Per m ²	Gauge mm	Gauge mm	Per m ²	Gauge mm	Gauge mm	Per m ²	Gauge mm
Headlap	50 mm			65 mm			75 mm			80 mm		
Slate length mm												
600	275	3.64	340	268	3.74	348	263	3.81	353	260	3.85	355
500	225	4.44	290	218	4.60	298	213	4.71	303	210	4.76	305
450	205	5.00	270	198	5.19	278	193	5.33	283	190	5.41	285
400	175	5.71	240	168	5.97	248	163	6.15	253	160	6.25	255
350	150	6.67	215	143	7.02	223	138	7.27	228	135	7.41	230
300	125	8.00	190	118	8.51	198	113	8.89	203	110	9.09	205
Headlap	85 mm			90 mm			95 mm			100 mm		
Slate length mm												
600	258	3.88	358	255	3.92	360	253	3.96	363	250	4.00	365
500	208	4.82	308	205	4.88	310	203	4.94	313	200	5.00	315
450	188	5.48	288	185	5.56	290	183	5.63	293	180	5.71	295
400	158	6.35	258	155	6.45	260	153	6.56	263	150	6.67	265
350	133	7.55	233	130	7.69	235	128	7.84	238	125	8.00	240
300	108	9.30	208	105	9.52	210	103	9.76	213	100	10.00	215
Headlap	105 mm			110 mm			115 mm			120 mm		
Slate length mm												
600	248	4.04	368	245	4.08	370	243	4.12	373	240	4.17	375
500	198	5.06	318	195	5.13	320	193	5.19	323	190	5.26	325
450	178	5.80	298	175	5.88	300	173	5.97	303	170	6.06	305
400	148	6.78	268	145	6.90	270	143	7.02	273	140	7.14	275
350	123	8.16	243	120	8.33	245	118	8.51	248			
300												
Headlap	125 mm			130 mm			135 mm			140 mm		
Slate length mm												
600	238	4.21	378	235	4.26	380	233	4.30	383	230	4.35	385
500	188	5.33	328	185	5.41	330	183	5.48	333	180	5.56	335
450	168	6.15	308	165	6.25	310	163	6.35	313	160	6.45	315
400	138	7.27	278	135	7.41	280						
350												
300												
Headlap	145 mm			150 mm			155 mm					
Slate length mm												
600	228	4.40	388	225	4.44	390	223	4.49	393			
500	178	5.63	338	175	5.71	340	173	5.80	343			
450	158	6.56	318	155	6.67	320						
400												
350												
300												

BREATHABLE UNDERLAY MEMBRANES

EBP Ventia Breathable Membranes are three layered polypropylene laminate composites for use in cold non-ventilated pitched roofs, cold ventilated roofs, warm non-ventilated roofs and timber-frame constructions.

Mass per unit area is 95 gsm for EBP Ventia Base and 120 gsm for Ensor Ventia Iron, both of which are available in roll sizes 50 x 1 metre and 50 x 1.5 metres.

Own branding is available: details on request.



NOMINAL CHARACTERISTICS

Characteristic (unit)	Ventia Breathable Membranes	
	Ventia Base	Ventia Iron
Thickness (mm)	0.4	0.55
Mass per unit area (g·m ⁻²)	95	120
Roll length (m) ⁽¹⁾	50	50
Roll width (m) ⁽¹⁾	1.5	1.5
Colour upper lower	Various Various	Various Various
Tensile strength [N·(50 mm) ⁻¹] longitudinal transverse	210 105	280 160
Elongation (%) longitudinal transverse	65 90	65 135
Tear resistance (N) longitudinal transverse	75 90	120 135
Resistance to penetration of air [m ³ (m ² .h.50 Pa) ⁻¹] 0.045 0.050 0.040	0.045	0.050
Watertightness unaged aged ⁽²⁾	W1 W1	W1 W1
Water vapour transmission (S _d) (m)	0.020	0.020

(1) Other lengths, widths and colours are available.
(2) Aged in accordance with BS EN 13859-2 : 2010, Annex C.

VENTIA INSTALLATION GUIDE

- 1** Ventia breathable membranes are intended for installing on pitched roofs in a direct contact with thermal insulation layer. Additionally, some of Ventia membranes can be installed on roof board sheathing (in case of pitched roof only). Ventia membranes should be installed with the printed side up. Only such way of installation ensures proper durability and functionality of membrane.
- 2** It's recommended to install membrane horizontally. Installing membrane vertically to the eaves (and along the rafters) is also possible but it can be met mainly on roofs with metal sheathing and in case of renovation works. Such a way of installing requires sealing overlapping membrane with Ventia reparation tape.
- 3** Installation of Ventia membranes should begin at the eaves by unrolling the first row of membrane across the roof parallel with the eaves. The subsequent rows should be installed above the underlying ones, lapping them by the amount indicated further in this instruction. Regardless of whether the membrane is dressed into the gutter or beneath it, the edge of the membrane should be installed over the eaves flashing (for example an eaves strip) and sealed with butyl glue to prevent wind from blowing beneath membrane and thus causing possible damage. It's necessary to install membrane in such a way that it's protected from UV rays.
- 4** Ventia membranes should be unrolled slightly taut and fixed to the rafters with staples, using a tacker for the purpose. To ensure a complete tightness of the fixing, it's recommended to use Ventia reparation tape to cover the staples. This eliminates the risk of capillary action at the points of fixing.

On roofs with board sheathing, if there is a need for additional fixing beyond the line of counter battens, staples should be used in the overlap area in such a way that the upper row of the membrane covers the lower one. Or a reparation tape can be used to cover the fixing.

Regardless of whether membrane is installed on rafters or on roof boards it's recommended to use roofing staples with special caps.

In case that in one row two rolls of membrane have to be joined, they should be joined with a sealing tape and it is also advised to overlap the joint so that it is situated in the middle of the overlap and thus covered with membrane from both upper and lower side.
- 5** Regardless of the type of the roof, Ventia membranes should be installed in such a way that the upper run of membrane overlaps the lower run by at least 150 mm.
- 6** Counter battens (and also battens, if necessary) should be installed successively with laying the subsequent runs of membrane. Counter battens provide a channel for water and moisture drainage. They also seal the staples fixing membrane to the rafters, reducing the risk of water penetration of fixings.
- 7** Due to the their diffusive parameters Ventia membranes can be used for sealing the ridge and hips of the roof. In order to do that, the membrane from one elevation should overlap the other by at least 200 mm and be fixed to the rafters.
- 8** In roof valleys rows of membrane should be extended to the neighbouring elevation overlapping it by at least 250 mm. Additionally, the installation of the membrane should start with laying a strip of membrane at least 500 mm wide along the axis of the valley, from the top of the roof to the bottom in order to increase the water tightness of the valley area. The overlaps should be sealed with reparation tape to increase the tightness of the joints.
- 9 to 10** While joining membrane with walls rising above the roof surface it's necessary to extend the membrane onto the vertical surface of the wall and join them using butyl glue.

Additionally, just as in a valley, it's worth starting by laying the first strip of the membrane along the fall line, with the membrane overlapping the wall by 150 mm.

The flashing of the main sheathing (e.g. roof tiles) should cover the membrane folded up onto the wall completely, protecting it from UV rays.
- 11** At the spots where ventilation channels, aerial cables or other small size installations penetrate the roof structure and thus the Ventia membrane, a star-shaped cut should be made in the membrane. It should be as small as possible, fitting the penetrating part tightly. The star-cut membrane should be folded up onto the penetrating part and sealed with reparation tape.
- 12** Around the ventilation chimneys membrane should be cut along the diagonal lines and folded up. The excessive parts of membrane (over 150 mm) can be



cut out, the rest will form an overlap that should be fixed to the chimney with a butyl glue tape. The joint should be as watertight as possible. Additionally, the joint should be covered with a reparation tape to increase watertightness. In case of exhaust fume chimneys the possibility of lapping the membrane over the chimney may depend on the local laws of the country.

13 In order to provide additional protection a kind of gutter made of a strip of membrane should be formed above the chimney wall. Its upper part should be fixed to the rafters beneath the overlapping row of the membrane installed above the chimney. The bottom part should be extended over the battens that should be cut through and moved to the sides, profiling the gutter in such a way that the channel for water drainage is led beyond the nearest counter batten and thus is directed away from the chimney area.

14 Around roof windows and escape roof windows membrane should be laid identically as around chimneys and fixed to the window frame. Additionally at the sides of the window frame additional strips of membrane should be laid overlapping the previously installed membrane. The bottom strip should be led beyond the nearest batten, and next, additional strips should be laid vertically, along the descending surface of the roof. And finally an upper strip should be installed as described in the part concerning chimney flashing. The upper strips should overlap the bottom strips. It's also recommended to seal the joints with a reparation tape.

15 A direct contact of the membrane with wood preservatives must be avoided, as they may have a negative effect on the technical and functional parameters of membrane or even cause its partial destruction. In practice it means that membrane cannot be installed on freshly preserved or damp wooden parts of the roof structure (e.g. rafters or boards).

16 Membrane must be protected from such substances as oil, grease or petrol, and also from the contact with hot metal fillings. All these things, if their direct contact with membrane is allowed, can destroy its structure, causing irreversible or even complete loss of membrane's crucial technical and functional parameters.

17 Ventia membranes have an adequate resistance to UV rays, and can be exposed to sunlight for up to 3 months, which means that the installation of the roof's main sheathing must be finished within 3 months after starting the installation of the membrane. Nonetheless, it is recommended that the membrane exposure to UV rays is as short as possible, because avoiding UV rays ensures the long lastingness of the membrane, and longer exposure can lead to the destruction of the membrane due to the destructive influence of the UV rays. It must also be remembered that there is a necessity to cover also these membrane surfaces that are exposed to the reflected UV rays, so such that operates on the membrane not covered from beneath.



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