

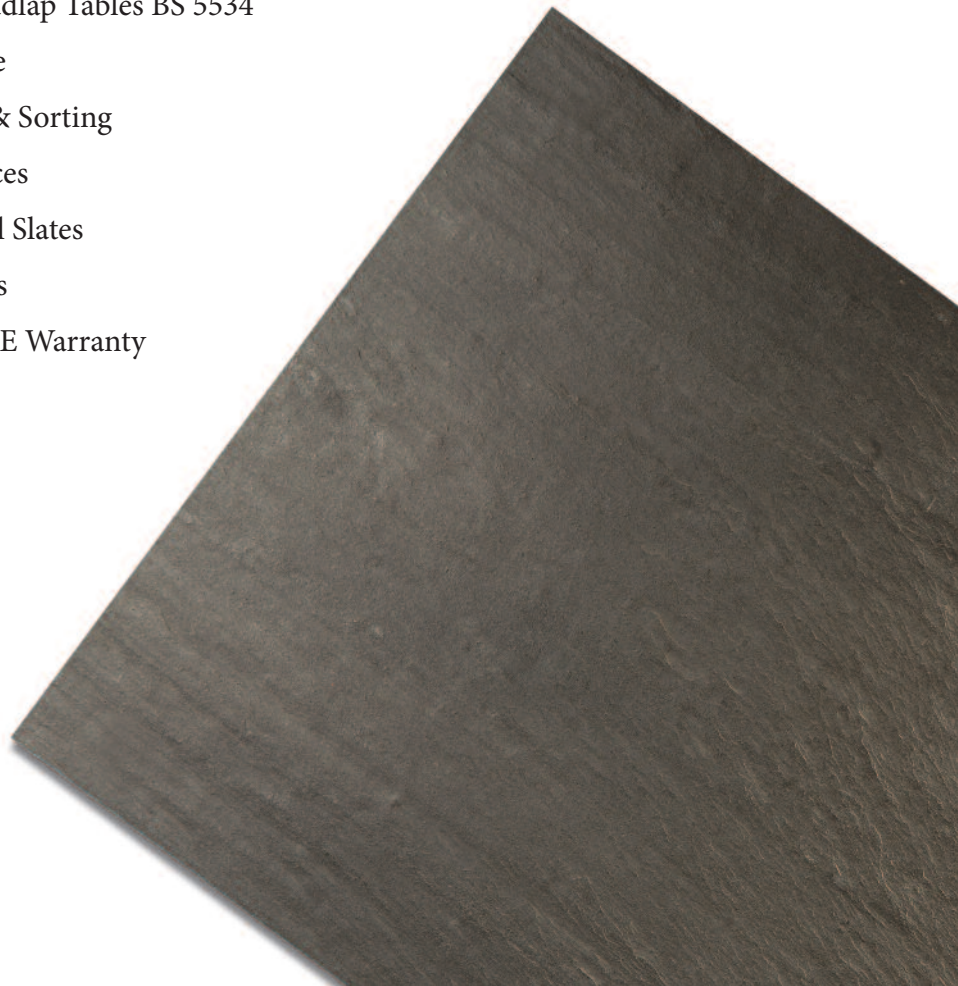
SIGA NATURAL SLATE | A GUIDE

SIGA
Natural Slate



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SIG Roofing | SIGA Natural Slate

Introducing SIG Roofing

As the largest distributor of natural slate in the world, the SIG Group supports Europe's largest markets, including the UK, Ireland, France and Germany.

SIG Roofing, a subsidiary of SIG plc, sells over 21 million slates a year across the UK from a range, largely sourced directly from the quarries.

Quality is at the forefront of everything we do, so we work closely with our producers to ensure that we supply slate that not only meets your performance criteria, but also meets your aesthetic requirements within budget. We know from our extensive experience that no two projects are alike, so we ensure that every slate is carefully selected to match your roofing requirements and geographical area.

Introduction to SIGA Natural Slate

As the largest supplier of Natural Slate in the world, we have built an enviable reputation for quality and consistency.

Since our inception in 2005, SIGA Slate has sought to bring simplicity to the market through the clarity, consistency and efficiency of our products and services. We have been able to build long-lasting relationships with our customers thanks to the transparency we offer through test certificates for contractors and architects.

SIGA Slate carefully manages every single step of the journey, from the quarry to the roof. This monitoring and careful selection ensures that your slate roof is not only aesthetically beautiful and strong, but that you also have consistency and traceability that's second to none. SIGA Slate stands for quality. The way we ensure Natural Slate quality is through an in-depth knowledge of our quarries. We have built especially close partnerships with our quarries in Spain, where our onsite, full-time quality control teams are all working together to make sure your slate is the best it can be. By choosing SIGA, you're choosing to work with people who have immense pride in, and in-depth knowledge of Natural Slate for roofing.

Warranty Overview:

SIGA slates, and the quarries that produce them, have been carefully selected by experienced specialists to satisfy our customer's roofing requirements. Because of the traceability we rigorously enforce, SIG Roofing is able to provide a product replacement warranty directly to the end-user; giving the peace of mind you would expect with a leading UK-based distributor. The warranty is in addition to, and does not affect, your statutory rights. Full terms and conditions of the warranty are available on request.



Why use Natural Slate?

The real attraction of a slate roof is its strength, fire resistance, energy efficiency durability. Natural slate can last a lifetime - often with little or no maintenance. Natural slate is one of the cleanest and most environmentally friendly materials available and has the lowest carbon footprint of any pitched roof covering.

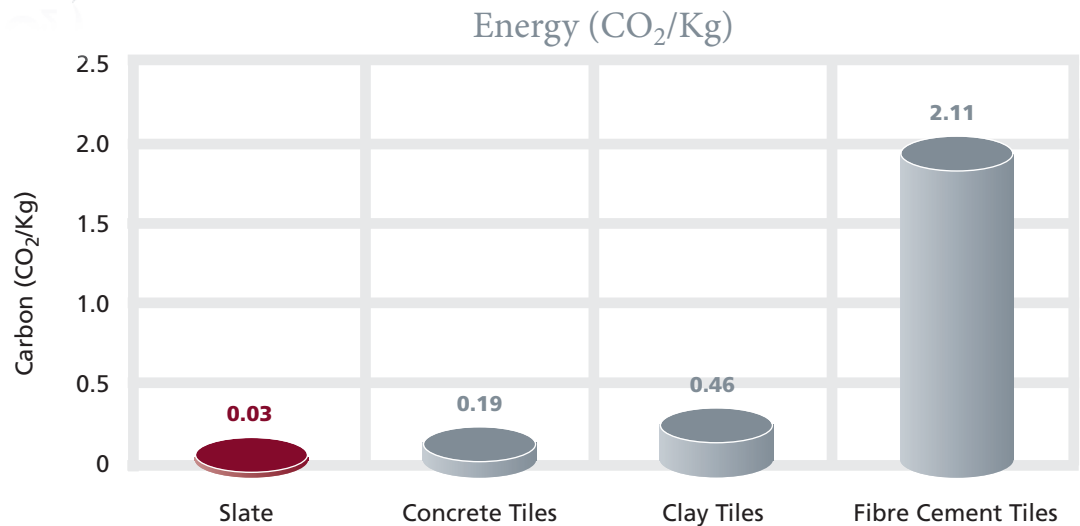
The tables below highlight how much lower natural slate is in terms of environmental impact compared to other roofing materials.

Environmental considerations

Climate Change

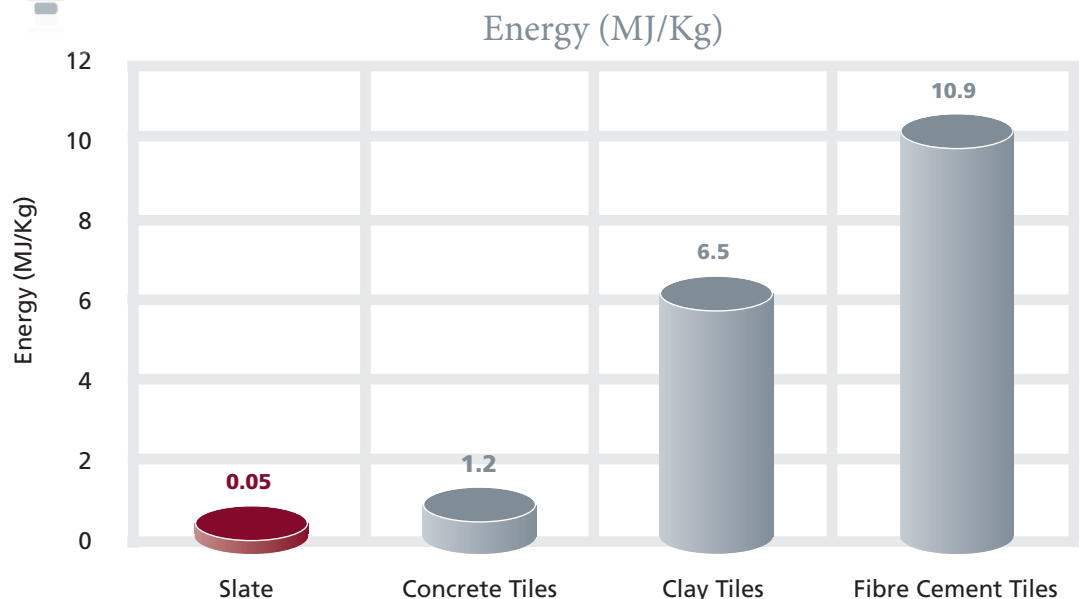


A slate roof (100m²) impacts the environment almost three times less than a fibre cement roof.



Fossil Fuel Depletion

A fibre cement roof (100m²) needs almost two times more energy than a slate roof.



Reference:

Inventory of Carbon and Energy, University of Bath, 2006

BS EN12326 & CE Marking

BS EN12326:2014

This standard is designed to enable specifiers / purchasers to compare the key physical properties of natural slates to ensure the best fit for the project. A broad range of attributes are tested, but the three most critical areas are: **Thermal Cycle, Sulphur Dioxide Exposure and Water Absorption.**

Thermal Cycle

Essentially, this process assesses the levels of rust or oxidation within the slate. The test involves repeatedly soaking six pieces of slate in water and then drying them out over a period of up to three weeks. The samples are then inspected for corrosion. The results are classified as follows:

Code	Observation in the test	Conformity to the standard
T1	No changes in appearance. Surface oxidation of metallic minerals. Colour changes that neither affect the structure nor form runs of discolouration.	Acceptable
T2	Oxidation or appearance changes of the metallic inclusions with runs of discolouration but without structural changes.	Acceptable
T3	Oxidation or appearance changes of metallic minerals which penetrate the slate and risk the formation of holes.	Not suitable

All SIGA slates have been independently tested to T1 standard.

Sulphur Dioxide Exposure

This test examines the ability of the slate to resist atmospheric pollutants. The slate samples are placed in a hermetically sealed container for up to three weeks and subjected to extreme acidic and humid atmospheric conditions. These samples are then subjected to a standardised mechanical scraping test to measure any softness caused by the chemical disintegration of any carbonate content. Slates with a carbonate content of <5% have their results showing as S1 (no change), S2 (the slate must be split at least 5% thicker), or S3 (slates must be at least 8mm). Slates containing more than 20% carbonate content are not suitable for roofing or external cladding.

All SIGA slates have been independently tested to S1 standard.

Water Absorption

Excessive water absorption will result in natural slate being vulnerable to frost damage. If the slate absorbs $\leq 0.6\%$ or less of its mass in water, it is classified as W1 ($\leq 0.6\%$), the highest grade, and needs no further testing. If the absorption is greater than 0.6% it is classified as W1 (>0.6%) and must be subjected to a separate freeze-thaw test, showing no deterioration in mechanical strength.

All SIGA slates have been independently tested to W1 ($\leq 0.6\%$), standard.

CE Marking

Under the Construction Products Regulation, any organisation that produces, imports, or sells natural slate must ensure that CE Marking and certification are sought and displayed.

BS EN12326-1: 2014 is the harmonised EU standard governing Natural Slate and Stone for Discontinuous Roofing and Cladding. All slates, irrespective of their origin, should be tested to the criteria laid down in the standard, and thus have a set of test results and carry the CE mark.

UK Building Regulations have been amended to ensure that only CE marked products are used in cases where a directive exists. Local Authority Building Control Department enforce these regulations, so we recommend that you ensure that any natural slate you specify carries the CE mark, and your supplier provides a set of test results.



Purchasers and installers of Natural Roofing Slate can check whether the slates they have purchased, or are using, have been tested to BS EN12326-1:2014 by looking for the CE marking on any labels within the packaging, and/or any documentation accompanying the slates, such as delivery notes or invoices.

Please note that CE marking does not indicate the quality of a slate – but that it has been tested to BS EN12326:2014.

Summary:

- All SIGA slates are tested to BS EN12326: 2014 and test results are readily available.
- All SIGA slates carry the CE mark.
- Every crate of SIGA slates is marked with EN test results.
- Most SIGA slates are classified as T1 for minimal surface corrosion.
- All SIGA slates are classified as S1 for strength after corrosive environment exposure.

- All SIGA slates are classified as W1 ($\leq 0,6\%$), for water absorption.
- In response to problems caused by poor quality slates on new homes, the NHBC now require that all slates used on NHBC-covered projects are A1, T1, W1($\leq 0,6\%$), according to BS EN12326, and that valid Declaration of Performance, Accompanying Commercial Document, and CE label are provided. The SIGA range includes a wide variety of W1($\leq 0,6\%$), T1, S1 slates to suit local requirements.



Declarations of Performance

In addition, the BS EN12326-1:2014 standard makes reference to 'Accompanying Commercial Documents', which are a comprehensive summary of the test results. These are updated regularly as new test results are published. All SIGA Declarations of Performance are available upon request from SIG Roofing branches, and from our website www.sigaslate.co.uk

Slate Quarrying & the Manufacturing Process



The Slate Deposit

The extraction of natural slate from the mountain or mine is an expensive operation requiring considerable investment. The site for the quarry is selected after careful analysis of the geological and geotechnical studies that are carried out to ensure the slate is of the right quality and that there are plenty of slate reserves in the vein.

Where necessary, the overburden is removed. This can be millions of tonnes of vegetation, soil and loose rock which sit above the slate deposit, requiring heavy investment in time & materials. Extracting good complete blocks is the goal of any slate quarry.



Extracting the Slate

The slate is carefully extracted using a diamond coated wire saw to obtain large blocks of slate. The saw requires a vertical hole to be made in the slate bank and a corresponding horizontal hole so that the diamond saw can be threaded through, a precise process. The saw then takes several hours to cut the block free from the mountain and is water cooled throughout this process. These large blocks are then split into transportable pieces and carried to the factory.

Factory processing

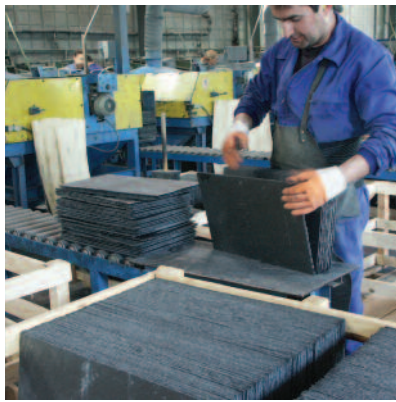
These pieces are then cut into smaller blocks using laser-guided diamond saws. The saw operator's job is challenging- they have to balance the need to produce the maximum yield per piece against the actual orders the quarry may have. Water is used here to cool the saw which reduces dust from the splitting process. The water is recycled and purified to minimise wastage of this important resource.





Forming the slate

Craftsmen then split these blocks into the final slate sizes and thicknesses required. This is a highly skilled task and a good craftsman ensures the highest possible yield from the block. The block is split in half to test the way it splits, and then worked down to quarters, eighths and so on, until they reach the desired thickness. The slate reaches this stage with a sawn edge. To give the slates the traditional, and aesthetically pleasing dressed edge, the slates are then put through a dressing machine and holed at the same time.

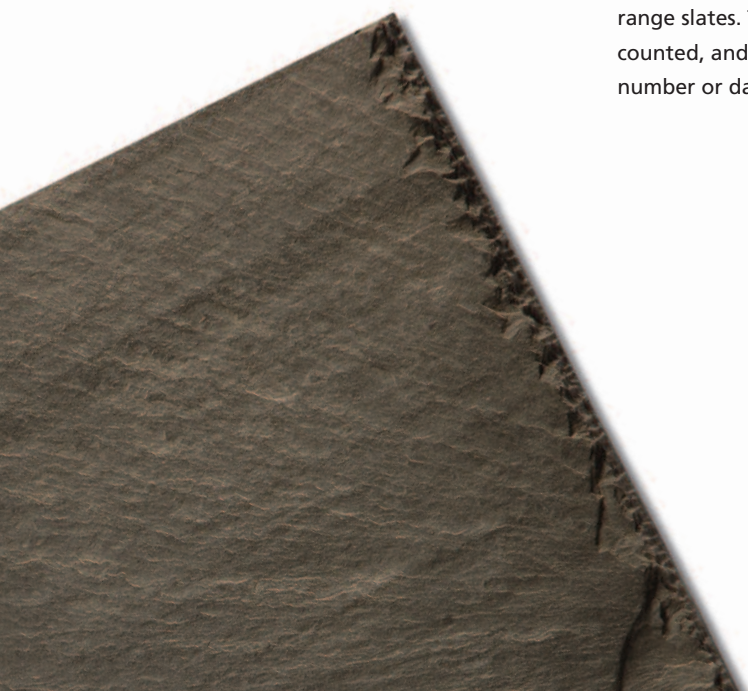


Grading and Selection

From the user's perspective, selection is the single most important aspect of slate production- and it is entirely manual. Slates are manually sorted and graded for quality. SIGA slate provides transparency and ease of purchase through its grading system of qualities from the very best Excellence Range slates through to the Specification and Commercial ranges to the Classic range slates. They are then packed, counted, and labelled with the batch number or date.

Environmental

European quarries have to obey very strict environmental obligations which are regulated and overseen by government agencies and environmental groups. The manufacturing of slate requires no chemicals and is a purely mechanical process. The only waste product is water used in the various processes which is purified and recycled. Once the slate seam has been exhausted, the landscape is returned to its original form through hydro-seeding native plants, making natural slate one of the most environmentally friendly pitched roof coverings available.





Slate Selection & Wastage Rates

Every quarry grades their slates into 'selection' during the production process. As there is no European or industry benchmark, there is little or no consistency across the market defining what makes a particular grade. Every quarry will aim to produce the highest possible proportion of best quality slates, with the lower grade slates more keenly priced. However it is important to note that any potential savings made from using lower grade slates may be offset by increased time and labour charges involved in additional sorting and grading.

To ensure you have greater transparency when selecting natural slate, all SIGA slates are categorised into 'Excellence', 'Specification', 'Commercial' and 'Classic'.

Depending on the quarry (and even the seam of rock in that quarry), the selection process usually results in a mixture of the following grades:

Excellence

The finest selections from the best quarries.

Specification

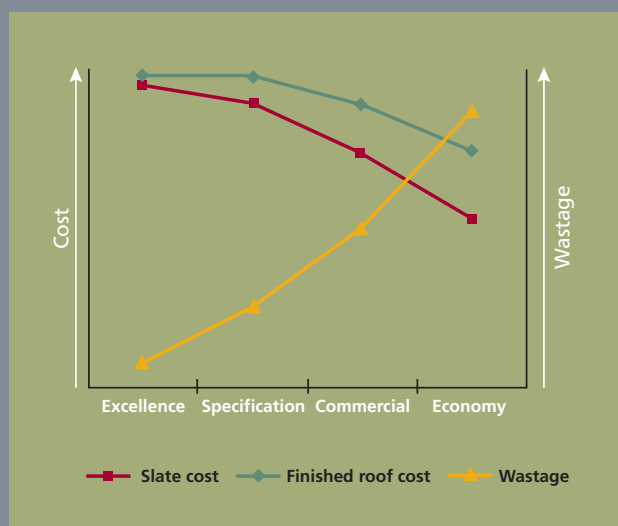
A broad range of high quality first selection slates.

Commercial

Trusted quality and workable slates suited to the experienced installer.

Classic

Affordable slates of good overall quality.



Note: all natural slates must be sorted prior to installation in accordance with BS 8000-6: 2013. When deciding on the most appropriate slate we recommend that you consider all of the costs associated. These include wastage rates, grading, sorting and trimming required with the lesser quality slates along with transportation costs needed for distribution.



Excellence Range



The finest SIGA Slates from the most reputable quarries are selected to provide a long-lasting, beautiful roof with minimal grading & sorting. The Excellence range also provides a readily-available alternative to long-discontinued domestic British slates, with a close match for texture and colour, without the slightest compromise on quality.

The finest selections from the very best quarries, the SIGA Excellence range offers:

- Superlative quality stone
- Exceptional selection with very low wastage
- Extended warranties and long life expectancy



Specification Range



A selection of high-quality first-selection slates, covering a broad range of colours and textures to fulfil almost any specification desired. The Specification range is carefully tailored to each part of the UK, and regional favourites are stocked in depth for rapid availability and service.

SIGA Specification slates are a popular choice with homeowners, self-builders and developers, due to their consistency, quality, smooth roof finish, and market-leading warranties. All Specification slates are W1($\leq 0,6\%$), T1, S1 to comply with NHBC requirements.



Commercial Range

A range of affordable slates of good quality, ideal for New Build projects, refurbishment & the volume developer market. These are recommended for more experienced slaters, as thickness and quality can be more variable than the Specification range, so careful sorting and grading is strongly recommended for the best aesthetics.

All Commercial slates are W1($\leq 0,6\%$), T1 S1 to comply with NHBC requirements. Wastage, while still very reasonable, is generally a little higher than the Excellence or Specification ranges.





Classic Range

Classic slates require more sorting and grading in order to produce a good roof finish making them ideal for budget conscious projects.

All SIGA Classic slates must meet the same strict testing and certification criteria as the higher grades. The rock used in the Classic range can be the same as the higher ranges, the difference is the selection which can result in slates exhibiting more variation in appearance.



Quality Control & Design Considerations

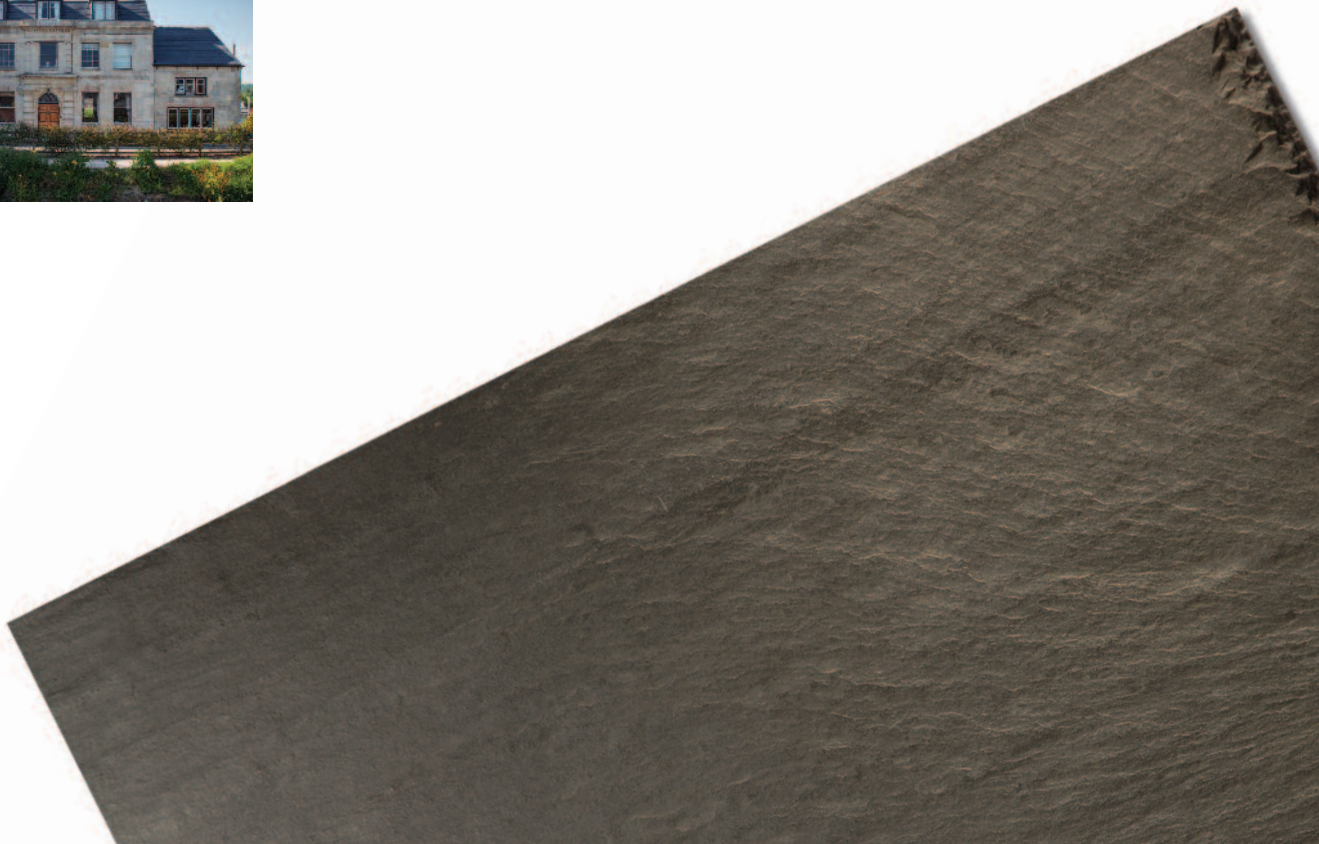
In order to further cement our commitment to provide quality natural slate, we launched our 'Slate Operations Centre', SIG Pizarras in 2007. Through SIG Pizarras, based in the heart of the slate quarrying region in Leon, Spain, we have access to:

- A wide range of slate quarries for all types of slate
- On-site full-time quality control personnel
- Highly experienced slate procurement personnel
- Custom slate sizes, headlaps and selection
- Rapid and efficient logistics

To ensure the effective design of a natural slate roof, it is imperative that key interrelated factors are taken into account including:

- Site exposure
- The pitch of the roof
- The type of slate selected
- The slate lap

General guidance on the most important points to be considered is given below. Further information can be obtained from BS 5534:2014, Code of practice for slating and tiling.



Environmental Conditions

Rain exposure

The degree of exposure of a building to driving rain determines the minimum lap which should be specified.

The anticipated degree of exposure is given in the adjacent image.

Localised factors such as high buildings, buildings on the slopes or tops of hills and coastal sites, can increase the exposure grading which should be applied in a specific project.

The table on page 21 shows the minimum recommended headlap for moderate and severe exposure sites.

Pitch of roof

In general, the lower the pitch of the roof, the greater should be the lap.

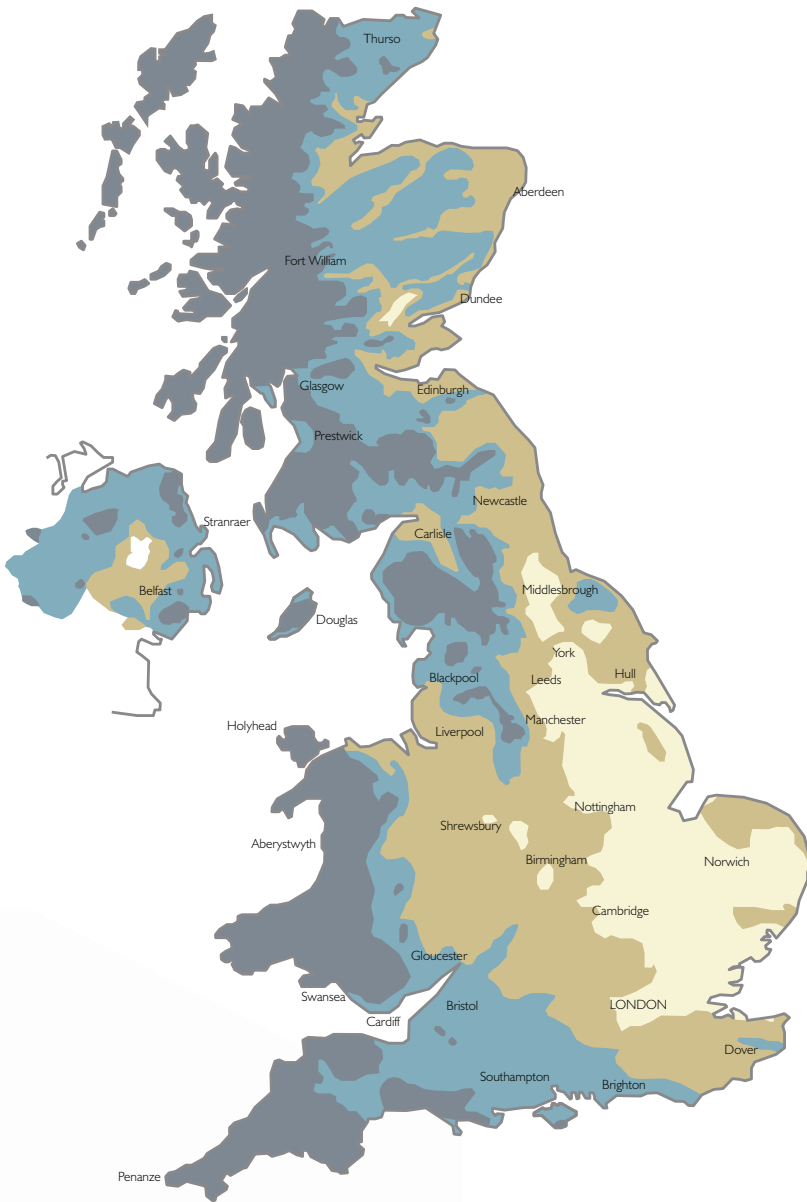
This longer lap will help to resist both capillary action and wind uplift.

On steeper pitches with free-flowing drainage, smaller slates may be used.

For exposed sites, wide slates with a greater lap should be used, whereas in sheltered areas, roof pitches as low as 20 degrees can be achieved.

Lap

The lap is calculated by taking account of wind uplift, exposure to driving rain and the roof pitch. The table on page 21 gives the recommended minimum laps for various roof pitches and building exposures.



This map shows the annual driving rain index. Exposure gradings and local knowledge should be referred to when discussing design requirements.

For further information, please contact us direct.

Exposure zones	Approximate wind-driven rain* (litres/m ² per spell)
1. Sheltered	less than 33
2. Moderate	33 less than 56.5
3. Severe	56.5 to less than 100
4. Very severe	100 or more

* Maximum wall spell index derived from BS8104

Fixings & Headlap Tables BS 5534

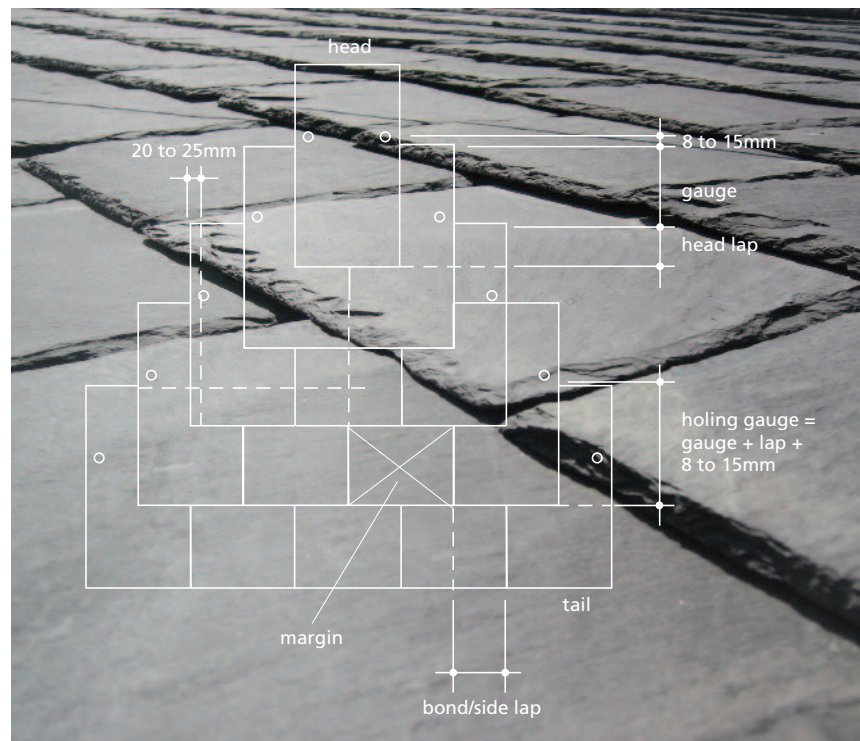
BS 5534:2014 is the Code of Practice for Slating and Tiling and describes not only the means of installing slates (nailing or hook fixing), but also the 'headlaps' required to ensure that the roof remains watertight even at pitches as low as 20 degrees.

The most commonly used slate size in Britain is 500 x 250mm, and 400 x 250mm in Scotland. Most stock slates will be pre-holed at 75, 90 or 100mm, allowing you the versatility of different pitches - 25 degrees in moderate exposure zones and 30 degrees in severe exposure zones.

We can pre-hole any headlap to special order. While this does not normally attract a price premium, any bespoke products must be ordered in advance to ensure timely delivery for specific projects.

Terminology

The above diagram gives a brief explanation of the terms that are commonly used throughout the roofing industry. They are by no means comprehensive and the terms may vary in different parts of the country. We suggest that further reference is made to BS 6100 Building & Civil Engineering Terms.




Notes from BS 5534:2014

1. The Minimum Roof Pitch for Natural Slates: 20 degrees (BS 5534:2014 Page 45) Depending on Size of Slate See Table Above (BS 5534:2014 Page 45, Table 9).
2. Slates 450mm Long or Less Should Not Be Used at Pitches Of 27.5 Degrees or Less (Moderate & Severe Exposure) (BS 5534:2014 Page 45).
3. Slates less than or equal to 460mm long or greater than 450mm long should not be used at pitches of 25 degrees or less in Severe Exposure (BS 5534:2014 Page 45).
4. Slates less than or equal to 500mm long or greater than 460mm long should not be used at pitches less than 25 degrees in Severe Exposure (BS 5534:2014 Page 45).
5. Generally, the recommendations given on the headlap tables should be followed for rafter lengths of not more than 9m in driving rain exposures of less than 56 L/m² per spell and 6m in driving rain exposures of 56 L/m² per spell or greater (BS 5534:2014 section 5.5.4).
6. Where abnormal weather conditions might be expected, e.g. on elevated sites, near to the coast, in localities where heavy snow falls are commonly experienced or in conditions of severe exposure, the following recommendations for pitches and laps will not always ensure full protection from the weather. In such conditions, the specifier using generic products should seek guidance from a competent person who is conversant with local conditions and any special precautions that should be taken into account in designing the roof covering (BS 5534:2014 section 5.5.1)

Recommended Headlaps Table

 Less than 56.5 l/m² per spell

Slate Size mm	Roof Pitch								
	20°	22.5°	25°	27.5°	30°	35°	40°	45° to 75°	85°
600 x 300			91	83	77	67	60	54	54
550 x 300		101	91	83	77	67	60	54	54
500 x 300	115	101	91	83	77	67	60	54	54
500 x 250			91	83	77	67	60	54	54
450 x 300					77	67	60	54	54
450 x 250					77	67	60	54	54
450 x 220					77	67	60	54	54
400 x 300					77	67	60	54	54
400 x 250					77	67	60	54	54
400 x 200					77	67	60	54	54
350 x 300					77	67	60	54	54
350 x 250					77	67	60	54	54
350 x 200					77	67	60	54	54
300 x 200					77	67	60	54	54
270 x 180						67	60	54	54

 56.5 l/m² or greater per spell

Slate Size mm	Roof Pitch								
	20°	22.5°	25°	27.5°	30°	35°	40°	45° to 75°	85°
600 x 300			**	**	98	86	76	69	69
550 x 300		128	116	106	98	86	76	69	69
500 x 300		128	116	106	98	86	76	69	69
500 x 250			**	**	98	86	76	69	69
450 x 300					98	86	76	69	69
450 x 250					98	86	76	69	69
450 x 220					115	105	100	95	69
400 x 300					98	86	76	69	69
400 x 250					98	86	76	69	69
400 x 200					98	86	76	69	69
350 x 300					98	86	76	69	69
350 x 250					98	86	76	69	69
350 x 200					98	86	76	69	69
300 x 200					98	86	76	69	69
270 x 180						86	76	69	69

These tables give minimum recommended headlaps according to exposure, roof pitch and slate size. Detailed guidance on wind load calculations is given in BS 5534:2014 and BS EN 1991-1-4:2005.

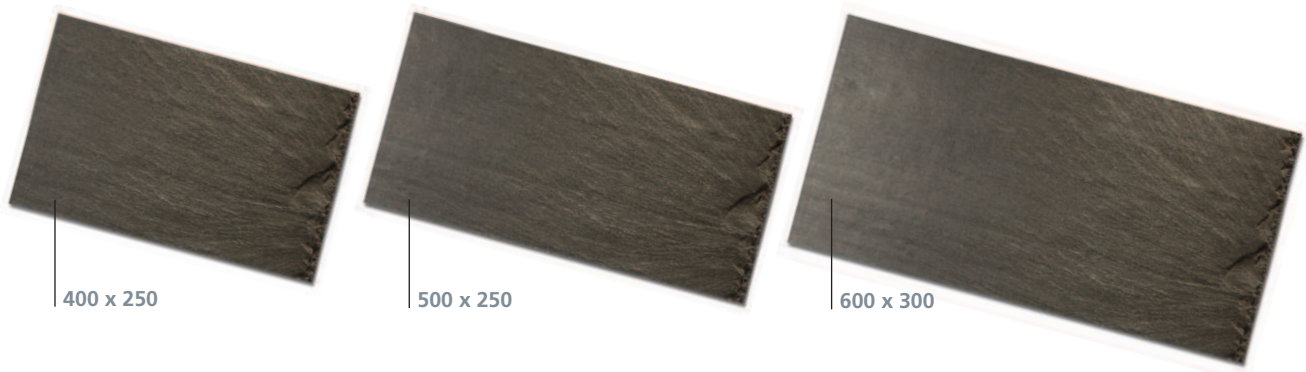
**Refer to BDM or Technical Dept. Specific fixing calculations can be carried-out for projects. For further details please contact us for advice.

Table to be used for buildings with rafter lengths not exceeding 6 metres for severe and very severe exposure and not longer than 9 metres in sheltered or moderate exposed areas. Specifiers should take account of any abnormal conditions such as elevated sites, near to the coast, heavy snowfall areas and the height and design of the building as the calculations for pitches and laps will not always ensure full protection from the weather. In such conditions the specifier should seek advice from a competent person who is conversant with local conditions and special precautions should be taken into account in designing the roof covering. The latest version of these tables will be available at www.sigaslate.co.uk



Batten & Holing Gauges

mm	300	350	400	450	500	550	600	Slate Length
Inches	12	14	16	18	20	22	24	
50mm lap	125	150	175	200	225	250	275	Battening gauge (mm)
	8.00	6.67	5.71	5.00	4.44	4.00	3.64	(M) batten per sq.m
	185	210	235	260	285	310	335	Holing gauge (mm)
55mm lap	123	148	173	198	223	248	273	Battening gauge (mm)
	8.16	6.78	5.80	5.06	4.49	4.04	3.67	(M) batten per sq.m
	188	213	238	263	288	313	338	Holing gauge (mm)
65mm lap	118	143	168	193	218	243	268	Battening gauge (mm)
	8.51	7.02	5.97	5.19	4.60	4.12	3.74	(M) batten per sq.m
	193	218	243	268	293	318	343	Holing gauge (mm)
70mm lap	115	140	165	190	215	240	265	Battening gauge (mm)
	8.70	7.14	6.06	5.26	4.65	4.17	3.77	(M) batten per sq.m
	195	220	245	270	295	320	345	Holing gauge (mm)
75mm lap	113	138	163	188	213	238	263	Battening gauge (mm)
	8.90	7.27	6.15	5.33	4.70	4.22	3.80	(M) batten per sq.m
	197	222	247	272	297	322	347	Holing gauge (mm)
80mm lap	110	135	160	185	210	235	260	Battening gauge (mm)
	9.09	7.41	6.25	5.41	4.76	4.26	3.85	(M) batten per sq.m
	200	225	250	275	300	325	350	Holing gauge (mm)
85mm lap	108	133	158	183	208	233	258	Battening gauge (mm)
	9.30	7.55	6.35	5.48	4.82	4.30	3.88	(M) batten per sq.m
	203	228	253	278	303	328	353	Holing gauge (mm)
90mm lap	105	130	155	180	205	230	255	Battening gauge (mm)
	9.52	7.69	6.45	5.56	4.88	4.35	3.92	(M) batten per sq.m
	205	230	255	280	305	330	355	Holing gauge (mm)
95mm lap	103	128	153	178	203	228	253	Battening gauge (mm)
	9.76	7.84	6.56	5.63	4.94	4.40	3.96	(M) batten per sq.m
	208	233	258	283	308	333	358	Holing gauge (mm)
100mm lap	100	125	150	175	200	225	250	Battening gauge (mm)
	10.00	8.00	6.67	5.71	5.00	4.44	4.00	(M) batten per sq.m
	210	235	260	285	310	335	360	Holing gauge (mm)
105mm lap	-	123	148	173	198	223	248	Battening gauge (mm)
	-	8.16	6.78	5.80	5.06	4.49	4.04	(M) batten per sq.m
	-	238	263	288	313	338	363	Holing gauge (mm)
110mm lap	-	120	145	170	195	220	245	Battening gauge (mm)
	-	8.33	6.90	5.88	5.13	4.55	4.08	(M) batten per sq.m
	-	240	265	290	315	340	365	Holing gauge (mm)
115mm lap	-	118	143	168	193	218	243	Battening gauge (mm)
	-	8.51	7.02	5.97	5.19	4.60	4.12	(M) batten per sq.m
	-	243	268	293	318	343	368	Holing gauge (mm)
120mm lap	-	-	140	165	190	215	240	Battening gauge (mm)
	-	-	7.14	6.06	5.26	4.65	4.17	(M) batten per sq.m
	-	-	270	295	320	345	370	Holing gauge (mm)
125mm lap	-	-	138	163	188	213	238	Battening gauge (mm)
	-	-	7.27	6.15	5.33	4.71	4.21	(M) batten per sq.m
	-	-	273	298	323	348	373	Holing gauge (mm)
130mm lap	-	-	135	160	185	210	235	Battening gauge (mm)
	-	-	7.41	6.25	5.41	4.76	4.26	(M) batten per sq.m
	-	-	275	300	325	350	375	Holing gauge (mm)
150mm lap	-	-	-	150	175	200	225	Battening gauge (mm)
	-	-	-	6.67	5.71	5.00	4.44	(M) batten per sq.m
	-	-	-	310	335	360	385	Holing gauge (mm)



Slate Coverage

Given the multitude of different sizes and headlaps available, and the peculiarities of the production process, the installed cost of any slate can be influenced by the size selected, the quantity of batten and fixings required for that particular slate size. Please contact your SIGA Slate Business Development Manager for further assistance. The most popular slate size in Southern England is 500 x 250mm, and 400 x 250mm in the North of England and Scotland.

Size (Nominal) mm	Lap (mm)																
	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	130	150
600 x 350	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	11.0	11.2	11.3	11.4	11.5	11.6	11.7	12.0	12.5
600 x 300	11.9	12.0	12.1	12.3	12.4	12.5	12.6	12.7	12.9	13.0	13.1	13.2	13.4	13.5	13.7	14.0	14.6
550 x 300	13.1	13.2	13.4	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	15.1	15.2	15.6	16.4
500 x 300	14.6	14.7	14.9	15.1	15.2	15.4	15.6	15.8	16.0	16.2	16.4	16.6	16.8	17.0	17.3	17.7	18.7
500 x 250	17.4	17.6	17.8	18.0	18.2	18.5	18.7	18.9	19.1	19.4	19.6	19.9	20.1	20.4	20.6	21.2	22.4
450 x 300	16.4	16.6	16.8	17.0	17.3	17.5	17.7	18.0	18.2	18.5	18.7	19.0	19.3	19.6	19.9	20.5	21.9
450 x 250	19.6	19.9	20.1	20.4	20.6	20.9	21.2	21.5	21.8	22.1	22.4	22.7	23.1	23.4	23.8	24.5	26.1
400 x 300	18.7	19.0	19.3	19.6	19.9	20.2	20.5	20.8	21.2	21.5	21.9	22.2	22.6	23.0	23.4	24.3	
400 x 250	22.4	22.7	23.1	23.4	23.8	24.1	24.5	24.9	25.3	25.7	26.1	26.6	27.0	27.5	28.0	29.0	
400 x 200	27.9	28.3	28.7	29.1	29.6	30.0	30.5	31.0	31.5	32.0	32.5	33.1	33.6	34.2	34.8	36.1	
350 x 300	21.9	22.2	22.6	23.0	23.4	23.8	24.3	24.7	25.2	25.7	26.2	26.8	27.3				
350 x 250	26.1	26.6	27.0	27.5	28.0	28.5	29.0	29.6	30.2	30.8	31.4	32.0	32.7				
350 x 200	32.5	33.1	33.6	34.2	34.8	35.5	36.1	36.8	37.5	38.3	39.0	39.8	40.7				
300 x 300	26.2	26.8	27.3	27.9	28.5	29.1	29.8	30.5	31.2	32.0							
300 x 250	31.4	32.0	32.7	33.4	34.1	34.9	35.7	36.5	37.3	38.3							
300 x 200	39.0	39.8	40.7	41.5	42.4	43.4	44.3	45.4	46.5	47.6							

Values calculated using nominal sizes and incorporating a 5mm joint gap as per BS 8000: Part 6. We recommend the addition of at least 5% wastage allowance. These figures are for guidance only and dependent on the joint gap allowed.

This table gives a range of sizes for your information.

Other sizes may be available, please contact us for further information.

Slate Storage & Sorting

All natural slates should be sorted and graded in accordance with BS 8000-6:2013. This is most easily done at ground level. Any twisted or bowed slates should be set to one side, and be used first for eaves or top slates. This will result in the best possible roof finish. Not sorting slates, particularly amongst the Commercial and Classic ranges, can compromise the aesthetic appeal of the roof.

Slates should be stored in their pallets wherever possible. Once removed from the crate, they should be stacked on their long edge on two pieces of batten. Each slate should be inspected and separated into three piles:

- Thick slates ideally should be used at the lower roof
- Medium thickness slates used in the middle of the roof
- Thin slates used on the upper roof

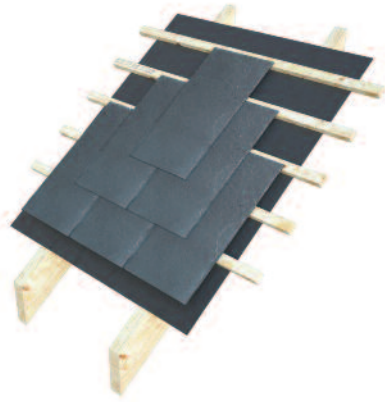


Slating Practices

For a detailed description of the process of roof slating, reference should be made to code of Practice for Slating and Tiling and BS 8000 – part 6, Workmanship on Building Sites.

A short guide to the basic steps are below;

- Slates should be sorted into at least three groups of equal thickness.
- The size of slate, the head lap and hence the holing gauge should be selected to conform to BS 5534. These should be checked to ensure they provide adequate side lap.
- Where required slates should be holed with the thicker end as the tail and from the underside to the topside (as laid) to provide a small counter sink in the face of the slate.
- Fix the underlay as specified.
- Mark out the roof to the correct battening gauge and batten the roof.
- Check the actual width of slates and mark out perpend on battens at correct centres allowing a maximum of 5mm joint gaps between the slates to accommodate variations in the slate width.
- Load out the slates onto the roof so that the thickest slates are in the lowest courses and the thinnest are nearest the ridge.
- The under eaves course should be laid with the dressed edges face down to give the required overhang to the gutter or tilting fillet.
- Slates should be laid with the dressed edge face up. Slates of equal thickness should be laid in any one course, with the thicker slates in the lower courses grading down to the thinner slates in the upper course.
- Fix the slates to perpend lines. In order to maintain adequate laps and allow proper fixing, slates must not be cut too narrow. In general, no slates should be less than 150mm wide, in accordance with BS 5534-2014.
- At all verges and abutments, alternate courses must be started either with half width slates or with slate-and-a-half widths to maintain bond. If the half-slate would be less than 150mm, slate-and-a-half widths must be used.
- At valleys, hips and other places where slates must be cut on the rake, it is essential that slates are of an adequate width to accommodate secure fixings.
- All slating should be mechanically fixed in accordance with BS 5534.



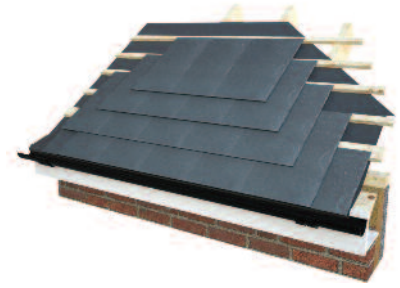
Battening

The most common form of roof construction in England and Wales with open rafters. This shows the position of the battens relative to the slates in the main roof areas.



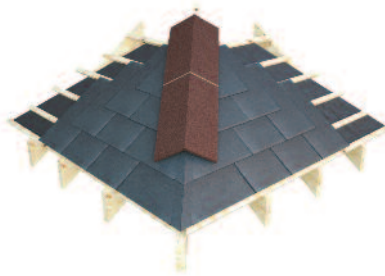
Verges

The use of slate-and-a-half slates is recommended at the verge. Traditional wet bedded verge must ensure the correct mortar mix is used for this application.



Eaves

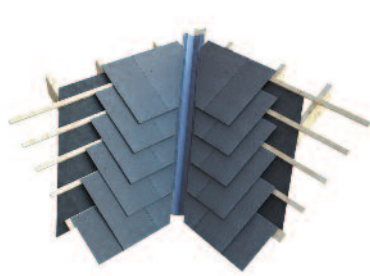
The under eaves slate is laid with the dressed edge face down and projecting into the gutter. The eaves course slate are installed dressed edge face up with the tail aligned to the under eave slate.



Hips

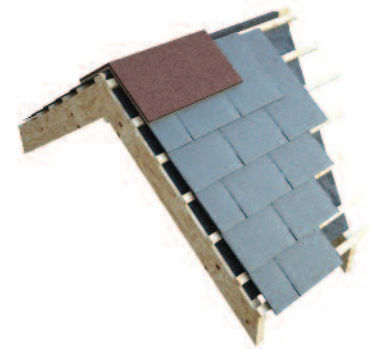
The slates must be cut closely at the hip junction with ridge hip tiles of the correct angle used. Wet bedded hips use hip irons to BS 5534 and mortar of the correct mix along with a mechanical fixing to each ridge.

Dry hip packs are common in new build applications.



Valleys

The use of slate-and-a-half slates is recommended at the valley to ensure secure fixing of the slate.



Ridge

A shorter slate can be used at the ridge to compensate for the gauge and to ensure adequate ridge overlap. Ensure that the minimum headlap is maintained.

Dry ridge packs are common in new build applications.

Fixing Natural Slates

BS 5534 specifies two ways of installing slates: nailing or hook fixing.

These fasteners fix the slates to either batten which is by far the most common English method, or to sarking board, which is commonly used in exposed areas in Scotland.

Fixing:

Fixing SIGA slates is straightforward for an experienced slater. They should be fixed by traditional nailing; further fixing information is provided below – for a comprehensive guide, please refer to BS 5534. Most SIGA slates come preholed at a nominal 90mm headlap. By simply moving the location of the slate on a standard 50x25mm batten, these can be fixed to obtain headlaps between 72 and 116mm, allowing them to be used on a variety of pitches.

Nail fixing:

Nails should be copper or aluminium to BS 1202. In corrosive or marine atmospheres copper nails are preferable and in severe conditions silicone bronze nails should be used. The nail head diameter should be at least 10mm to comply with BS 5534 to minimise the risk of the nail head pulling through the slate. A 10mm head is only possible where the nail shank is 3mm diameter or greater.

Fixing Random Slates:

If you require guidance or a fixing specification for SIGA Random slates, please contact your SIGA Slate Representative for advice.

Hook fixing:

All natural slates can be fixed using slate hooks. The hook method offers considerable freedom in design and can save up to 25% on labour costs and eliminate breakages. With the hook fixing system, the slates are secured at the tail, thus providing strong resistance to wind uplift. To comply with BS 5534, hooks should be stainless steel, 18/10 or 316 (marine) grade, 2.7 mm gauge and at least 5 mm longer than the minimum lap required. Only “spike-end” or nail-in hooks are permissible under BS 5534. In accordance with BS 5534-2014, crimped hooks can be used to a minimum pitch of 25 degrees, straight hooks can be used to a minimum pitch of 30 degrees.



CPD Seminars

In response to the challenges specifiers must overcome, we offer informative free CPD Seminars.



SIGA Natural Slate emphasizes traceability and coverage from the rock face to the roof. Our CPD is designed to equip you with the knowledge to specify good, durable, slate roofs, and to dispel some myths about natural slate. Covering the origin of slate and how it's produced will give you an understanding of the manufacturing process, which directly effects what is available to roofers. We cover the qualities of natural slate, common issues and the key legislation to ensure you make informed buying decisions.

To discuss your requirements with one of our slate specialists, or to book a CPD seminar at your practice, please contact info@sigaslate.co.uk.

SIGA & ONE Warranty

SIGA Natural Slate is proud to form part of SIG Roofing's ONE Warranty – a pitched roof product warranty that supports all the key elements required in the build-up of the roof. The products performance is covered for 15 years under one single package warranty, providing a warranty that's easy to understand and even easier to use.

Products included are coverings such as industry leading SIGA Natural Slate, SIGnature clay roof tiles, along with a range of market leading accessories including; batten, breather membrane, fixings and ridges.

This unique warranty provides a number of valuable benefits to both primary users of the warranty: the contractor and the property owner;

Contractor Benefits

- Cost effective – Take advantage of the most cost effective solution to cover all of the key elements of the roof.
- Value – Provide a value added service to property owners, whilst increasing the desirability of the contractors offering.
- Simplicity – Enjoy one single package warranty and a full service from one company – with an efficient process and reduced administration.
- Peace of mind - Rest assured whilst using quality products and by working with a well-established FTSE 250 company.

Property Owner Benefits

- Simplicity – Enjoy having just one warranty and set of documentation for the key elements of the roof with the single package warranty.
- Ease of use – Be assured that if something was to go wrong there is just one company to deal with for the roof.
- Peace of mind – With confidence in the products supplied and that the roof is covered for 15 years by a warranty that is backed by an established FTSE 250 company.





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