

SIGA

SOURCE:
**San Vicente Region, Spain**

COLOUR:
**Blue Grey**

TEXTURE:
**Textured**

THICKNESS:
**5.5mm**

SIZES AVAILABLE:
**400 x 250mm, 500 x 250mm, 500 x 300mm***

*Other sizes may be available to special order on request: please contact your SIGA representative to discuss your requirements.

# Specification Range | SIGA 39

Product data sheet

## Description

SIGA 39 is an outstandingly successful first selection slate that is flat, uniform and of consistant thickness. It's minimal sorting requirement enables fast paced installation, contributing to its popularity. It's aesthetically pleasing blue grey textured finish, combined with its A1T1S1 rating, makes it the obvious choice for both new build and refurbishment projects, giving a long-lasting beautiful roof finish.

## Testing

Samples of SIGA 39 have been tested in accordance with, and comply with the relevant sections of EN12326-1:2004. The latest declarations of conformity are available upon request.

## Representative Performance

| | |
|---|---|
| Thermal cycling | T1 |
| Exposure $SO_2$ | S1 |
| Water Absorption | A1 |

## Sorting and Holing

Natural slate should be handled with care. Before the slates are fitted they should be sorted and graded (and holed if necessary) as per BS 5534 and BS 8000. The factory selection of the slate used will have an impact on the amount of grading required.

The following processes should be followed to ensure best practice:

- Sort slates into different thicknesses (thick, medium and thin). Thicker slates should be laid at the eaves, thinner slates at the ridge.
- Any slate found to be twisted, bowed etc. should be set to one side and used for eave or top slates, or cut for half slates, valleys or chimneys.
- Roofing slate is always holed from the back, creating a countersunk area on the front, so that any water present near the hole does not have a direct route to the underside of the slate. It also provides a neat spalled area for the nail head to sit in.
- Pre-holed are supplied as standard in the UK. Unholed (blank) slates are also available to special order, and can give peace of mind on very low pitches when used with slate hooks.
- Load out the slates on the roof with the thickest slates in the lowest courses.

Specification Range

SIGA WARRANTIES ARE BACKED BY 75 YEAR WARRANTY SIG ROOFING SUPPLIES GROUP

SIGA warranties are backed by SIG Roofing Supplies Group, the UK's largest distributor of roofing materials. The performance of the slate is warranted for the stated period, subject to installation in accordance with prevailing British Standards and good roofing practice.

Meets the requirements of NHBC

# Technical Specifications

## Fixing

Fixing SIGA 39 slates is straightforward for an experienced slater. They can be fixed by either traditional nailing, or by the modern hook system. 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.

## 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.

Please refer to the SIGA brochure for more details regarding fixing, coverage, batten and holing gauges, headlaps and exposure.

## A guide to the European Standards EN 12326-1:2004

- In July 2004 a European standard for roofing slates was published, BS EN 12326-1:2004 Slate and Stone Products for Discontinuous Roofing. This standard replaces all previous standards throughout Europe including BS 680, the previous standard for roofing slates.
- The standard is established against a series of tests carried out on each product under controlled conditions.
- Any manufacturer claiming conformity with the product specification must carry out the tests relevant to their product and make the results available in a report.
- The report is officially called the ACD (Accompanying Commercial Document) and comprises two parts, both of which must be present for the ACD to be a complete report.
- Part 1 relates to the information about the manufacturer (producer), the slate source and the testing together with the test results.
- Part 2 explains the meaning of the tests and what is required for conformity to the standard.
- The new standards offer different levels of conformity for a given characteristic, (E.g. thickness of the slate) with respect to the rock from which they are made. These relate to different durability acceptable in different countries.
- It is no longer acceptable to specify "Slates which conform to the relevant British Standard" or even slates which conform to BS EN 12326-1. These blanket specifications would allow slates to be supplied at the lowest conformity level within a standard and this could mean that the client receives a sub standard product.
- For detailed information on BS EN 12326, please see the SIGA Slate brochure or contact your SIGA slate representative.

## Design Life

SIGA slates should last the design life of the building and come exclusively from traceable quarries with a history of producing durable roofing slate. SIGA slates have been installed on homes, major projects and prestigious projects for many years. For the latest installations, please see our case studies page at www.sigaslate.co.uk




SIG ROOFING SUPPLIES

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SIGA
Natural Slate

# DECLARATION OF PERFORMANCE
# EN 12326 ROOFING AND CLADDING SLATE
# EC CONSTRUCTION PRODUCTS REGULATION

| | |
|---|---|
| DOP Number | DOP 392013 |
| 1. Unique identification code of the product-type: | **SIGA 39** |
| 2 Type, batch or serial number or any other element allowing identification of the construction product as required | **300x200-600x450 Villarmartin de Valdeorras, Orense, Spain** |
| 3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer: | Slate for discontinuous Roofing and Cladding |
| 4. Name, registered trade name or registered trade mark and contact address of the manufacturer | **SIG Roofing Supplies, Harding Way, St Ives, Cambs.** |
| 5. Where applicable, name and contact address of the authorised representative. | NA |
| 6. System or systems of assessment and verification of constancy of performance of the construction product | AVCP System 4 |
| 7. In case of the declaration of performance concerning a construction product covered by a harmonised standard: | The manufacturer has carried out both:<br><br>a) determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product;<br><br>b) factory production control in accordance with EN 12326-1 and EN12326-2 |
| 8. In case of the declaration of performance concerning a construction product covered by a European Technical Assessment: | N/A |

9. Declared Performance

| Essential Characteristic For pitched Roof Coverings | Performance | | | | Harmonised Technical Specification |
|---|---|---|---|---|---|
| Mechanical resistance | Mean failure load: | | | | EN12326-2:2000 |
| | Transverse: **489N** | Longitudinal: **587N** | | | |
| | Characteristic MOR: | | | | |
| | Transverse: **51MPa** | Longitudinal: **57MPa** | | | |
| External fire performance | Deemed to satisfy | | | | (EC Decision 2000/553/EC) |
| Reaction to fire | Deemed to satisfy Class A1 | | | | (EC Decision 96/603/EC, as amended) |
| Water permeability | **A1 (0.25%)** | | | | EN12326-2:2000 |
| Dimensional variation: Slate type. | Very Smooth | Smooth | Normal | Textured | EN12326-2:2000 |
| Deviation from flatness: | | <1.0% | | | |
| Nominal thickness and variation: | | **5.5mm** | | | |
| Deviation from declared width: | **< +-5mm** | | | | |
| Deviation from declared length: | **< +-5mm** | | | | |
| Deviation from straightness of edges: | **<5mm or 1%** | | | | |
| Deviation from rectangularity: | **<+-1 %** | | | | |
| Durability: Water Absorption: | **A1 (0.22%)** | | | | EN12326-2:2000 |
| Freeze thaw: | **Not required** | | | | |
| Thermal cyclic test: | **T1** | | | | |
| Carbonate content: | **0.19%** | | | | |
| Sulphur dioxide exposure tests: | **<20%** | **S1** | | | |
| | **>20%** | Depth of softening **NA** | | | |
| Non-carbonate carbon content: | **0.43%** | | | | |
| Defects: | Free of physical / petrographic features, or damage | | | | |
| Release of dangerous substances | None in conditions of use as roofing or external cladding | | | | EN12326-1 |

10. Declaration

I declare on behalf of the manufacturer in point 4 that the product(s) in points 1 and 2 is in conformity with the declared performance under point 9. This declaration is the sole responsibility of the manufacturer in point 4.

| | |
|---|---|
| Place and date of issue:<br><br>SIG Roofing Supplies<br>Harding Way<br>St. Ives<br>PE27 3YJ<br>05/07/13 | Position: Commercial Director SIG Roofing & Roofline<br><br>Name: Andrew Wakelin<br><br>Signature:  |

SIG ROOFING SUPPLIES

# ACCOMPANYING DOCUMENT & DECLARATION OF CONFORMITY EN 12326 ROOFING SLATE

| | | |
|---|---|---|
| Date of sampling and testing | If more than one date is applicable to sampling or testing they should be indicated against the individual test results | |
| Product Description | Slate for roofing and external cladding or carbonate slate for roofing and external cladding | |
| 1 Dimensional tolerances | | |
| Length and Width | Maximum deviation ±5mm | |
| Deviation from squareness | Maximum deviation ±1% of the length | |
| Deviation from straightness of edges | Slate length ≤500mm permitted deviation≤ 5mm | |
| | Slate length >500mm permitted deviation≤1% of the length | |
| Flatness: The limits of deviation from flatness are defined for four types of slate. The bevelled edges shall be applied to the convex face. Slates with Deviation from flatness in excess of the limit may be used for special applications | Slate type | Maximum deviation from flatness as a % of the slate length |
| | Very Smooth | <0,9 |
| | Smooth | <1,0 |
| | Normal | <1,5 |
| | Textured | <2,0 |

2: Thickness: The basic nominal thickness is determined as a function of the bending strength using the equations given in 3, local climate conditions and traditional construction techniques. The basic nominal thickness is increased in relation to the slates performance in the appropriate sulphur dioxide test (if required) as shown in 7 and 8 below

3. Strength: Longitudinal and transverse bending strength and modulus of rupture; there is no limit for bending strength or modulus. However the basic nominal thickness is determined as a function of the bend strength using the equations below, local climate conditions and traditional construction techniques.

$$e_l = x\sqrt{\frac{l}{R_{cl}}}$$

and

$$e = x\sqrt{\frac{b}{R_{ct}}}$$

Where

$e_l$ is the longitudinal thickness, in millimetres (mm):

$e_t$ is the transverse thickness, in millimetres (mm):

$l$ is the length of the slate, in millimetres (mm):

$b$ is the width of the slate, in millimetres (mm):

$R_{cl}$ is the characteristic longitudinal modulus of rupture in megapascals (Mpa):

$R_{ct}$ is the characteristic transverse modulus of rupture in megapascals (Mpa):

$x$ is a constant determined as a function of climate and the traditional construction techniques in root newton.millimetres (N ½ . mm ½ ). It may be different for each equation and is selected for the country of use according to the table below.

| National Factors x | Country | Transverse | Longitudinal | Country | Transverse | Longitudinal |
|---|---|---|---|---|---|---|
| | Belgium | 1,35 | 1,35 | Italy | 1,2 | 1,2 |
| | France | 1,25 | 1,40 | Spain | 1,2 | 1,2 |
| | Germany | 1,2 | 1,2 | UK | 0,9 | 1,1 |

Those countries that have not declared a national value should select a value or a pair of values in relation to their countries climate and traditional construction techniques. It should not be less than the minimum value or pair of values given above.

SIG ROOFING SUPPLIES

# ACCOMPANYING DOCUMENT & DECLARATION OF CONFORMITY EN 12326 ROOFING SLATE

4. Water absorption: The water absorption of slates shall not exceed 0,6% unless they can satisfy the requirements of the freeze-thaw test.

5. Freeze-thaw test: slates with a water absorption greater than 0.6% shall show no significant reduction in bending strength using a one-sided Students t-test at the 2,5% significance level (slates with a water absorption of 0,60% or less are not required to undergo a freeze-thaw test.)

6. Thermal cycle test: The following table explains the meaning of the test codes:

| 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. | Acceptable subject to the note below |

NOTE Slates within code T3, which potentially may result in water penetration should only be used selectively with suitable methods of construction that avoid such penetration. Slates showing exfoliation splitting or other structural changes in this test are not acceptable.

7. Carbonate content: There is no limit on carbonate content. However, the carbonate content determines which sulphur dioxide exposure test procedure should be carried out and, together with the strength, the minimum nominal thickness of the product.

If the carbon content is less than 20% then the sulphur dioxide exposure test procedure in EN 12326-2:2000, 15.2 applies. The minimum thickness is calculated using the table below.

8. Minimal nominal thickness in relation to carbonate content and sulphur dioxide exposure code.

| Carbonate content % | $SO_2$ exposure test code from EN 12326-2:2000, 15.1 | Depth of softened layer from EN 12326-2:2000, 15.2 | Thickness adjustment |
|---|---|---|---|
| $\geq$ 5,0 | S1 | | None |
| | S2 | | $e_{bi}$ + 5% |
| | S3 | | $e_{bi} \geq$ 8,0mm or switch to the test in EN 12326-2:2000, 15.2 |
| > 5,0 < 20,0 | S1 | | $e_{bi}$ + 5% |
| | S2 | | $e_{bi}$ + 10% |
| | S3 | | $e_{bi} \geq$ 8,0mm or switch to the test in EN 12326-2:2000, 15.2 |
| $\geq$ 20,0 | | 0 0,70mm | $e_{bi}$ + 0,50mm + $t^2$ |

$e_{bi}$ is the basic individual thickness obtained from 3 above in millimetres
$t$ is the thickness of the softened layer obtained from EN 12326-2:2000, 15.2 in millimetres

9. Non carbon content: The non carbon content shall be less than 2%

SIG ROOFING SUPPLIES

SIGA 39
Natural Slate

# ACCOMPANYING DOCUMENT & DECLARATION OF CONFORMITY EN 12326 ROOFING SLATE

| | | | | | |
|---|---|---|---|---|---|
| Producer: Name and address or identifying mark **SIG Roofing Supplies** | | | | | |
| BS EN12326-1:2004 | | | | | |
| Number of this commercial Document | N/A | Date of issue | **January 2011** | | |
| Commercial Document issued by: **SIG Roofing Supplies, Harding Way, St. Ives, Cambs** | | | | | |
| Location of mine or quarry: **Valdeorras, Ourense, Spain** | | | | | |
| This document records the conformity of the product described below and is incomplete without the explanation of the meaning of the test results and requirements of EN 12326-1:2004. The tests referred to and the criteria are contained in EN 12326-1:2004 & -2:2000. | | | | | |
| Date of Sampling **January 2011** | | Date of Testing **January 2011** | | | |
| Product description and Commercial name | **SIGA 39** | | | | Conformity |
| 1 Dimensional tolerances | | | | | |
| Format | **600x 300, 500x300, 500x250, 400x250, 400x200, 350x250, 350x200, 300x200mm** | | | | |
| Deviation from declared length | | | | **+-1 %** | **Y** |
| Deviation from declared width | | | | **+-1 %** | **Y** |
| Deviation from squareness | | | | **+-1 %** | **Y** |
| Deviation from straightness of edges | | | | **Mm** | **Y** |
| Slate type for deviation from flatness | Very Smooth | Smooth | Normal | Textured | |
| Deviation from flatness | | **1%** | | | |
| 2 Thickness | | | | | |
| Slate type for packed thickness Calculation | Very Smooth | Smooth | Normal | Textured | |
| Nominal thickness and variation | | **5.5 +-1mm** | | | **Y** |
| 3 Strength | | | | | |
| Characteristic MoR | Transverse | **44MPa** | Longitudinal | **55MPa** | |
| Mean failure load | Transverse | **407N** | Longitudinal | **399N** | |
| 4 Water absorption | | | | **0.26%** | **A1** |
| 5 Freeze thaw | Pass, fail or not required | | | | **Not required** |
| 6 Thermal cycle test | Code T1, T2 or T3 | | | | **T1** |
| 7 Carbonate content | | | | **0.18%** | |
| 8 Sulphur dioxide Exposure tests < 20% Carbonate | Code S1, S2 or S3 | | | | **S1** |
| 8 Sulphur dioxide Exposure tests > 20% Carbonate | Depth of softening | | | mm | |
| 9 Non-carbonate carbon content | | | | **0.36%** | |
| 10 External fire exposure | Deemed to satisfy | | | | |
| 11 reaction to fire | Deemed to satisfy class A1 | | | | |
| 12 Release of dangerous substances | None in conditions of use as roofing or external cladding | | | | |

SIG ROOFING SUPPLIES

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| | Smooth | <1,0 |
| | Normal | <1,5 |
| | Textured | <2,0 |

2: Thickness: The basic nominal thickness is determined as a function of the bending strength using the equations given in 3, local climate conditions and traditional construction techniques. The basic nominal thickness is increased in relation to the slates performance in the appropriate sulphur dioxide test (if required) as shown in 7 and 8 below

3. Strength: Longitudinal and transverse bending strength and modulus of rupture; there is no limit for bending strength or modulus. However the basic nominal thickness is determined as a function of the bend strength using the equations below, local climate conditions and traditional construction techniques.

$$e_l = x\sqrt{\frac{l}{R_{cl}}}$$

and

$$e = x\sqrt{\frac{b}{R_{ct}}}$$

Where

$e_l$ is the longitudinal thickness, in millimetres (mm):

$e_t$ is the transverse thickness, in millimetres (mm):

$l$ is the length of the slate, in millimetres (mm):

$b$ is the width of the slate, in millimetres (mm):

$R_{cl}$ is the characteristic longitudinal modulus of rupture in megapascals (Mpa):

$R_{ct}$ is the characteristic transverse modulus of rupture in megapascals (Mpa):

$x$ is a constant determined as a function of climate and the traditional construction techniques in root newton.millimetres (N ½ .mm ½ ). It may be different for each equation and is selected for the country of use according to the table below.

| National Factors x | Country | Transverse | Longitudinal | Country | Transverse | Longitudinal |
|---|---|---|---|---|---|---|
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| | Germany | 1,2 | 1,2 | UK | 0,9 | 1,1 |

Those countries that have not declared a national value should select a value or a pair of values in relation to their countries climate and traditional construction techniques. It should not be less than the minimum value or pair of values given above.

# ACCOMPANYING DOCUMENT & DECLARATION OF CONFORMITY
# EN 12326 ROOFING SLATE

4. Water absorption: The water absorption of slates shall not exceed 0,6% unless they can satisfy the requirements of the freeze-thaw test.

5. Freeze-thaw test: slates with a water absorption greater than 0.6% shall show no significant reduction in bending strength using a one-sided Students t-test at the 2,5% significance level (slates with a water absorption of 0,60% or less are not required to undergo a freeze-thaw test.)

6. Thermal cycle test: The following table explains the meaning of the test codes:

| 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. | Acceptable subject to the note below |

NOTE Slates within code T3, which potentially may result in water penetration should only be used selectively with suitable methods of construction that avoid such penetration. Slates showing exfoliation splitting or other structural changes in this test are not acceptable.

7. Carbonate content: There is no limit on carbonate content. However, the carbonate content determines which sulphur dioxide exposure test procedure should be carried out and, together with the strength, the minimum nominal thickness of the product.

If the carbon content is less than 20% then the sulphur dioxide exposure test procedure in EN 12326-2:2000, 15.2 applies. The minimum thickness is calculated using the table below.

8. Minimal nominal thickness in relation to carbonate content and sulphur dioxide exposure code.

| Carbonate content % | $SO_2$ exposure test code from EN 12326-2:2000, 15.1 | Depth of softened layer from EN 12326-2:2000, 15.2 | Thickness adjustment |
|---|---|---|---|
| $\geq$ 5,0 | S1 | | None |
| | S2 | | $e_{bi}$ + 5% |
| | S3 | | $e_{bi} \geq$ 8,0mm or switch to the test in EN 12326-2:2000, 15.2 |
| > 5,0 < 20,0 | S1 | | $e_{bi}$ + 5% |
| | S2 | | $e_{bi}$ + 10% |
| | S3 | | $e_{bi} \geq$ 8,0mm or switch to the test in EN 12326-2:2000, 15.2 |
| $\geq$20,0 | | 0 0,70mm | $e_{bi}$ + 0,50mm + $t^2$ |

$e_{bi}$ is the basic individual thickness obtained from 3 above in millimetres
$t$ is the thickness of the softened layer obtained from EN 12326-2:2000, 15.2 in millimetres

9. Non carbon content: The non carbon content shall be less than 2%