Producer: *Name & address or identifying mark* Specimen					
EN 12326-1:200X					
Number of this commercial document	Specimen		Date of issue	Specimen	
Commercial document issued by*; Name & address* Specimen					
Location of the mine or quarry: *District, county or province* Specimen					
This document records the conformity of the product described below and is incomplete without the explanation of the meaning of the test results and the requirements of EN 12326-1:200x. The tests referred to and the criteria are contained in EN 12326-1:200x & -2:2000					
Date of sampling Specimen			Date of testing Specimen		
Product description and commercial name					Conformity
1 Dimensional tolerances:					
Format	Specimen				
Deviation from declared length				Specimen mm	Specimen
Deviation from declared width				Specimen mm	Specimen
Deviation from squareness				Specimen %	Specimen
Deviation from straightness of edges				Specimen mm or %	Specimen
Slate Type for deviation from flatness	Very Smooth	Smooth	Normal	Textured	
Deviation from flatness	Specimen	Specimen	Specimen	Specimen	Specimen
2 Thickness:					
Slate type for packed thickness calculation	Very Smooth	Smooth	Normal	Textured	
Nominal thickness and variation		Specimen mm		Specimen	Specimen
3 Strength:					
Characteristic MoR	Transverse	MPa	Longitudinal	MPa	
Mean failure load	Transverse	Specimen N	Longitudinal	Specimen N	
4 Water absorption				Specimen %	Specimen
5 Freeze thaw:	Pass, fail or not required			Specimen	Specimen
6 Thermal cycle test:	Code T1, T2 or T3			Specimen	Specimen
7 Carbonate content				Specimen %	Specimen
8 Sulfur dioxide exposure tests: ≤ 20% carbonate:	Code S1, S2 or S3			Specimen	Specimen
8 Sulfur dioxide exposure tests: > 20% carbonate:	Depth of softening			Specimen mm	Specimen
9 Non-carbonate carbon content				%	Specimen
10 External fire performance	Deemed to satisfy				Specimen
11 Reaction to fire	Deemed to satisfy class A1				Specimen
12 Release of dangerous substances	None in conditions of use as roofing or external cladding				Specimen

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 cladding or carbonate slate for roofing and cladding

1 Dimesional tolerances.

Length and width	Maximum deviation ± 5 mm
Deviation from squareness	Maximum deviation ± 1 % of the length
Deviation from straightness of edges	Slate length ≤ 500 mm Permitted deviation ≤ 5 mm. Slate length > 500 mm 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	< 0,68
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 below, local climate conditions and traditional construction techniques. The basic nominal thickness is increased in relation to the slate's performance in the appropriate sulfur dioxide test (if required) as shown in 7 & 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 given below, local climate conditions and traditional construction techniques.

$$e_l = X.\sqrt{\frac{l}{R_{cl}}}$$

and

$$e_t = X.\sqrt{\frac{b}{R_{ct}}}$$

Where

e_{cl} is the longitudinal thickness, in millimetres (mm);

e_{ct} 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_l is the characteristic longitudinal modulus of rupture in mega Pascals (MPa);

R_t is the characteristic transverse modulus of rupture in mega Pascals (MPa)

X is a constant determined as a function of climate and the traditional construction techniques in root Newton millimetres ($N^{1/2}.mm^{1/2}$). It may be different for each equation and is selected for the country of use according to the table below

National X factors

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 which 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.

e_l and e_t are determined by using the length l and the width b of the slates. The maximum value determined is the basic individual thickness of the slate, e_{bi}. The basic individual thickness is increased in relation to the slates performance in the appropriate sulfur dioxide test as shown in 7 and 8 below. For a significant difference between the longitudinal and transverse modulus of rupture the t-statistic is greater than 2,021.

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 Student's 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

Slates within Code *T3* which potentially may result in water penetration should only be used selectively with suitable methods of construction which 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 sulfur dioxide exposure test procedure should be carried out and, together with the strength, the minimum nominal thickness of the product.

If the carbonate content is less than 20 % then the sulfur dioxide exposure test procedure EN 12326-2:2000, subclause 15.1 applies. If the carbonate content is 20 % or more the sulfur dioxide exposure test procedure EN 12326-2:2000, subclause 15.2 applies. The minimum thickness is calculated using the table below.

8 Minimum nominal thickness in relation to carbonate content and sulfur dioxide exposure code

Carbonate content %	SO_2 exposure test code from EN 12326-2:2000, subclause 15.1	Depth of softened layer from EN 12326-2:2000, subclause 15.2	Thickness adjustment
≤5,0	S1		None
	S2		e_{bi} + 5 %
	S3		$e_{bi} \geq$ 8.0 mm or switch to the test in EN 12326-2:2000, subclause15.2
> 5,0 < 20,0	S1		e_{bi} + 5 %
	S2		e_{bi} + 10 %
	S3		$e_{bi} \geq$ 8.0 mm or switch to test the in EN 12326-2:2000, subclause 15.2
≥ 20,0		0 - 0,70 mm	e_{bi} + 0,50 mm + 7 t^2

e_{bi} is the basic individual thickness in mm obtained from 3 above

t is the thickness in mm of the softened layer obtained from EN 12326-2:2000, subclause 15.2

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