SLOVENSKI STANDARD
oSIST prEN 12326-2:2024

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Skrilavec in izdelki iz naravnega kamna za polaganje streh in zidov - 2. del: Preskusne metode

Slate and stone for discontinuous roofing and external cladding - Part 2: Test methods

Schiefer und Naturstein für überlappende Dachdeckungen und Außenwandbekleidungen - Teil 2: Prüfverfahren für Schiefer und carbonathaltige Schiefer

Ardoises et pierres pour toiture et bardage extérieur pour pose en discontinu - Partie 2 : Méthodes d'essai

Ta slovenski standard je istoveten z: **prEN 12326-2**

ICS:

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Slate and stone for discontinuous roofing and external cladding - Part 2: Test methods

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 128.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 12326-2:2024) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12326-2:2011.

This document is one of a series of product standards for building materials, which consists of the following parts:

— *Part 1: Specifications for slate and carbonate slate*

— *Part 2: Test methods*

1 Scope

This document specifies test methods for slate, carbonate slate, schist and schistose stone for discontinuous roofing and external cladding, as defined in 3.1, 3.2, and 3.3 of EN 12326-1:2014 and 3.1 of prEN 12326-3:2021, used for assembly into discontinuous roofs and external wall cladding. In this sense, when the test describes a slate, it could also be considered as carbonate slate.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12326-1:2014, *Slate and stone for discontinuous roofing and external cladding - Part 1: Specifications for slate and carbonate slate*

3 Terms, definitions and symbols

For the purposes of this document, the following terms, definitions and symbols apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp/

3.1 Terms and definitions

3.1.1
constant mass
mass achieved when two successive weightings taken 24 h apart do not differ by more than 0,005 g or 0,05 % of the mass of the test piece, whichever is greater

3.1.2
modulus of rupture
maximum stress sustained by a slate test piece when a bending moment is applied

Note 1 to entry: In this document, the geometry of the test is three point bending.

3.2 Symbols

Symbol	Physical quantity	Unit
A_w	water absorption	%
A	rate of application of stress in the modulus of rupture test	$(N/mm^2)/s$
B	width	mm
C'_a	apparent mass percentage calcium carbonate in slate	%
C_c	carbonate carbon content of slate	%
$\bar{C}_c$	mean carbonate carbon content of a slate	%
C_d	carbon dioxide content of a test piece or standard preparation	%

C_{nc}	non-carbonate carbon in a slate	%
C_T	total carbon in a slate	%
e_{1A} to e_{4A}	individual thickness measurements in the SO_2 exposure test	mm
e_i	Individual thickness measurement of slates or test pieces	mm
E_i	thickness of a individual slate or a test piece	mm
$\overline{e}_{i8}$	mean of 8 individual thickness measurements in the modulus of rupture test	mm
E_d	maximum deviation of the thickness of a slate from the mean thickness	%
e_{mi}	mean of three thickness measurements used to determine the rate of application of load in the modulus of rupture test	mm
e_{max}	the individual thickness measurement from the four individual thickness measurements with the maximum difference with the mean individual thickness carried out on one slate or a test piece	mm
e_s	thickness of the softened layer in the SO_2 exposure test	mm
F_d	deviation from flatness of a slate	mm
$\lambda K\alpha$	wavelength of the α radiation used in the x-ray diffraction analysis	nm
l	length	mm
l_t	distance between the bending supports to base	mm
m_o	dry mass of a test piece in the water absorption test	g
m_p	mass of a powdered test piece of slate	mg
m_w	wet mass of a test piece in the water absorption test	g
n	number of slates subject to a test	-
P_i	failure load of individual slates in the modulus of rupture test	N
r_d	individual measurements of the deviation of a slate from a rectangle	mm
r_{dmax}	maximum deviation of a slate from a rectangle	mm
R_d	deviation of a test slate from a rectangle as a percentage of its length	%
R_i	modulus of rupture of individual test slates	N/mm^2
$\bar{R}$	sample mean modulus of rupture of test slates	N/mm^2
$\overline{R}_l$	sample mean modulus of rupture of test slates measured in the longitudinal orientation	N/mm^2
$\overline{R}_t$	sample mean modulus of rupture of test slates measured in the transverse orientation	N/mm^2
R_c	characteristic modulus of rupture of test slates	N/mm^2

$\overline{R}_1$	sample mean modulus of rupture of the control test pieces in the freeze-thaw test	N/mm²
$\overline{R}_2$	sample mean modulus of rupture of the frost exposed test pieces in the freeze-thaw test	N/mm²
s	sample standard deviation of the modulus of rupture	-
s_l	sample standard deviation of the modulus of rupture in the longitudinal orientation	-
s_t	sample standard deviation of the modulus of rupture in the transverse orientation	-
s_1	sample standard deviation of the modulus of rupture of the control test pieces after the freeze-thaw test	-
s_2	standard deviation of the modulus of rupture of the frost exposed test pieces after the freeze-thaw test	-
s_d	deviation of the edge of a slate from a straight edge	mm
S_d	deviation of the edge of a slate from a straight edge as a percentage of its length	%
v_l	rate of application of the load in the modulus of rupture test	N/s
α	deviation of a slate from rectangle	o
θ	angle of incidence of the beam in the X-ray diffraction analysis	o

4 Number of slates required for testing

Table 1 indicates the number of slates required for each test.

In addition, specimens for testing shall be representative of the product and any processes that the stone is subjected to.

Table 1 — Number of slates required to carry out each test

Test	Number of slates required for each test
Length and width	1
Straight edges	1
Rectangularity	1
Individual thickness	1
Curvature	1
Modulus of Rupture	20/40*
Water absorption	5
Freeze thaw	20/40*
Non-carbonate carbon content	3
Carbonate content	3
Sulfur dioxide exposure for less than or equal to 20 % carbonate	12
Sulfur dioxide exposure for more than 20 % carbonate	6 or 12*
Thermal cycle	6
Where there is a possibility that the slates being tested may contain localized harmful inclusions, such as calcite veins or oxidizable minerals, the preparation of the test pieces or powdered test pieces should be modified to ensure sufficient inclusions are contained in the test piece to provide a representative result. Sampling should preferably be carried out by the recipient or his representative in the presence of the supplier. For the tests marked * the number of slates required depends on their size. The individual tests indicate the size and number of test pieces or powdered test pieces required.	
NOTE Because many of the tests do not require whole slates it is possible to carry out a full set of tests with fewer than the total number of slates listed in this table.	

5 Determination of the length (l) and width (b) and the deviation from the specified length and width

5.1 Principle

The dimensions of slates are measured using a steel rule placed on the midline of the length and the width. The percentage deviation from the specified dimension is calculated.

5.2 Apparatus

5.2.1 A steel rule capable of reading to 0,5 mm.

5.2.2 Two steel bars longer and thicker than the slates under test. Each bar shall have one edge which shall not deviate from a straight edge by more than ± 0,1 mm.

5.3 Preparation of test pieces

Whole slates are used and do not need any preparation unless any corners are oversized within 50 mm of the corner. In this case, remove the oversize corner(s) at an angle of approximately 45° from a point 50 mm from the corner, using a suitable cutting tool.

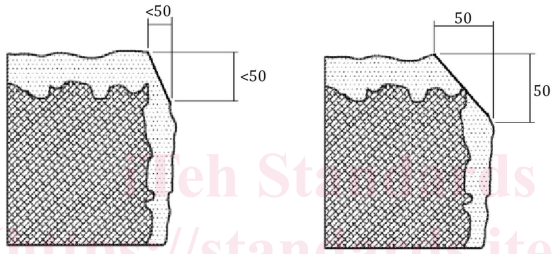

Figure 1 — Corner oversized within 50 mm of the corner.

5.4 Procedure

Place the slate with the chamfered edge facing down. Align the straight edges of the two steel bars along the long edges of the slate. Using a steel rule find the midpoints of the length of the slate on each side to the nearest 1,0 mm at each end and mark the positions on the slate. Place the steel rule across the distance between the bars at the marked points. Read off and record the width to the nearest 1,0 mm.

Repeat for the length.

5.5 Expression of the results

Calculate the difference of the length from the specified length as a percentage.

Calculate the difference of the width from the specified width as a percentage.

5.6 Test report

Report the length and width in millimetres and the deviation in percentage from the specified length and width.

The test report shall also include the identification of the product, reference to this method and the identifier of this document, i.e. prEN 12326-2:2024.