SLOVENSKI STANDARD
oSIST prEN 12326-3:2021

01-julij-2021

Skrilavec in naravni kamen za pokrivanje streh in oblaganje zunanjih zidov - 3. del: Specifikacije za skrilavce in skrilaste naravne kamne

Slate and stone for discontinuous roofing and external cladding - Part 3: Specifications for schist and schistose stones

Schiefer und Naturstein für überlappende Dachdeckungen und Außenwandbekleidungen - Teil 3: Anforderungen für Schiefer und schistose Natursteinarten

Ardoises et pierres pour toiture et bardage extérieur pour pose en discontinu - Partie 3 : Spécifications pour schiste et pierres schisteuses

Ta slovenski standard je istoveten z: **prEN 12326-3**

ICS:

91.060.10	Stene. Predelne stene. Fasade	Walls. Partitions. Facades
91.060.20	Strehe	Roofs
91.100.15	Mineralni materiali in izdelki	Mineral materials and products

oSIST prEN 12326-3:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 12326-3

May 2021

ICS 91.100.15

English Version

Slate and stone for discontinuous roofing and external cladding - Part 3: Specifications for schist and schistose stones

Schiefer und schistose Natursteinarten für überlappende Dachdeckungen - Anforderungen und Prüfverfahren

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 12326-3:2021) 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 has been prepared under two standardization requests to CEN by the European Commission and the European Free Trade Association.

For relationship with Regulation (EU) No. 305/2011 on construction products (CPR), see informative Annex ZA, which is an integral part of this document.

This document prEN 12326-3 is one of a series of standards for specification of roofing slate products which includes the following:

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

— EN 12326-2:2011, *Slate and stone for discontinuous roofing and external cladding — Part 2: Methods of test for slate and carbonate slate*

EN 12326-1 and this document are product standards, while EN 12326-2 is the standard that specifies test methods that are applicable for both product standards.

Introduction

The performance of a roof or wall constructed with these products depends not only on the properties of the product as required by this document, but also on the design, construction and performance of the roof or wall as a whole in relation to the environment and conditions of use.

1 Scope

This document specifies characteristics of schist and schistose stones (see 3.1) intended to be used for assembly into discontinuous roofing and external cladding.

This document specifies procedures for assessment and verification of constancy (AVCP) of performance of characteristics of schist and schistose stones.

This document does not cover the following:

— slate and carbonate slate products (see EN 12326-1:2014 and EN 12326-2:2011);

— schist and schistose products, used as wall cladding, which are either bonded with adhesive or fixed with dowels and cramps (see EN 1469:2015);

— treated products;

— installation or construction specific requirements.

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 12326-2:2011, *Slate and stone for discontinuous roofing and external cladding — Part 2: Methods of test for slate and carbonate slate*

EN 12407:2019, *Natural stone test methods — Petrographic examination*

EN 12440:2017, *Natural stone — Denomination criteria*

EN 12670:2019, *Natural stone — Terminology*

EN 13373:2020, *Natural stone test methods — Determination of geometric characteristics on units*

3 Terms and definitions

For the purposes of this document, the following terms and definitions given in EN 12670:2019 and the following apply.

3.1
schistose stones
schist (3.2) and other foliated metamorphic rocks, composed of nearly parallel arranged mica, chlorite, quartz, feldspar and/or other typical minerals with well-developed fissility that allows an easy split

Note 1 to entry: These rock types belong petrographically to metamorphic formations that start at the epizonal-metamorphic phyllite formations, i.e. where EN 12326-1:2014 ends, see Table 4.

3.2
schist
foliated rock composed of nearly parallel arranged mica, chlorite, quartz and other typical mineral

Note 1 to entry: Commercial definition: natural stone possessing a well-developed fissility that allows an easy split, i.e. phyllite, mica schist and quartzite schist.

3.3
phyllite
schist (3.2) mainly consisting of glittering layers of micas, chlorite, quartz, feldspar and other minor minerals

Note 1 to entry: It is a fine grained to medium grained, dark grey metamorphic rock with evenly distributed layers with mica, and where these layers appear up to 10 mm apart. Typically, mica is the main constituent of the rock.

Note 2 to entry: The rock is formed by low grade metamorphism of clay stone.

[SOURCE: EN 12670:2019, 3.1.382, modified — feldspar is added]

3.4
mica schist
schist (3.2) with glittering layers of micas, consisting of these, biotite, quartz and other minerals

Note 1 to entry: It is a medium to coarse grey to dark grey metamorphic rock with evenly distributed layers of mica, and where these layers appear up to 10 mm apart. In addition, the rock contains quarts and/or feldspar and other minerals. Typically, mica is the main constituent of the rock.

Note 2 to entry: The rock is formed by medium grade metamorphism of clay stone.

3.5
quartzite schist

schist (3.2) enriched in quartz and with cleavage along planes in mica

Note 1 to entry: It is a fine to medium grained, light grey to grey, metamorphic quartz-feldspar rich rock containing rhythmically distributed planar lamina (less than 1 mm thick) of mica (muscovite and/or biotite). The rock can be split along the lamina to slabs varying from 5 mm to more than 100 mm in thickness.

Note 2 to entry: The rock is formed by low to medium grad metamorphism of sandstone.

Note 3 to entry: Other terms used are schistose quartzite or schistose flagstone.

3.6
paragneiss
gneiss with mineralogy and texture indicating derivation from a sedimentary rock protolith

Note 1 to entry: Typically consists of abundant quartz, mica, or calcsilicate minerals; aluminosilicate minerals or garnet commonly present.

3.7
layer
bed or stratum of rock

[SOURCE: EN 12670:2019, 3.1.260]

3.8
vein
mineral body, thin in relation to its other dimensions, which cuts the older country rock

[SOURCE: EN 12670:2019, 3.1.521]

3.9
lineation
general descriptive term for any kind of linear (one dimensional) feature in the fabric of a rock

[SOURCE: EN 12670:2019, 3.1.270]

3.10
shouldering
removal of corner(s) (when installed) of a roofing or external cladding stone to facilitate laying or for aesthetic reasons

3.11
irregular stones
stones of random plan dimensions

3.12
natural riven
stone with natural split faces

3.13
nominal thickness
thickness of stone declared by the manufacturer

3.14
lower expected value
value that corresponds to the 5 %-quantile of a logarithmic normal distribution for a confidence level of 75 %

Note 1 to entry: See Annex B.

3.15
higher expected value
value that corresponds to the 95 %-quantile of a logarithmic normal distribution for a confidence level of 75 %

Note 1 to entry: See Annex B.

3.16
Student's *t*-test
standard parametric statistical test used to test hypotheses about population means when the variance(s) are known

Note 1 to entry: See ISO 3534-1 [3].

Note 2 to entry: In this document, the Student's *t*-test is used to test for significant differences between the means of two populations.

Note 3 to entry: See Annex B.

4 Characteristics

4.1 Dimensional variation

Dimensional variations in thickness, length and width of schist and schistose stones shall be determined according to 5.1.

All dimensions shall be expressed in mm.

4.2 Water permeability

Water permeability is expressed through water absorption of schist and schistose stones and shall be determined in accordance with 5.2.

The performance of water absorption shall be expressed with combined indication of mean value, together with the highest expected value (both expressed as a mass percentage % to two decimal places).

4.3 Mechanical resistance

Mechanical resistance is expressed through modulus of rupture of schist and schistose stones and shall be determined in accordance with 5.3.

The performance of modulus of rupture shall be expressed with the mean value and the lower expected value (in N/mm^2) and with specification of test direction in relation to eventual any visual lineation.

4.4 Durability against freeze–thaw

Durability is expressed through freeze–thaw resistance of schist and schistose stones and shall be determined in accordance with 5.4. The durability performance against freeze–thaw shall be expressed by:

— the mean value and higher expected value of water absorption (in mass percentage %) before and after exposure, see Annex B;

— the change in water absorption (in %) based on Student's *t*-test;

— visual appearance by comparison of reference specimens and the exposed specimens, focusing on the following aspects:

— colour changes, including oxidation of metallic minerals;

— tendency of exfoliation, splitting or other major structural changes.

The following requirements apply:

— the schist or schistose stone shall not show significant increase in water absorption when a Student's *t*-test is applied,

— the schist or schistose stone shall not exhibit exfoliation (opening of cleavage plane).

Schist or schistose stone that does not satisfies the above requirements should not be used without documented good service life experiences.

If the sample water absorption after the freeze–thaw cycling is equal to or less than the value before the freeze–thaw cycling, the *t*-test shall not be carried out.

4.5 Durability against thermal cycles

Durability is expressed through thermal cycle resistance of schist and schistose stones and shall be determined in accordance with 5.5.

The durability performance against thermal cycles shall be expressed by:

— the mean value and higher expected value of water absorption (in weight%) before and after the thermal cycle test, see Annex B;

— the change in water absorption (in %) based on Student's *t*-test;

— visual appearance by comparison of reference specimens and the exposed specimens, focusing on the following aspects:

  — colour changes, including oxidation of metallic minerals;

  — tendency of exfoliation, splitting or other major structural changes.

The following requirements apply:

— the schist or schistose stone shall not show significant increase in water absorption when a Student's *t*-test is applied,

— the schist or schistose stone shall not exhibit exfoliation (opening of cleavage plane).

Schist or schistose stone that does not satisfies the above requirements should not be used without documented good service life experiences.

If the mean water absorption after the thermal cycle test is equal to or less than the value before the freeze–thaw cycling, the *t*-test shall not be carried out.

4.6 Reaction to fire

The reaction to fire performance of schist and schistose stones, shall be expressed as Class A1, according to 5.6.

4.7 External fire performance

The external fire performance of schist and schistose stones, intended to be used in buildings as discontinuously laid roof covering, shall be expressed as Class B_{ROOF}, according to 5.7.

4.8 Release of dangerous substances

Release of dangerous substances of products of schist and schistose stones shall be determined as specified in 5.8.

5 Testing, assessment and sampling methods

5.1 Dimensional variation

5.1.1 General

All measurements shall be determined in accordance with EN 13373:2020, Clause 7, and all measured values of individual units shall be within the specified tolerances.

Measurements of rectangular, square and scallops stones are specified in 5.1.2 and 5.1.3. See also 7.5. Other shapes and irregular stones are specified in 5.1.4.