SLOVENSKI STANDARD

SIST EN 12059:2008

01-junij-2008

Proizvodi iz naravnega kamna – Dimenzijsko obdelan kamen -Zahteve

Natural stone products - Dimensional stone work - Requirements

Natursteinprodukte - Steine für Massivarbeiten - Anforderungen

Produits en pierre naturelle - Pierre de taille - Exigences

Ta slovenski standard je istoveten z: EN 12059:2008

ICS:

91.100.15

SIST EN 12059:2008 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12059

February 2008

ICS 91.100.15

English Version

Natural stone products - Dimensional stone work - Requirements

Produits en pierre naturelle - Pierre de taille - Exigences

Natursteinprodukte - Steine für Massivarbeiten - Anforderungen

This European Standard was approved by CEN on 12 January 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 12059:2008: E

Contents

Page

Foreword

This document (EN 12059:2008) has been prepared by Technical Committee CEN/TC 246 “Natural stones”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2008, and conflicting national standards shall be withdrawn at the latest by August 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements for the following stone units:

a) Structural solid stone units:

   i. Load bearing stone elements, typically subject to prevailing compression stresses, such as solid columns, arches and similar;

   ii. Solid stone elements used for parapets, handrails, balustrades, copings and the like, intended to withstand horizontal live loadings in addition to any dead load.

b) Finishing solid stone units:

   i. Curved cladding panels, for the external finishing of walls, columns or pilasters;

   ii. Stone elements for framing one or more side openings in building walls or floors, such as sills, jambs, architraves and similar.

This European Standard does not include stone masonry units, as defined in EN 771-6, stone which is a 'cast-on' finish to pre-cast concrete or agglomerated stones. Moreover it does not cover commemorative or funeral stones and sculptures, when they do not show the above mentioned characteristics.

2 Normative references

The following referenced documents are indispensable for the application 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 1925, *Natural stone test methods - Determination of water absorption coefficient by capillarity*

EN 1926, *Natural stone test methods - Determination of uniaxial compressive strength*

EN 1936, *Natural stone test methods - Determination of real density and apparent density, and of total and open porosity*

EN 12371, *Natural stone test methods - Determination of frost resistance*

EN 12372, *Natural stone test methods - Determination of flexural strength under concentrated load*

EN 12407, *Natural stone test methods - Petrographic examination*

EN 12440, *Natural stone - Denomination criteria*

EN 12670:2001, *Natural stone - Terminology*

EN 13161, *Natural stone test methods - Determination of flexural strength under constant moment*

EN 13373:2003, *Natural stone test methods - Determination of geometric characteristics on units*

EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

EN 13755, *Natural stone test methods - Determination of water absorption at atmospheric pressure*

EN 14066, *Natural stone test methods - Determination of resistance to ageing by thermal shock*

NOTE Besides the European Standards for test methods mentioned in this clause there exist further standards which can be used for scientific examinations, but which are not relevant for the application in practice according to this standard.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12670:2001 and the following apply.

3.1
dimensional stone work
stone element worked to any specific dimensions for inside or outside application in the building sector

NOTE Dimensional stone work includes:

— flat stone elements which are not used as slabs for cladding, (see EN 1469) or slabs for floors and stairs (see EN 12058) and also for furniture (e.g. tables, kitchen tops);

— curved stones or three-dimensional shaped stone elements.

4 Requirements

4.1 Requirements for geometric characteristics

4.1.1 General

The dimensions shall be as given in the appropriate design drawings.

All measurements shall be carried out in accordance with EN 13373 and all measured values of individual units shall fall within the required tolerances.

4.1.2 Requirements for thickness

The thickness shall not deviate from the nominal thickness by more than the tolerances given in Table 1.

Table 1 — Tolerances on the nominal thickness

Nominal thickness in mm	Tolerance
More than 15 up to and including 30	± 10 % [a]
More than 30 up to and including 80	± 3 mm [b]
More than 80	± 5 mm [c]
[a] in case of elements to be assembled the tolerance of the visual thickness shall become respectively ± 0,5 mm [b] in case of elements to be assembled the tolerance of the visual thickness shall become respectively ± 1 mm [c] in case of elements to be assembled the tolerance of the visual thickness shall become respectively ± 2 mm	

Stricter tolerances may be declared by the supplier.

The required thickness of the stone elements shall result from a structural analysis or similar procedure which takes into account the technical and physical properties of the stone and the intended application.

For natural cleft/riven faces, Table 1 does not apply and the tolerances shall be declared by the supplier.

4.1.3 Requirements for flatness

The deviation from flatness of the surface (except for natural cleft faces) shall not exceed 0,2 % of the length, and shall not exceed 3 mm. For natural cleft faces, the tolerance on flatness shall be declared by the supplier.

4.1.4 Requirements for length and width

The length or width shall not deviate from the nominal size by more than the tolerances given in Table 2.

Table 2 — Tolerances on length and width

Nominal length or width in mm	< 600	≥600
Sawn edges thickness ≤80 mm	± 2 mm	± 3 mm
Sawn edges thickness > 80 mm	± 4 mm	± 5 mm

Stricter tolerances may be declared by the supplier.

4.1.5 Requirements for angles and special shapes

The permissible tolerance at any point shall be as stated in Table 2.

Each slab angle shall be in accordance with the agreed geometry. Pieces of special or irregular shape (e.g. curved) shall be checked for compliance with the required shape by use of a suitable template, the permissible tolerance at any point shall be as stated in Table 2. In cases where the thickness of a curved unit is both greater than and less than 80mm at different parts of the unit, the tolerance shall always be that for less than 80mm.

Stricter tolerances may be declared by the supplier.

4.1.6 Requirements for edges

Normally all edges shall be chamfered, unless specified differently.

4.1.7 Requirements for surface finish

4.1.7.1 General

Surface finishes shall extend uniform to the edges of the stone element on all treated sides.

The surface finishing of some types of stones may typically involve the use of patching, fillers or other similar products for natural holes, faults or cracks: this is to be considered as part of the normal processing. In such cases the type of treatment as well as the type and nature of additional materials shall be declared.

Surface finishes shall be suitable for the intended use.

4.1.7.2 Requirements for surfaces after finishing

Surfaces shall have a regular appearance according to the finishing process and shall be worked to meet the specified finish (e.g. making reference to samples, see 4.2.2) on all exposed surfaces.

NOTE 1 Surfaces obtained by grinding are, for example:

— rough ground surfaces obtained, e. g. by means of a grinding disk of grain size F 60;

— medium ground surfaces obtained, e. g. by means of a grinding disk of grain size F 120;

— fine ground surfaces obtained, e. g. by means of a grinding disk of grain size F 220;

— matt finished surfaces obtained, e. g. by means of a polishing disk with grain size F 400;

— highly polished surfaces obtained, e. g. by means of a polishing disk or felt.

NOTE 2 Surfaces obtained by means of hammer type tools are, for example:

— bush hammered surfaces (see EN 12670:2001, 3.3.8)*;

— trimmed surfaces: finish obtained by using pointed chisel and mallet or a grooving machine;

— striated surfaces: finish obtained by using a claw chisel (percussion tool for roughening a surface, with the cutting end covered by several teeth of various size) or a ruling machine.

NOTE 3 Surfaces obtained by other finishing operations are, for example:

— flamed finish (see EN 12670:2001, 3.3.22)**;

— sand blasted finish (see EN 12670:2001, 3.3.46)***;

— water jet streamed finish: a matt textured surface finish, accomplished by exposing the surface to a steady jet of water under pressure;

— machine tooled finish (see EN 12670:2001, 3.3.54)****;

— riven cut finish: rugged surface produced by splitting the stone with a guillotine or chisel.

* finish obtained by using a bush hammer (percussion tool for roughening a surface, with a square head and with few pyramidal percussion teeth or points) or a bush hammering machine (machine consisting of feed rolls and a overhanging beam, supporting a pneumatic bush hammer).

** surface texture obtained by thermal treatment of the stone using a high temperature flame.

*** a matt finish resulting from the impact of sand or other abrasive grains expelled by a sand jet.

**** this term has two different meanings:

1) finish resulting from the mechanical surface treatment with tools;

2) dressed finish clearly showing tool marks.

4.2 Requirements of natural stone for dimensional work

4.2.1 General

Due to the natural variations of the stone materials, deviations from the declared values can occur. Whenever stone processing is likely to change the characteristics of the initial material (e.g. as a consequence of the type of processing or because the use of patching, fillers or other similar products for natural holes, faults, cracks and similar), then this has to be considered when determining the characteristics requested by this standard.

The following characteristics shall be declared where requested by this standard or with reference to the intended use conditions.

4.2.2 Denomination

The denomination shall always be declared in accordance with EN 12440 (it means traditional name, petrological family, typical colours and place of origin).

The petrographic name shall be determined in accordance with EN 12407.

4.2.3 Visual appearance

This characteristic shall always be declared.

The colour, veining, texture, etc. of the stone shall be identified visually, typically by a reference sample of the same stone suitable to provide a general description of visual appearance.

The reference sample shall be provided by the supplier.

4.2.3.1 Reference sample

A reference sample shall be an adequate number of pieces of natural stone of sufficient size to indicate the general appearance of the finished work. The dimensions of individual pieces shall be between 0,01 m^2 and 0,25 m^2 in face area and shall indicate the range of appearance regarding the colouring, the vein pattern, the physical structure and the surface finish. In particular the reference sample shall show specific characteristics of the stone, such as holes for travertine, worm holes for marble, glass seams, spots, crystalline veins and rusty spots.

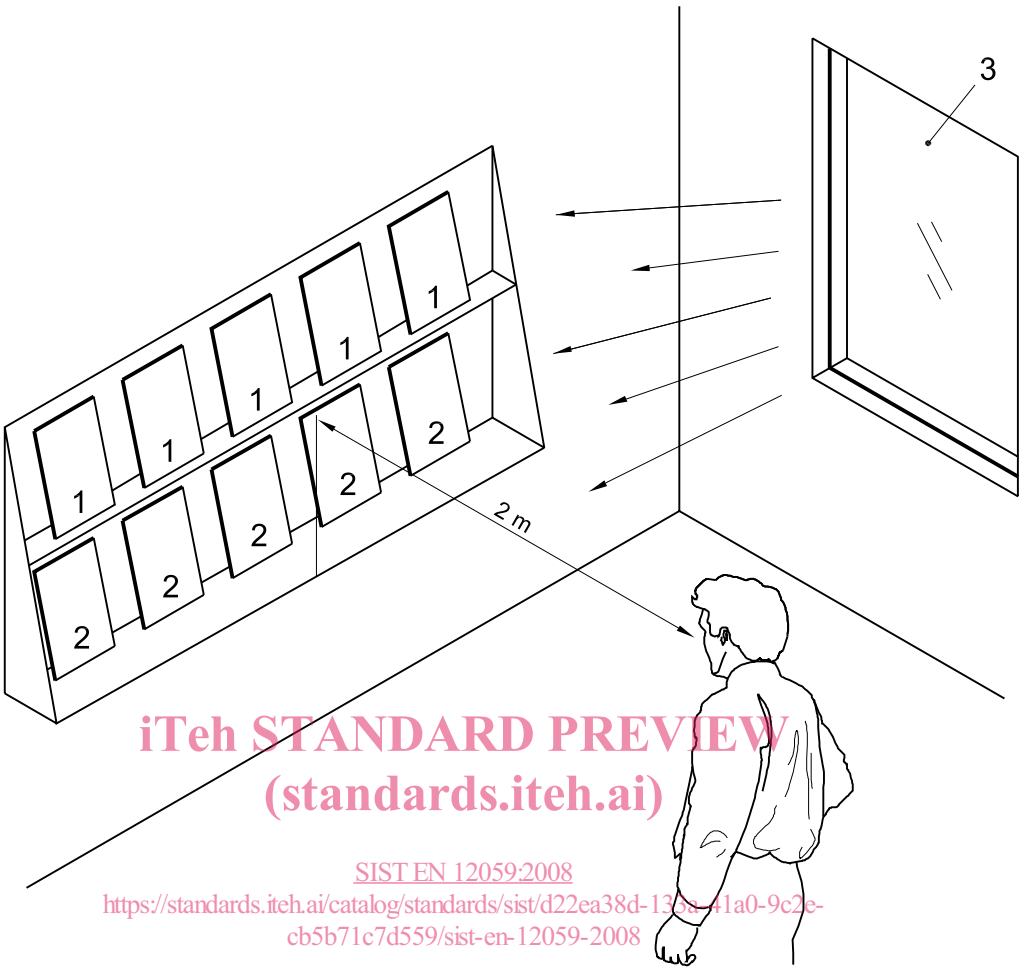
The reference sample does not imply strict uniformity between the sample itself and the actual supply; natural variations can always occur.

If the processing of the stone will typically involve the use of patching, fillers or other similar products for natural holes, faults or cracks, then the reference sample shall similarly display the impact of the same on the finished surface.

All the characteristics as shown by the reference sample shall be considered typical of the stone and not as flaws, therefore they shall not become a reason for rejection, unless their concentration becomes excessive and the typical character of the stone is lost.

The name and address of the producer or the supplier, as well as the denomination of the material in accordance with 4.2.2 shall be indicated on the reference sample.

Any comparison between production sample and reference sample shall be carried out by placing the reference sample against the production sample and viewing them at a distance of about two metres under normal daylight conditions and recording any visible differences in the characteristics of the stones (see Figure 1).



Key

1 reference sample

2 production sample

3 daylight

Figure 1 — Comparison between production sample and reference sample

4.2.4 Flexural strength

This characteristic shall be declared upon request. (e.g. lintels, block stairs, balaustrades, etc.)

The flexural strength shall be determined using the test method in EN 12372 or EN 13161 and the mean value, lower expected value and standard deviation shall be declared.

4.2.5 Water absorption at atmospheric pressure

This characteristic shall be declared upon request. (e.g. for outside uses, fountains, …)