



SLOVENSKI STANDARD
SIST EN 12057:2004
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Natural stone products - Modular tiles - Requirements

Natursteinprodukte - Fliesen - Anforderungen

Produits en pierre naturelle - Plaquettes modulaires - Exigences

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Ta slovenski standard je istoveten z: EN 12057:2004

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English version

Natural stone products - Modular tiles - Requirements

Produits en pierre naturelle - Plaquettes modulaires -
Exigences

Natursteinprodukte - Fliesen - Anforderungen

This European Standard was approved by CEN on 9 July 2004.

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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 Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12057:2004) 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of an identical text or by endorsement, at the latest by April 2005, and conflicting national standards shall be withdrawn at the latest by July 2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are an integral part of this document.

This document is one of a series of standards for specifications of natural stone products which includes the following:

EN 1467, *Natural stone - Rough blocks - Requirements*

EN 1468, *Natural stone - Rough slabs - Requirements*

prEN 1469:, *Natural stone products – Slabs for cladding - Requirements*

EN 12057, *Natural stone products - Modular tiles - Requirements*

EN 12058, *Natural stone products - Slabs for floors and stairs - Requirements*

prEN 12059:, *Natural stone products - Dimensional stone work - Requirements*

Other standards on natural stones are produced by:

CEN/TC 178 *Paving units and kerbs*

EN 1341, *Slabs of natural stone for external paving - Requirements and test methods*

EN 1342, *Setts of natural stone for external paving - Requirements and test methods*

EN 1343, *Kerbs of natural stone for external paving - Requirements and test methods*

CEN/TC 128 *Roof covering products for discontinuous laying and products for wall cladding*

EN 12326-2, *Slate and stone products for discontinuous roofing and cladding - Part 2: Methods of test*

EN 12326-1, *Slate and stone products for discontinuous roofing and cladding - Part 1: Product specification*

CEN/TC 125 *Masonry*

EN 771-6, *Specification for masonry units - Part 6: Natural stone masonry units*

Other standards are relevant to aggregates for concrete, roads, railways and armourstone (under study within CEN/TC 154).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark,

Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

This document specifies requirements for flat modular tiles of natural stone which are made for use as flooring, stairs, cladding and ceiling finishes. It does not cover mineral aggregates and artificial agglomerated stone material and does not cover installation.

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 1936, *Natural stone test method - 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 12524, *Building materials and products - Hygrothermal properties - Tabulated design values*

EN 12670:2001, *Natural stone - Terminology*

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

EN 13373, *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 test data from reaction to fire tests*

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

EN 14157, *Natural stone test methods - Determination of the abrasion resistance*

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

EN 14231, *Natural stone test methods - Determination of the slip resistance by means of the pendulum tester*

EN ISO 12572, *Hygrothermal performance of building materials and products - Determination of water vapour transmission properties (ISO 12572:2001)*

NOTE Besides the documents for test methods mentioned in Clause 2 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 purpose of this document, the terms and definitions in given in EN 12670:2001 and the following apply.

3.1

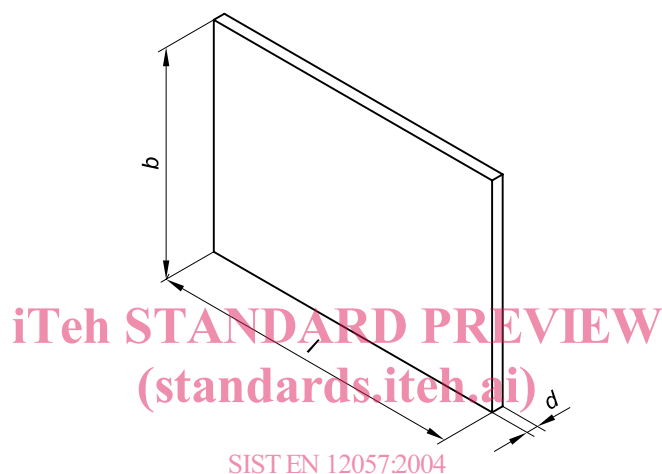
modular tile

flat piece of natural stone square or rectangular in standard sizes, normally ≤ 610 mm obtained by cutting or splitting at a nominal thickness ≤ 12 mm

3.2

dimensions of modular tiles

length l , width b and thickness d are the dimensions of a modular tile. The dimensions are given in the stated sequence in millimetres (see Figure 1)



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Figure 1 — Dimensions of a modular tile

4 Requirements

4.1 Requirements for geometric characteristics

4.1.1 General

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 dimensions, flatness and squareness

The tolerances for sizes, flatness and squareness shall be as given in Table 1. Table 1 is not valid for modular tiles having natural cleft/riven faces, for which tolerances on dimensions, flatness or squareness shall be declared by the manufacturer.

Table 1 – Tolerances on dimensions and shape

Property		Tolerances on dimensions and shape	
		Not calibrated tiles	Calibrated tiles ^a
Dimensions	<i>l, b</i>	± 1 mm	± 0,5 mm
	<i>d</i>	± 1,5 mm	± 0,5 mm
Flatness (for honed and polished surface only)		0,15 %	0,10 %
Squareness		0,15 %	0,10 %
^a Calibrated tiles indicate a product submitted to specific mechanical finishing in order to obtain more precise dimensions; they are suitable to be fixed by thin mortar bed or adhesives			

4.1.3 Requirements for surface finish

4.1.3.1 General

Surface finishes shall extend uniformly to the edges of the modular tiles.

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.

4.1.3.2 Requirements for surfaces after surface finishing

Surfaces shall be worked to achieve the specified finish and shall have a regular appearance as a result of the finishing process (e.g. making reference to samples, see 4.2.3).

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 grinding 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 percussion tools are, for example:

- bush hammered surfaces (see EN 12670:2001, 2.3.8)*;
- 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 edge consisting of 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, 2.3.22)**;
- sand blasted finish (see EN 12670:2001, 2.3.46)***;
- water jet streamed finish: a matt textured surface finish, accomplished by exposing the surface to a jet of water under pressure;
- machine tooled finish (see EN 12670:2001, 2.3.54)****;
- riven cut finish: rugged surface produced by splitting 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 finishing 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 a mechanical surface treatment with tools;
- 2) dressed finish clearly showing tool marks.

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4.2 Requirements of natural stone for modular tiles

4.2.1 General

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Due to natural variations of the stone materials, deviations from the declared values may occur.

Whenever stone processing is likely to change the characteristics of the raw 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 document.

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

4.2.2 Denomination

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

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

4.2.3 Visual appearance

4.2.3.1 General

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 for providing a general description of visual appearance.

The reference sample shall be provided by the supplier.

4.2.3.2 Reference sample, visual inspection and acceptance criteria

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 at least 0,01 square metres (typical values are between 0,01 and 0,25 square metres in face area but may be more), 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.

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

If the processing of the stone involves 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 stone in accordance with 4.2.2 above, 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 2).

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