SLOVENSKI STANDARD
SIST-TP CEN/TR 17024:2017

01-marec-2017

Naravni kamen - Navodila za uporabo naravnega kamna

Natural stones - Guidance for use of natural stones

Naturstein - Leitfaden für die Anwendung von Natursteinen

Pierres naturelles - Guide d'emploi des pierres naturelles

Ta slovenski standard je istoveten z: **CEN/TR 17024:2017**

ICS:

91.100.15	Mineralni materiali in izdelki	Mineral materials and products

SIST-TP CEN/TR 17024:2017 **en,fr,de**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 17024

January 2017

ICS 91.100.15

English Version

Natural stones - Guidance for use of natural stones

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This Technical Report was approved by CEN on 13 September 2016. It has been drawn up by the Technical Committee CEN/TC 246.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. CEN/TR 17024:2017 E

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European foreword

This document (CEN/TR 17024:2017) has been prepared by Technical Committee CEN/TC 246 “Natural stones”, the secretariat of which is held by UNI.

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Introduction

Product standards for natural stone are issued by the European committee for standardization and deal with stone masonry, tiles and slabs for cladding, flooring and stairs.

Producers in countries outside the European Union might not be familiar with these product standards. Therefore, the scope of this document is to inform and assist the user in order to provide recommendations for the proper use of natural stone and the requirements of the product standards regulating their being placed on the market within the countries comprising the European Union.

1 Scope

This Technical Report applies to natural stone products intended for masonry elements, wall coverings (including tiles), internal floor and stair finishes (including tiles) and exterior floor and stair finishes (including paving), as well as massive stone elements.

It provides guidance for the application and use of natural stone products in accordance with European product standards.

This Technical Report does not deal with coatings or staining problems, and does not take into account treatments that could modify the performance characteristics of the materials.

This Technical Report does not apply to agglomerated stones and aggregates.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 772-1, *Test methods for masonry units — Part 1: Determination of compressive strength*

EN 772-11, *Methods of test for masonry units - Part 11: Determination of water absorption of aggregate concrete, autoclaved aerated concrete, manufactured stone and natural stone masonry units due to capillary action and the initial rate of water absorption of clay masonry units*

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*

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

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

EN 1469, *Natural stone products - Slabs for cladding - Requirements*

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

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

EN 12059, *Natural stone — Finished products, dimensional stone work Requirements*

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, *Natural stone - Terminology*

EN 13364, *Natural stone test methods - Determination of the breaking load at dowel hole*

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

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*

EN 14146, *Natural stone test methods - Determination of the dynamic modulus of elasticity (by measuring the fundamental resonance frequency)*

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

EN 14158, *Natural stone test methods - Determination of rupture energy*

EN 14579, *Natural stone test methods - Determination of sound speed propagation*

EN 14581, *Natural stone test methods - Determination of linear thermal expansion coefficient*

EN 16140, *Natural stone test methods - Determination of sensitivity to changes in appearance produced by thermal cycles*

EN 16306, *Natural stone test methods - Determination of resistance of marble to thermal and moisture cycles*

CEN/TS 16165, *Determination of slip resistance of pedestrian surfaces - Methods of evaluation*

3 Terms and definitions

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

3.1
order
all products to be delivered on the basis of the contract

3.2
order item
one of a set of products corresponding to one single order

3.3
contractual sample
reference sample which forms part of the contract

3.4
delivery
part or all of the order arriving at the same time and at the same place, and giving rise to a delivery order

Note 1 to entry: In addition to the requirements of CE marking, the documents accompanying the delivery shall state the following:

— reference of the order;

— name and address of the supplier;

— nature and type of the delivered order items;

— date of collection and place of delivery;

— total weight of the load;

— quantity of delivered order items;

— weight of materials packaged in bulk (per packaging unit).

3.5
delivery acceptance
series of operations to verify compliance of the delivery with the contract specification (quantity, tolerance specifications, appearance, mechanical properties, contractual samples, etc.)

3.6
packaging unit
term that designates for instance a pallet, a crate, a bag, a box

Note 1 to entry: Each packaging unit shall carry a marking or label allowing the identification of the batch to which it derives.

3.7
batch
set of packaging units containing one order item in one delivery

Note 1 to entry: A batch necessarily corresponds to a single characterization sheet.

Note 2 to entry: A delivery may include one or several batches.

4 General specifications

4.1 General principles

To assess whether a stone type is suitable for a particular application, a specific testing program is described as mentioned in Table 1. Table 1 contains a detailed overview of the most useful tests, in particular:

— characterization tests (or identification tests): they are used to determine the intrinsic material properties, independent of its transformation into a finished product and the environment in which it will be used;

— tests relating to performance in use: these tests evaluate the performance of the finished product after manufacturing. Therefore, these tests should as nearly as possible reproduce the physical

forces and effects of weathering and contamination that act upon the element in service (taking into account dimensions and surface conditions);

— durability tests: these tests are used to analyse the behaviour of the stone over time and thus make it possible to evaluate the stability of the intrinsic material properties and of the initial performance data after a period of time.

Additionally it is relevant to consider the performance of the same stone type in existing examples of its use under similar climatic conditions.

Table 1 — Examples of stones used in structural applications and related tests

	Product standard	**Structural application**	**Test of performance in use**	**Test standard**
Masonry	EN 771–6	Element in elevation, with no possibility of splash back Splash course Window sill Handrail String course Cornice Pinnacles Gargoyle Massive slab for balcony Plinth	Capillarity	EN 772–11
			Frost resistance	EN 12371
			Compressive strength	EN 772–1
Wall cladding	EN 1469	**Internal cladding**		
		Mechanically fastened cladding	Resistance to breaking at dowel hole	EN 13364
			Flexural strength	EN 12372 (EN 13161)
		External cladding		
		Mechanically fastened cladding Elevation String course Balcony sill Window sill Plinth Horizontal covering	Frost resistance	EN 12371
			Resistance to breaking at dowel hole	EN 13364
			Flexural strength	EN 12372 (EN 13161)
			Resistance of marble to thermal and moisture cycles	EN 16306
			Thermal shock resistance	EN 14066

Wall cladding	EN 1469 EN 12057 EN 12059	**Internal cladding**		
		Glued cladding	Apparent density Open porosity	EN 1936
		External cladding		
		Glued cladding and tiling Elevation String course Balcony sill Window sill Plinth Horizontal covering	Apparent density Open porosity	EN 1936
			Frost resistance	EN 12371
			Thermal shock resistance	EN 14066
Floor covering	EN 12058 EN 12057	Interior floors and stairs	Abrasion resistance	EN 14157
			Flexural strength	EN 12372 (EN 13161)
		Exterior floors and stairs	Abrasion resistance	EN 14157
			Slip resistance	CEN/TS 16165
			Flexural strength	EN 12372 (EN 13161)
			Frost resistance	EN 12371
External Paving	EN 1341	Slabs	Abrasion resistance	EN 14157
			Flexural strength	EN 12372 (EN 13161)
			Slip and skip resistance	EN 14231
			Frost resistance	EN 12371
	EN 1342	Setts	Abrasion resistance	EN 14157
			Compressive strength	EN 1926
			Slip and skid resistance	EN 14231
			Frost resistance	EN 12371
	EN 1343	Kerbs	Abrasion resistance	EN 14157
—			Flexural strength	EN 12372
—			Frost resistance	EN 12371