



SLOVENSKI STANDARD

oSIST prEN 13364:2025

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Preskušanje naravnega kamna – Ugotavljanje lomne obremenitve ob sidrni izvrtini in sistemu z režo in rezilom

Natural stone test methods - Determination of the breaking load at dowel hole and slot-and-blade system

Prüfung von Naturstein - Bestimmung der Ausbruchlast am Ankerdornloch

Méthodes d'essai pour pierre naturelle - Détermination de l'effort de rupture au niveau du trou de goujon et du système rainure-équerre

Ta slovenski standard je istoveten z: prEN 13364

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ICS:

73.020	Rudarstvo in kamnolomsko izkopavanje	Mining and quarrying
91.100.15	Mineralni materiali in izdelki	Mineral materials and products

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ICS 73.020; 91.100.15

Will supersede EN 13364:2001

English Version

Natural stone test methods - Determination of the breaking load at dowel hole and slot-and-blade system

Méthodes d'essai pour pierre naturelle - Détermination
de l'effort de rupture au niveau du trou de goujon et du
système rainure-équerre

Prüfung von Naturstein - Bestimmung der
Ausbruchlast am Ankerdornloch

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 246.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 13364:2024) has been prepared by Technical Committee CEN/TC 246 “Natural Stone”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13364:2001.

prEN 13364:2024 includes the following significant technical changes with respect to EN 13364:2001:

- A complementary experimental method is integrated and concerns the slot-blade fixing system.

This document is one of the series of standards for tests on natural stone.

Test methods for natural stone consist of the following parts:

- 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 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 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 13755, *Natural stone test methods — Determination of water absorption at atmospheric pressure*
- EN 13919, *Natural stone test methods — Determination of resistance to ageing by SO₂ action in the presence of humidity*
- EN 14066, *Natural stone test methods — Determination of thermal shock resistance*
- EN 14158, *Natural stone test methods — Determination of rupture energy*
- EN 14205, *Natural stone test methods — Determination of Knoop hardness*
- EN 14231, *Natural stone test methods — Determination of slip resistance by means of the pendulum tester*
- EN 14579, *Natural stone test methods — Determination of sound speed propagation*
- EN 14580, *Natural stone test methods — Determination of static elastic modulus*
- EN 14581, *Natural stone test methods — Determination of linear thermal expansion coefficient*

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It is intended that other ENs call up this EN 13364 as the basis of evaluation of conformity. (Nevertheless, it is not intended that all-natural stones products be subjected regularly to all the listed tests. Specifications in other standards can call up only relevant test methods).

This document has an Annex A (normative).

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1 Scope

This document specifies a test method to determine the breaking load for two fixing methods available for natural stones used for cladding or lining in building. These two methods refer to:

- a) dowel-hole, and
- b) slot-blade fixing.

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 197-1, *Cement - Part 1: Composition, specifications and conformity criteria for common cements*

EN 10088-1, *Stainless steels - Part 1: List of stainless steels*

EN 12390-4, *Testing hardened concrete - Part 4: Compressive strength - Specification for testing machines*

3 Terms and definitions

No terms and definitions are listed in this document.

4 Principle

This test consists of applying a force in a direction perpendicular to the face of a specimen through:

- i) a dowel previously placed in a hole drilled in one of its sides or;
- ii) a metallic profile placed in a slot located in one of its sides and measuring the breaking load of the specimen.

5 Symbols

- d is the thickness of the test specimen, in millimetres;
- p is the depth of the slot located in the test specimen, in millimetres;
- s is the thickness of the slot located in the test specimen, in millimetres;
- e is defined as $[d/2 - s]$, in millimetres;
- d_1 is the distance from the hole wall to the face where fracture occurs, in millimetres;
- b_A is the maximum distance of the centre of the hole to the fracture edge on the face, in millimetres;
- F is the individual breaking load, in newtons;
- \bar{d}_1 is the mean value of d_1 , in millimetres;
- \bar{F} is the mean value of F , in newtons;
- \bar{b}_A is the mean value of b_A , in millimetres.

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6 Apparatus

- 6.1 A balance**, capable of weighing the specimens with an accuracy of 0,01 % of their mass.
- 6.2 ventilated oven**, capable of maintaining a temperature of (70 ± 5) °C.
- 6.3 A linear measuring device**, with an accuracy of 0,05 mm.
- 6.4 A rotary drilling machine**, equipped with a diamond or tungsten carbide tipped bit.
- 6.5 A cutting device**, allowing the creation of the adequate slot.
- 6.6 A testing machine** of appropriate force in accordance with EN 12390-4 and calibrated according to this document.
- 6.7 A clamping device**, consisting of two metal plates having the shape and sizes shown in Figure 1.
- 6.8 A device for applying loads**, perpendicular to the axis of the dowel (see Figure 2) or the slot (see Figure 3).
- 6.9 A non-deformable metallic corner**, used to transmit the force (only applicable to the slot-blade method (see Figure 3)).
- 6.10 A room or chamber** in which the temperature of the air can be maintained at (20 ± 5) °C.

7 Preparation of the specimens

7.1 Sampling and position of bedding

The sampling is not the responsibility of the test laboratory except where specially requested.

The position of any bedding or anisotropy shall be indicated on each specimen by means of at least two parallel lines.

7.2 Test specimens

7.2.1 General

The test can be carried out as an identification test or as a technological test.

Identification tests are tests carried out when the use of the stone with respect to the position of the planes of anisotropy and the thickness and surface finish of the elements in the cladding are not known.

Technological tests are those carried out when the use of the stone with respect to the position of the planes of anisotropy and the thickness and surface finish of the elements in the cladding are known. In this case the major faces of the specimens shall have the same orientation of the face that will be loaded during use.

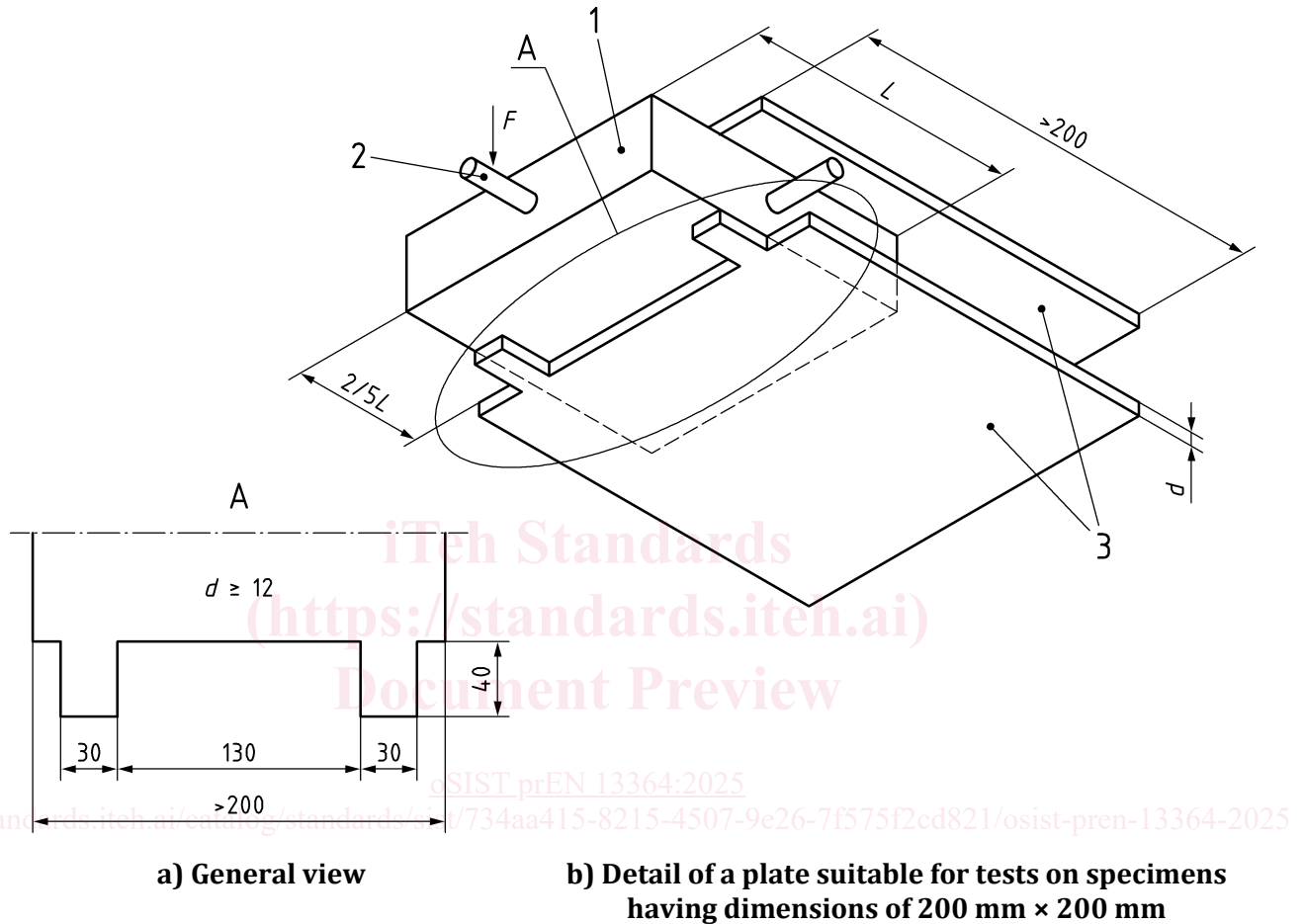
7.2.2 Number of specimens

The minimum number of test specimens depends on the presence of planes of anisotropy.

If the stone does not show planes of anisotropy 10 tests of Type 0 (see Figure 4) shall be made on three specimens.

If the stone shows planes of anisotropy:

- 10 tests of Type I (see Figure 5) shall be made on three specimens cut parallel to the planes of anisotropy;
- 10 tests of Type IIa (see Figure 6) and 10 tests of Type IIb (see Figure 7) shall be made on five specimens cut perpendicular to the planes of anisotropy.

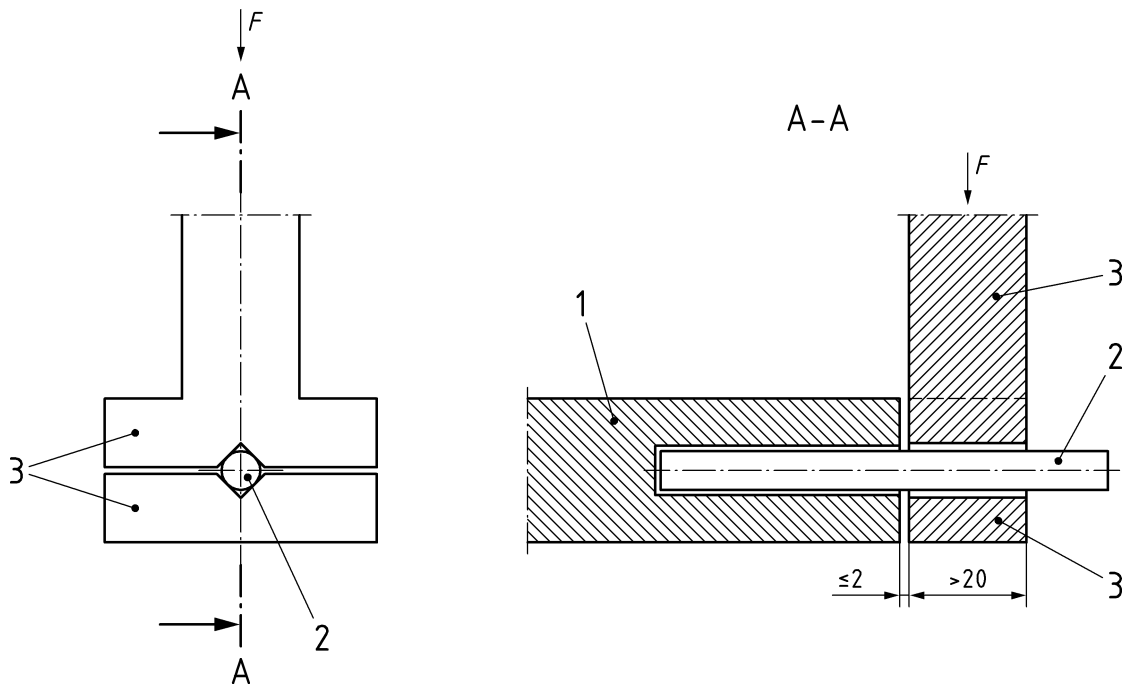


Key

- 1 specimen
- 2 dowel
- 3 metal plate
- F force applied on the specimen
- L length of the specimen
- d thickness of the metal plate

Figure 1— Clamping device to hold the specimen in place

Dimensions in millimetres



Key

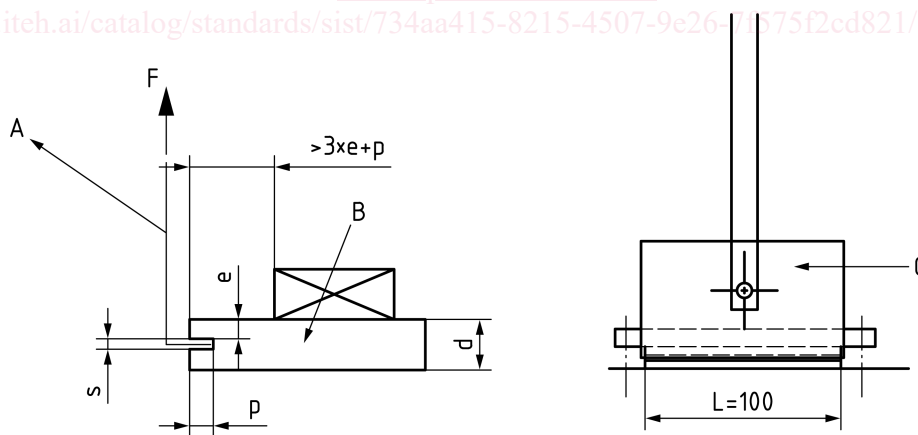
- 1 specimen
- 2 dowel
- 3 device for applying load
- F force applied on the specimen

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Figure 2— Device for applying loads perpendicular to the axis of the dowel

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Key

- A metallic corner
- B specimen
- C profile

Figure 3 — Device for applying loads perpendicular to the axis of the slot