



SLOVENSKI STANDARD
SIST EN 14617-2:2004

01-september-2004

Aglomeriran kamen - Preskusne metode - 2. del: Ugotavljanje upogibne trdnosti (zvijanje)

Agglomerated stone - Test methods - Part 2: Determination of flexural strength (bending)

Künstlich hergestellter Stein - Prüfverfahren - Teil 2: Bestimmung der Biegefestigkeit (Schwenkbiegen)

(standards.iteh.ai)

Pierre reconstituée - Méthodes d'essai - Partie 2: Détermination de la résistance a la flexion (traction)

<https://standards.iteh.ai/catalog/standards/sist/330f33e7-2f65-4251-ad0e-89a4afd4da24/sist-en-14617-2-2004>

Ta slovenski standard je istoveten z: EN 14617-2:2004

ICS:

91.100.15 Mineralni materiali in izdelki Mineral materials and products

SIST EN 14617-2:2004

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 14617-2:2004

<https://standards.iteh.ai/catalog/standards/sist/330f33e7-2f65-4251-ad0e-89a4afd4da24/sist-en-14617-2-2004>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14617-2

February 2004

ICS

English version

Agglomerated stone - Test methods - Part 2: Determination of flexural strength (bending)

Pierre agglomérée - Méthodes d'essai - Partie 2:
Détermination de la résistance à la flexion (traction)

Künstlich hergestellter Stein - Prüfverfahren - Teil 2:
Bestimmung der Biegefestigkeit (Schwenkbiegen)

This European Standard was approved by CEN on 14 November 2003.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

[SIST EN 14617-2:2004](https://standards.iteh.ai/catalog/standards/sist/330f33e7-2f65-4251-ad0e-89a4afd4da24/sist-en-14617-2-2004)

<https://standards.iteh.ai/catalog/standards/sist/330f33e7-2f65-4251-ad0e-89a4afd4da24/sist-en-14617-2-2004>



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

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

Contents	page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Principle	4
4 Symbols	4
5 Apparatus	4
6 Preparation of the specimens.....	5
6.1 Sampling	5
6.2 Test specimens	5
6.2.1 Surface finish	5
6.2.2 Dimensions.....	6
6.2.3 Limit deviation.....	6
6.2.4 Conditioning before testing	6
7 Test procedure	6
8 Expression of the results	6
9 Test report	7
Annex A (normative) Statistical evaluation of tests results	8
A.1 Scope	8
A.2 Symbols and definitions	8
A.3 Statistical evaluation of test results	9

Foreword

This document (EN 14617-2:2004) has been prepared by Technical Committee CEN/TC 246 "Natural Stone", 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 2004, and conflicting national standards shall be withdrawn at the latest by August 2004.

This document has been prepared in collaboration with JWG 229/246 "Agglomerated stones" (CEN/TC 246/WG4).

Test methods for agglomerated stones consist of the following:

prEN 14617-1, *Agglomerated stone - Test methods – Part 1: Determination of apparent density and water absorption*

EN 14617-2, *Agglomerated stone – Test methods – Part 2: Determination of flexural strength (bending)*

prEN 14617-3, *Agglomerated stone - Test methods – Part 3: Determination of slipperiness*

prEN 14617-4, *Agglomerated stone - Test methods – Part 4: Determination of abrasion resistance*

prEN 14617-5, *Agglomerated stone - Test methods – Part 5: Determination of freeze and thaw resistance*

prEN 14617-6, *Agglomerated stone - Test methods – Part 6: Determination of thermal shock*

prEN 14617-7, *Agglomerated stone – Test methods – Part 7: Determination of ageing*

prEN 14617-8, *Agglomerated stone – Test methods – Part 8: Determination of resistance to fixing (dowel hole)*

prEN 14617-9, *Agglomerated stone - Test methods – Part 9: Determination of impact resistance*

prEN 14617-10, *Agglomerated stone – Test methods – Part 10: Determination of chemical resistance*

prEN 14617-11, *Agglomerated stone – Test methods – Part 11: Determination of linear thermal expansion coefficient*

prEN 14617-12, *Agglomerated stone – Test methods – Part 12: Determination of dimensional stability*

prEN 14617-13, *Agglomerated stone – Test methods – Part 13: Determination of electrical resistivity*

prEN 14617-14, *Agglomerated stone – Test methods – Part 14: Determination of surface hardness*

prEN 14617-15, *Agglomerated stone – Test methods – Part 15: Determination of compressive strength*

prEN 14617-16, *Agglomerated stone – Test methods – Part 16: Determination of dimensions and geometric characteristics*

prEN 14617-17, *Agglomerated stone – Test methods – Part 17: Determination of biological resistance*

Annex A is normative.

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.

EN 14617-2:2004 (E)**1 Scope**

This European Standard specifies a method for determination of flexural strength under a concentrated load (bending resistance) of agglomerated stone flat products.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN 12440, *Natural stone – Denomination criteria*

prEN 14618, *Agglomerated stone – Terminology and classification*

3 Principle

The principle of this method is to place a specimen on two rollers and to progressively load the specimen in the middle. The breaking load is measured and the flexural strength calculated.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

[SIST EN 14617-2:2004](https://standards.iteh.ai/catalog/standards/sist/330f33e7-2f65-4251-ad0e-89a4afd4da24/sist-en-14617-2-2004)

<https://standards.iteh.ai/catalog/standards/sist/330f33e7-2f65-4251-ad0e-89a4afd4da24/sist-en-14617-2-2004>

4 Symbols

R_{ff} flexural strength, in Megapascals;

F breaking load, in newtons;

l distance between the supporting rollers, in millimetres;

b width of the specimen adjacent to the plane of fracture, in millimetres;

h thickness of the specimen adjacent to the plane of fracture, in millimetres;

L total length of the specimen, in millimetres.

5 Apparatus

5.1 A balance capable of weighing the specimen with an error limit of 0,01 % of the mass of the specimen.

5.2 A ventilated oven capable of maintaining a temperature of (70 ± 5) °C.

5.3 A linear measuring device with an error limit of 0,05 mm.

5.4 A testing machine of appropriate force, in accordance with EN 12372 and calibrated according to this standard.

5.5 A device for applying loads on the specimen by a centre-point load. It consists of two lower rollers (supporting rollers) and one upper roller (load-applying roller) which shall be centred exactly in the middle between

the two supporting rollers (see Figure 1). The distance between the two supporting rollers shall be reported as requested in 6.2.2.

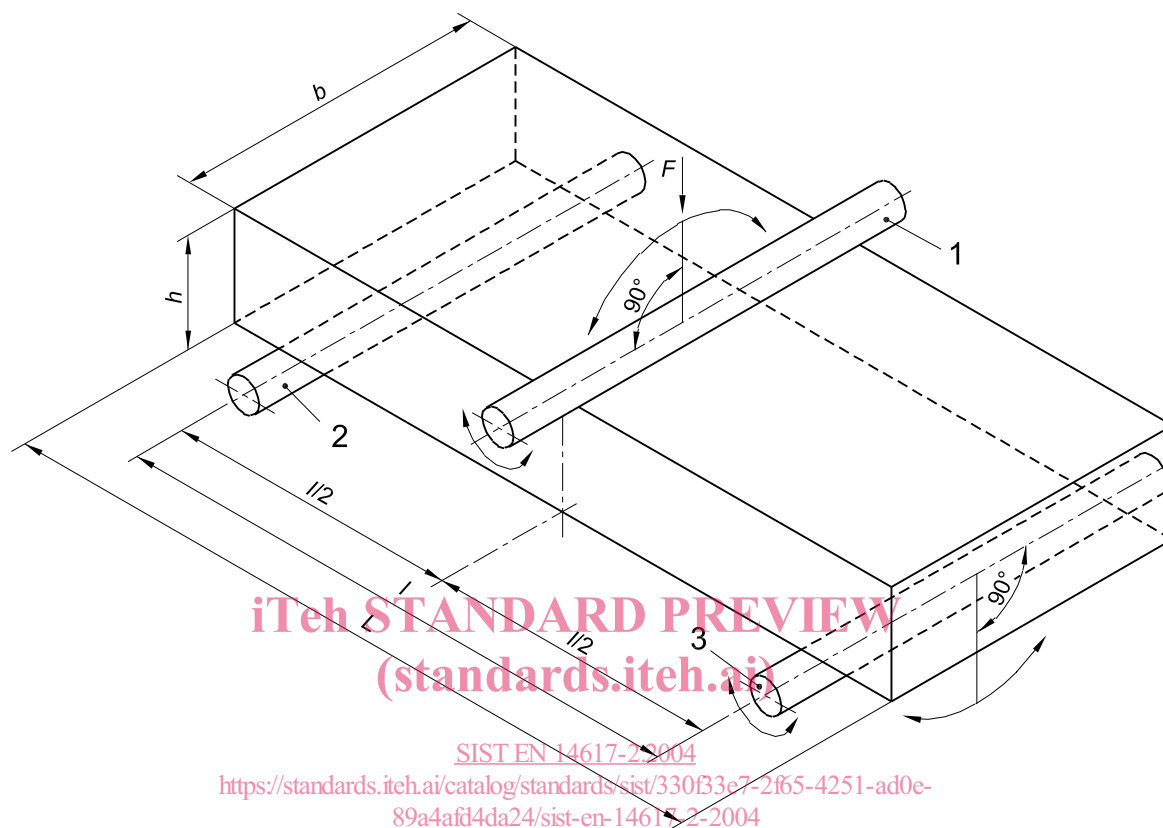


Figure 1 — Arrangement of loading of test specimen (centre-point loading)

5.6 A room which can be maintained at a temperature of (20 ± 5) °C.

6 Preparation of the specimens

6.1 Sampling

The sampling is not the responsibility of the test laboratory except where specially requested. When possible whole agglomerated stones should be tested, however, very large or irregular shapes may be cut in order to arrange them on the instrument. At least 6 specimens shall be selected from a homogeneous batch (see also 6.2.2).

6.2 Test specimens

6.2.1 Surface finish

The surface finish of the faces of the specimens can be sawn, polished, flamed or sand blasted. In any case, the kind of surface finish has to be stated in the report. The surface intended for use shall be in contact with the two supporting rollers (facing downwards).

EN 14617-2:2004 (E)**6.2.2 Dimensions**

The dimensions of the specimens are determined by their thickness h :

- the thickness h shall be at least 6,5 mm;
- the total length L shall be equal to six times the thickness;
- the distance between the supporting rollers l shall be equal to five times the thickness;
- the width b shall be between 50 mm and three times the thickness ($50 \text{ mm} \leq b \leq 3h$), and in no case it shall be less than the thickness.

6.2.3 Limit deviation

The limit deviation on the distance between the supporting rollers l is to be ± 1 mm of the nominal dimension.

The faces shall not depart from perpendicularity to the axis of the specimen by more than 2 % with a maximum of 2 mm differences when measuring in any direction. The measurement shall be taken in accordance with 5.6 of prEN.14618.

6.2.4 Conditioning before testing

The specimens shall be dried at (70 ± 5) °C for agglomerated stones with resin as a binder and at (40 ± 5) °C for agglomerated stones with cement as a binder, to a constant mass.

Constant mass is reached when the difference between two weighings carried out (24 ± 2) h apart is no greater than 0,1 % of the first of the two masses.

After drying and prior to testing the specimens shall be stored at (20 ± 5) °C until the thermal equilibrium is reached. After that the test shall be performed within 24 h.

7 Test procedure

Wipe the surface of the rollers clean and remove any loose grits from both the faces of the specimen that will be in contact with the rollers.

The specimen is placed centrally on the supporting rollers (see figure 1). The loading roller is placed in the middle of the specimen.

The load is increased uniformly at a rate of $(0,25 \pm 0,05)$ MPa/s until the specimen breaks. Note the breaking load to the nearest 10 N and also the place where the fracture occurs. The width and the thickness of the specimen are measured adjacent to the fracture plane and the dimensions are expressed in millimetres to the nearest 0,1 mm.

8 Expression of the results

The flexural strength R_{tf} of each specimen is calculated using the formula:

$$R_{tf} = \frac{3Fl}{2bh^2}$$

The result shall be expressed in Megapascals to the nearest 0,1 MPa.

If the fracture is situated more than 15 % of the distance between the supporting rollers from the middle of the specimen and/or flaws are present (veins, fissures, etc.) it shall be mentioned in the test report.

Statistical evaluation of test results shall be carried out in accordance with annex A.

9 Test report

The test report shall contain the following information:

- a) unique identification number of the report;
- b) the number, title and date of issue of this European Standard;
- c) the name and address of the test laboratory and the address where the test was carried out if different from the test laboratory;
- d) the name and address of the client;
- e) it is the responsibility of the client to supply the following information:
 - the petrographic name of the stone aggregates used in the tested agglomerated stone lots in accordance with prEN 14618;
 - the commercial name of the stone aggregates used in the tested agglomerated stone lots in accordance with EN 12440;
 - the place of origin of the aggregates used in the tested agglomerated stone lots;
 - the name of the supplier;
 - the name of the person or organization which carried out the sampling;
 - the surface finish of the specimens (if relevant to the test);
- f) the date of delivery of the sample or of the specimens;
- g) the date when the specimens were prepared (if relevant) and the date of testing;
- h) the number of specimens in the sample;
- i) the dimensions of the specimens;
- k) the rate of loading in Megapascals per second to the nearest 0,05 MPa/s;
- l) for each specimen: the width and thickness adjacent to the fracture plane and the distance between the supporting rollers in millimetres to the nearest 0,1 mm, the breaking force in newton without any decimal place, the flexural strength in Megapascals to the nearest 0,1 MPa and the location of the fracture and any anomalies observed;
- m) for each relevant direction of loading the mean value \bar{R}_f of the flexural strength and the standard deviations, in Megapascals to the nearest 0,1 MPa;
- n) all deviations from the standard and their justification;
- o) remarks.

The test report shall contain the signature(s) and the role(s) of the responsible(s) for the testing and the date of issue of the report. It shall also state that the report shall not be partially reproduced without written consent of the test laboratory.