SLOVENSKI STANDARD
oSIST prEN ISO 1288-5:2014

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Steklo v stavbah - Ugotavljanje upogibne trdnosti stekla - 5. del: Metoda soosnega dvojnega obroča na ravnem steklu z majhnimi površinami (ISO/DIS 1288-5:2014)

Glass in building - Determination of the bending strength of glass - Part 5: Coaxial double -ring test on flat specimens with small test surface areas (ISO/DIS 1288-5:2014)

Glas im Bauwesen - Bestimmung der Biegefestigkeit von Glas - Teil 5: Doppelring-Biegeversuch an plattenförmigen Proben mit kleinen Prüfflächen (ISO/DIS 1288-5:2014)

Verre dans la construction - Détermination de la résistance du verre à la flexion - Partie 5: Essais avec doubles anneaux concentriques sur éprouvettes planes, avec de petites surfaces de sollicitation (ISO/DIS 1288-5:2014)

Ta slovenski standard je istoveten z: **prEN ISO 1288-5 rev**

ICS:

81.040.20	Steklo v gradbeništvu	Glass in building

oSIST prEN ISO 1288-5:2014 **en**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 1288-5

ISO/TC **160**/SC **2**

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Glass in building — Determination of the bending strength of glass —

Part 5:
Coaxial double-ring test on flat specimens with small test surface areas

Verre dans la construction — Détermination de la résistance du verre à la flexion —

Partie 5: Essais avec doubles anneaux concentriques sur éprouvettes planes, avec de petites surfaces de sollicitation

ICS: 81.040.20

ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 1288 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 1288-5 was prepared by Technical Committee ISO/TC 160, *Glass in building*, Subcommittee SC 2, *Use considerations* in conjunction with Technical Committee CEN/TC 129, *Glass in building*.

ISO 1288 consists of the following parts, under the general title *Glass in building — Determination of the bending strength of glass*:

— *Part 1: Fundamentals of testing glass*

— *Part 2: Coaxial double ring test on flat specimens with large test surface areas*

— *Part 3: Test with specimen supported at two points (four point bending)*

— *Part 4: Testing of channel shaped glass*

— *Part 5: Coaxial double ring test on flat specimens with small test surface areas*

This Standard has been based on EN 1288-5 *Glass in building - Determination of the bending strength of glass" - Part 5 : Coaxial double ring test on flat specimens with small test surface areas* prepared by Technical Committee CEN/TC 129 "Glass in building"/WG8 "Mechanical Strength".

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Glass in building — Determination of the bending strength of glass — Part 5: Coaxial double ring test on flat specimens with small or medium test surface areas

1 Scope

This International Standard specifies a method for determining the comparative bending strength of glass for use in buildings, excluding the effects of the edges.

NOTE See 5.1.4 in ISO 1288-1 for an explanation as to why this test method should only be used for comparing the strength of types of glass, and not for assessing strength for design purposes.

The limitations of this part of this International Standard are described in ISO 1288-1.

ISO 1288-1 should be read in conjunction with this part of this International Standard.

This test method is not suitable for patterned glass..

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 1288. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 1288 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 48, *Rubber, vulcanised or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 1288-1, *Glass in building - Determination of the bending strength of glass - Part 1: Fundamentals of testing glass*

ISO 16293-1: *Glass in building – Basic soda lime silicate glass products – Part 1: Definitions and general physical and mechanical properties*

3 Terms and definitions

For the purposes of this part of ISO 1288, the following terms and definitions apply.

3.1
bending stress
the tensile bending stress induced in the surface of a specimen

NOTE For testing purposes, the bending stress should be uniform over a specified part of the surface.

4 Symbols (and abbreviated terms)

F	Load	N
F_{max}	Load at breakage, "breaking load"	N
h	Thickness of specimen	m
L	Side length of square specimens	m
K_1,K_2	Constants for calculation of bending stress	
r_1	Radius of loading ring	m
r_2	Radius of supporting ring	m
r_3	Radius of circular specimens	m
r_{3m}	Average specimen radius (for evaluation)	m
t	Time	s
σ	Stress	Pa
σ_{bB}	Bending strength	Pa
μ	Poisson number of specimen NOTE for soda lime silicate glass (see ISO 16293-1) a value of 0,23 is used.	
$\Delta F/\Delta t$	Rate of increase of load	N/s
$\Delta\sigma/\Delta t$	Rate of increase of stress	Pa/s

5 Principle of test method

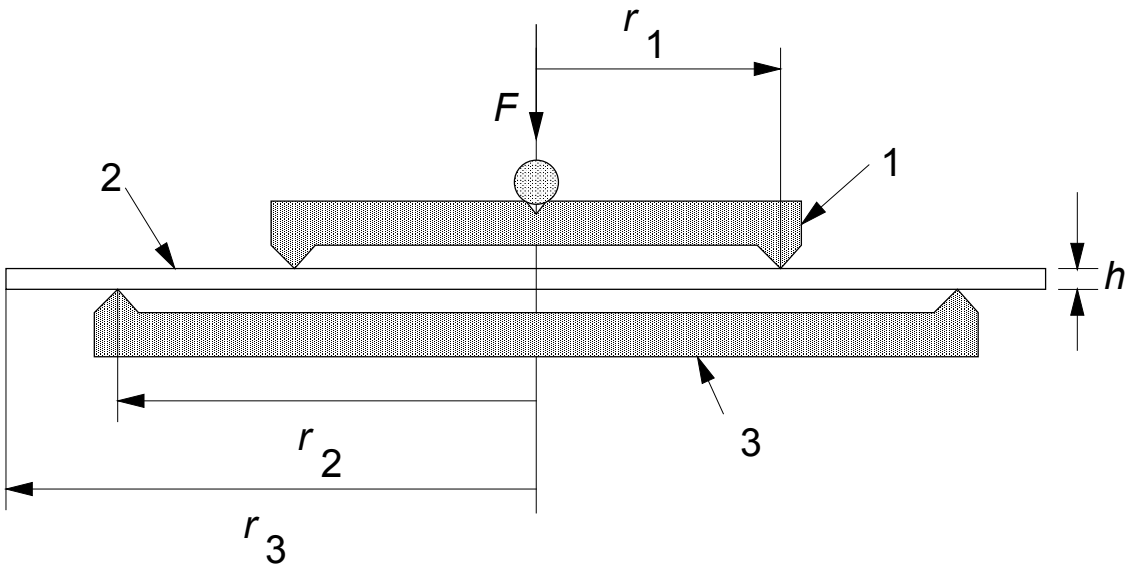
A circular or square plane-parallel specimen with radius r_3, or length of side L, resting on a supporting ring (radius r_2) shall be loaded by means of a loading ring (radius r_1) arranged concentrically relative to the supporting ring (see figure 1).

Outside the loading ring, the radial and tangential stresses in the specimen decrease towards the edge, so that the risk of failure there is small.

For limited loads, F, (depending on the values of r_1, r_2, r_3 and h) there is, in the central region of the convexly bent specimen surface, a tensile stress field (see [1] in Bibliography) extending in all directions and uniform, the area in this field being bounded by the loading ring.

By increasing the load, F, the tensile stress in the middle of the specimen is increased at a constant rate until failure occurs, the expected point of failure being in the most severely stressed surface region defined by the loading ring.

The bending strength, σ_{bB}, shall be calculated from the maximum load, F_{max}, measured when failure occurs and the specimen thickness, h, taking into account the dimensions of the square or circular specimens and the value for Poisson number, μ, of the specimen.



1 Loading ring

2 Specimen

3 Supporting ring

Figure 1 — Test arrangement (indicating the principle), illustrated for a circular specimen

6 Apparatus

6.1 Testing machine

The bending test shall be carried out using a s uitable bending testing machine, which shall incorporate the following features:

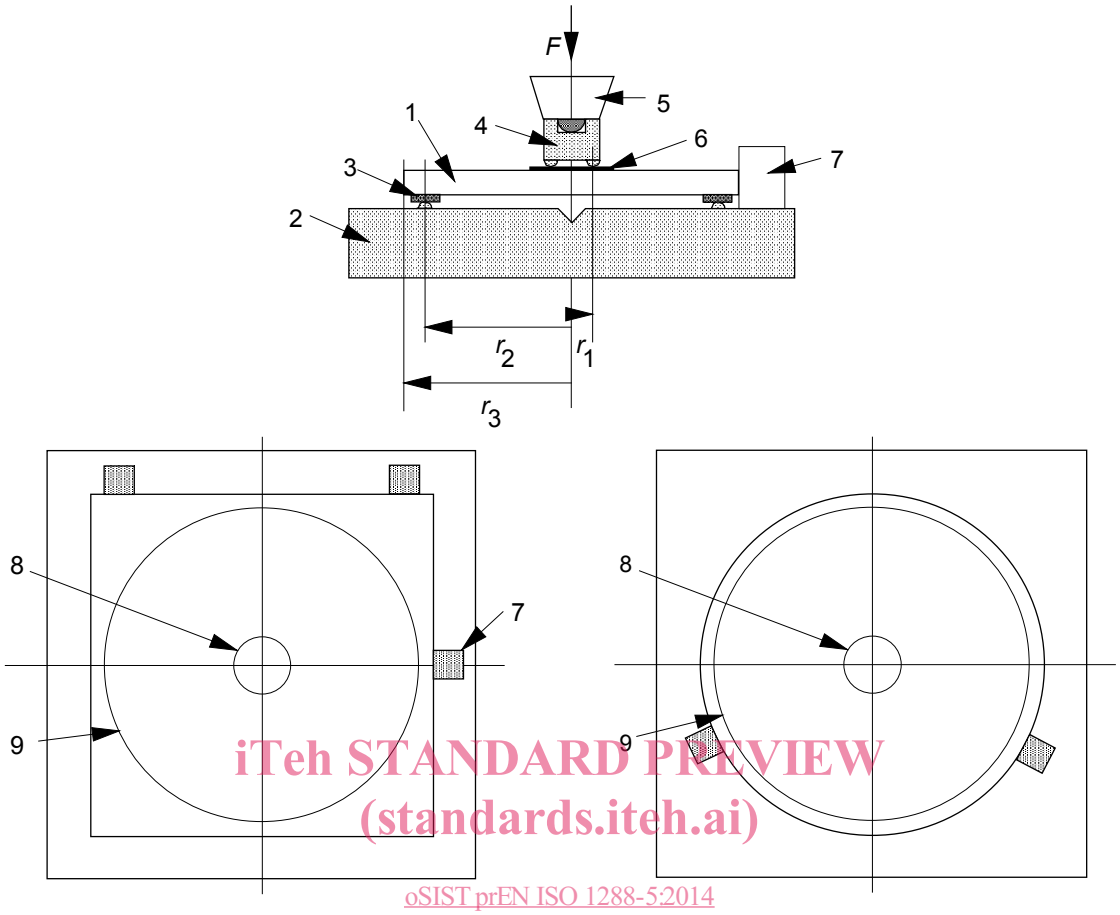
a) The stressing of the specimen shall be capable of being applied from zero up to a maximum value in a manner which minimizes shock and is stepless;

b) The stressing device shall be capable of the specified rate of stressing;

c) The testing machine shall incorporate a load measuring device with a limit of error of ± 2,0 % within the measuring range.

6.2 Loading device

The loading device shall be ar ranged as illustrated in figure 2, with dimensions conforming to table 1 f or the two combinations of loading ring and supporting ring accepted for the coaxial double ring bending test.



1 Specimen

2 Base plate of hardened steel provided with a supporting ring

3 Spacer of silicone rubber

4 Loading ring of hardened steel

5 Load transmitting member with a centring feature for the loading ring

6 Spacer of paper or synthetic material approximately 0,1mm thick

7 Adjusting jaw for centring the specimen

8 Contact circle of loading ring

9 Contact circle of supporting ring

Figure 2 — Loading device