



SLOVENSKI STANDARD

SIST EN 12572-2:2009

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Umetne plezalne stene - 2. del: Varnostne zahteve in preskusne metode za balvanske stene

Artificial climbing structures - Part 2: Safety requirements and test methods for bouldering walls

Künstliche Kletteranlagen - Teil 2: Sicherheitstechnische Anforderungen und Prüfverfahren für Boulderwände

Structures artificielles d'escalade - Partie 2: Exigences de sécurité et méthodes d'essai relatives aux murs d'escalade (pans et blocs)

Ta slovenski standard je istoveten z: **EN 12572-2:2008**

ICS:

97.220.10 Športni objekti Sports facilities

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12572-2

November 2008

ICS 97.220.10

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English Version

Artificial climbing structures - Part 2: Safety requirements and test methods for bouldering walls

Structures artificielles d'escalade - Partie 2 : Exigences de sécurité et méthodes d'essai relatives aux pans et blocs d'escalade

Künstliche Kletteranlagen - Teil 2: Sicherheitstechnische Anforderungen und Prüfverfahren für Boulderwände

This European Standard was approved by CEN on 27 September 2008.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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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 Terms and definitions	4
4 Safety requirements and test methods	5
5 Marking	8
6 Instruction manual	8
7 Conformity of the bouldering wall	9
Annex A (normative) Effects	10
Annex B (normative) Method of calculating of structural integrity and stability	11
Annex C (normative) Impact test of surface elements	13
Annex D (normative) Hold insert resistance test	16
Annex E (normative) Inspection and maintenance	18
Annex F (informative) Testing of the impact area connecting system	20
Bibliography	22

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Foreword

This document (EN 12572-2:2008) has been prepared by Technical Committee CEN/TC 136 "Sports, playground and other recreational facilities and equipment", the secretariat of which is held by DIN.

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 May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12572:1998, together with EN 12572-1:2007 and EN 12572-3:2008.

This standard consists of a number of parts as follows:

EN 12572-1, *Artificial climbing structures — Part 1: Safety requirements and test methods for ACS with protection points*

EN 12572-2, *Artificial climbing structures — Part 2: Safety requirements and test methods for bouldering walls*

EN 12572-3, *Artificial climbing structures — Part 3: Safety requirements and test methods for climbing holds*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

EN 12572-2:2008 (E)**1 Scope**

This European Standard specifies the safety requirements and calculation methods for bouldering walls, including the safety zone.

This European Standard is applicable when the bouldering is in normal use.

This European Standard is not applicable to ice climbing, dry tooling, playground equipment and deep water soloing.

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 1991-1-3, *Eurocode 1: Actions on structures — Part 1-3: General actions — Snow loads*

EN 1991-1-4, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

EN 1991-1-5, *Eurocode 1: Actions on structures — Part 1-5: General actions — Thermal actions*

EN ISO/IEC 17020, *General criteria for the operation of various types of bodies performing inspection (ISO/IEC 17020:1998)*

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3 Terms and definitions

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

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3.1**artificial climbing structure (ACS)**

sports equipment consisting of a purpose-built climbing structure, which displays different construction characteristics, and is designed for different use objectives and is not reserved for a particular age group

NOTE See EN 12572-1.

3.2**bouldering wall**

artificial climbing structures allowing climbing without protection points including the falling space and impact area

NOTE For protection points see EN 12572-1.

3.3**characteristic load**

maximum load that can be generated in normal use

NOTE See EN 12572-1.

3.4**falling space**

space on or around the bouldering wall that can be occupied by a user during a fall

NOTE See EN 12572-1.

4

3.5**impact area**

surface on which a user lands after falling

3.6**bouldering wall height**

vertical height measured between the highest possible hold and the top of the impact area

3.7**impact absorbing material**

material beneath a bouldering wall filling the impact area designed to absorb the energy of a fall

EXAMPLE Water, air cushion, shingle and foam safety mats.

4 Safety requirements and test methods**4.1 Maximum bouldering wall height**

The maximum height of a bouldering wall where it is not possible to stand on the top shall be 4 500 mm. It shall be 4 000 mm where it is possible to stand on the top.

4.2 Impact absorbing material**4.2.1 General**

The impact absorbing material shall be adapted to accept a fall from at least the maximum height of the bouldering wall at the bottom of which it is installed.

SIST EN 12572-2:2009

4.2.2 Impact attenuation**4.2.2.1 Impact attenuating capacity for foam safety mats**

The most common indoor impact absorbing materials are foam safety mats.

There is currently no unity in Europe between member countries in specifying the correct thickness and density of foam to use in safety mats for any given bouldering wall height. Refer to relevant national standards where applicable.

4.2.2.2 Impact attenuating capacity for shingle

One of the most common outdoor impact absorbing materials is shingle.

When shingle is used it shall be washed, rounded and be between 8 mm and 16 mm in diameter and have a minimum depth of 400 mm.

For bouldering wall heights greater than 3 000 mm, as the impact attenuating capacity of shingle may not be sufficient to safely absorb all falls, a notice shall be erected at the bouldering wall site warning climbers that the use of this bouldering wall is more like climbing at a natural site, and therefore they should use other regular techniques for protecting each other such as: hand spotting, use of crash pads (individual protection mats) etc.

This information shall be visible and accessible to all.

EN 12572-2:2008 (E)

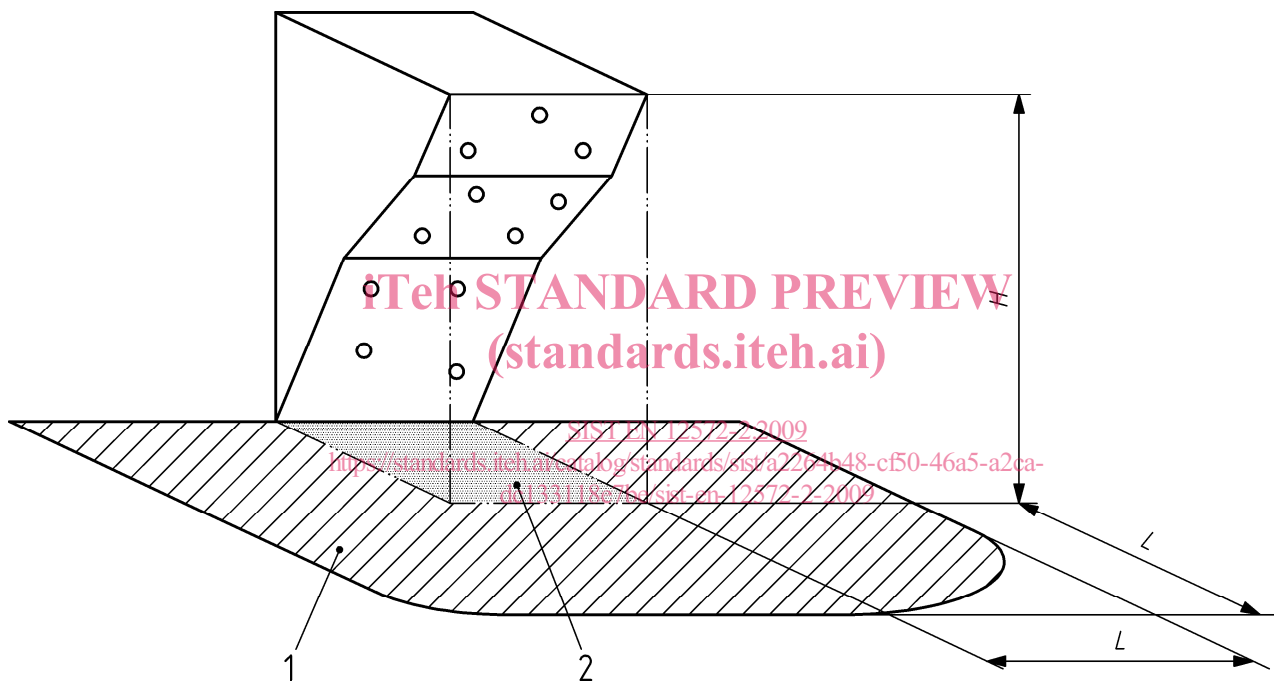
4.2.2.3 Impact attenuating capacity for other types of impact absorbing material

For other types of material such as water, air cushion, net, rubber, bark etc. relevant standards for the selected material should be followed where applicable.

4.3 Impact area

4.3.1 Size of the impact area

Extent of the impact area: if the bouldering wall height is less than 3 000 mm, the ground projection of the bouldering wall shall be extended by $L \geq 2\,000$ mm; if the height of the bouldering wall is 3 000 mm or more, the ground projection of the bouldering wall shall be extended by $L \geq 2\,500$ mm, see Figure 1. If the bouldering wall is vertical or less than 10° overhanging with no holds on the side walls, the impact area either side of the bouldering wall can be reduced to 1 500 mm.



Key

- 1 impact area
- 2 projection of the bouldering wall
- H height of the highest possible hold
- L additional length added to the ground projection of the bouldering wall

Figure 1 — Example of the dimensions of the impact area at the base of a bouldering wall

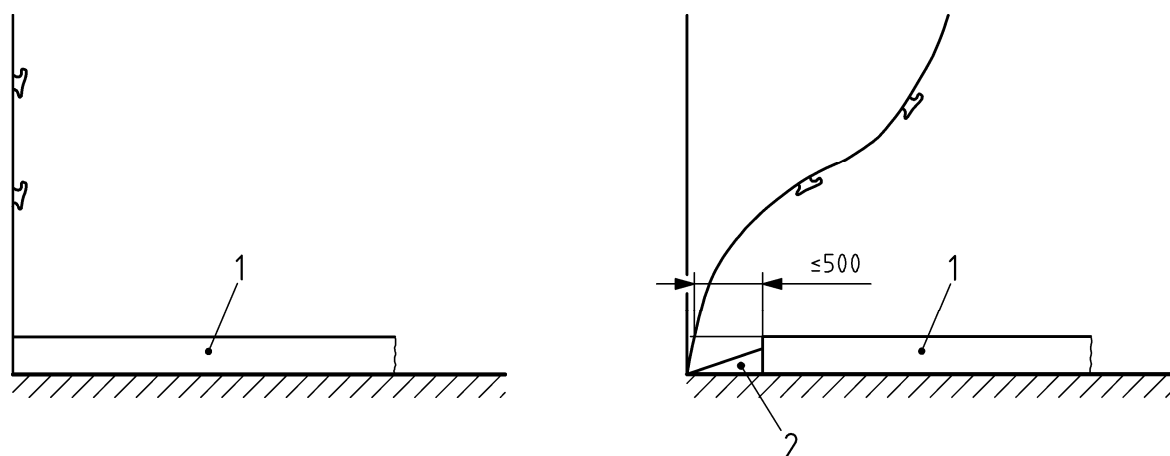
If a bouldering wall constructor can prevent through considered design the possibility of a climber falling to the side of the bouldering wall, the extent of the impact area can be reduced accordingly.

4.3.2 Position of foam safety mats

Foam safety mats shall touch the base of the bouldering wall, see Figure 2 a).

For steeply overhanging bouldering walls with sit down starts it is recommended that a thin or sloping mat is installed between the base of a bouldering wall and the main foam safety mat to prevent foot injuries, see Figure 2 b).

Dimensions in millimetre



a) Foam safety mat in normal circumstances

b) Optional foam safety mat position for "Sit down starts"

Key

- 1 foam safety mat
- 2 thin or sloping mat

Figure 2 — Position of the impact area

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4.4 Connection of modular foam safety mat elements

If the impact absorbing materials consist of modular elements, the sections shall be securely connected together or the gaps shall be covered so that it is impossible for the climber to enter into the gaps between modular elements. If the impact absorbing materials are beneath a continuous surface cover, the cover shall be in sufficient tension to hold the foam safety mats closely together.

Informative Annex F describes one possible method of testing modular foam safety mat element connections.

4.5 Structural integrity

The structural integrity, including stability, of a bouldering wall shall be justified by calculation using the characteristic loads given in Table A.1 in accordance with Annexes A and B.

In all cases where a bouldering wall transmits loads to an existing structure (building, concrete platforms, ground) it shall be ensured that the structure can safely accommodate the loads imposed by the bouldering wall.

4.6 Impact resistance of surface elements

When tested in accordance with Annex C there shall be no breaking or splitting of the surface element.

4.7 Hold insert resistance

When tested in accordance with Annex D there shall no breaking out or loosening of the surface element or of the hole insert.

4.8 Falling space

Within the falling space there shall not be any obstacle which could lead to a hazard to the user. This does not apply to climbing structures.

EN 12572-2:2008 (E)**4.9 Bouldering wall surfaces**

All reachable parts of the bouldering wall surface shall be free of sharp edges and burrs. Edges shall be rounded by a minimum radius of 1 mm, or chamfered at 45° × 1 mm.

There shall be no gaps between 8 mm and 25 mm and with a depth greater than 15 mm which can lead to entrapment, unless it is a feature specifically designed for climbing. Insert holes in the climbing surface of the bouldering wall for attaching holds are excluded.

5 Marking

All bouldering walls shall be marked in a clearly visible place with a notice detailing:

- a) name or trademark of the manufacturer;
- b) name of importer or supplier;
- c) number and date of this European Standard, i.e. EN 12572-2:2008;
- d) date of installation of the bouldering wall (the year with 4 figures);
- e) date of the next main inspection (the year with 4 figures);
- f) that this is a specifically designed bouldering wall for climbing and is not playground equipment;

NOTE This principally concerns external bouldering walls in public places.

- g) in case of shingle or other similar impact absorbing material, safety marking in accordance with 4.2.2.2.

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6 Instruction manual

An instruction manual shall be provided including the following information:

- a) all the information contained in Clause 5;
- b) specific maintenance and inspection requirements;
- c) maximum additional load allowed per square metre, for large removable elements (e.g. Macros);
- d) maximum number of climbers permitted at any time, where applicable.

7 Conformity of the bouldering wall

The conformity documentation shall be supplied to the client and shall contain the following information:

a) detailed calculation (or justification) of the stability of the bouldering wall;

NOTE For all further reconfigurations only the new calculations (or justification) according to the standard and the manufacturer's instructions are necessary.

b) report of the hold insert resistance test, where applicable;

c) report of the impact test of surface elements;

d) report of the connection of modular foam safety mat elements, where applicable;

e) justification for the selection of the impact absorbing material used in the impact area;

f) marking (according to Clause 5);

g) instruction manual (according to Clause 6).

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