



# SLOVENSKI STANDARD

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SIST EN 12572-1:2007

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### Umetne plezalne stene - 1. del: Varnostne zahteve in preskusne metode za umetne plezalne stene z varovalnimi točkami

Artificial climbing structures - Part 1: Safety requirements and test methods for ACS with protection points

Künstliche Kletteranlagen - Teil 1: Sicherheitstechnische Anforderungen und Prüfverfahren für KKA mit Sicherungspunkten

Structures artificielles d'escalade - Partie 1: Exigences de sécurité et méthodes d'essai relatives aux SAE avec points d'assurage

Ta slovenski standard je istoveten z: **EN 12572-1:2017**

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EUROPEAN STANDARD

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## Artificial climbing structures - Part 1: Safety requirements and test methods for ACS with protection points

Structures artificielles d'escalade - Partie 1 : Exigences  
de sécurité et méthodes d'essai relatives aux SAE avec  
points d'assurage

Künstliche Kletteranlagen - Teil 1:  
Sicherheitstechnische Anforderungen und  
Prüfverfahren für KKA mit Sicherungspunkten

This European Standard was approved by CEN on 29 October 2016.

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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**

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## European foreword

This document (EN 12572-1:2017) 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of an identical text or by endorsement, at the latest by July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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

This document supersedes EN 12572-1:2007.

This standard EN 12572, *Artificial climbing structures*, consists of the following parts:

- *Part 1: Safety requirements and test methods for ACS with protection points*
- *Part 2: Safety requirements and test methods for bouldering walls*
- *Part 3: Safety requirements and test methods for climbing holds*

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

**EN 12572-1:2017 (E)****1 Scope**

This European Standard specifies the safety requirements and test methods for artificial climbing structures with protection points (hereafter referred to as ACS).

This European Standard is applicable for ACS in normal use for sport climbing.

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

**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 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 1998-1, *Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings*

**3 Terms and definitions**

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

**3.1 artificial climbing structure (ACS)**  
<https://standards.iteh.ai/catalog/standards/sist/87d21b44-638f-4e6f-963f-e119c299a753/sist-en-12572-1-2017>  
 sports equipment consisting of a purpose-built climbing structure, which shows various construction characteristics, and is designed for various uses in sport climbing objectives

**3.2 protection point**  
 attachment point on the ACS designed to protect the climber

Note 1 to entry: It can be permanent (cannot be removed with tools, e.g. a glue in anchor) or non-permanent (removable with tools, e.g. a hanger).

**3.2.1 individual protection point**  
 intermediate protection point used to safeguard a climber in his/her progress on the ACS

**3.2.2 individual top protection point**  
 protection point which is fixed at the top of a climbing line and which is designed to take the rope of one climber

Note 1 to entry: It can be used for top rope or lead climbing.

### 3.3

#### **attachment point**

if permanent quick draws are installed the lower point of the device through which the rope passes

Note 1 to entry: Without permanent quick draws the attachment point is the protection point.

### 3.4

#### **collective top protection system**

protection system which is fixed at the top of a climbing line and which is designed to take the ropes of several climbers at once

Note 1 to entry: It can be used for top rope or lead climbing.

### 3.5

#### **span**

part of a collective top rope system measured between two consecutive supports or attachments

Note 1 to entry: See Figure F.2.

### 3.6

#### **characteristic load**

maximum load that can be generated in normal use

### 3.7

#### **falling space**

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

### 3.8

#### **free space**

space around the ground projection of the ACS that can be occupied by a climbing, a lowering, spotting or belaying user

### 3.9

#### **hold**

removable climbing component used for progression on an ACS or bouldering wall including bigger three dimensional, structural attachment without additional panel insert or other means of hold fixation

Note 1 to entry: It should be noted that holds bigger than size XXL are called macros (see Table 1).

### 3.10

#### **volume**

removable three dimensional, structural attachment with panel insert or other means of hold fixation designed for temporary extension of the climbing surface

### 3.11

#### **panel insert**

point on which a climbing hold is attached

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## EN 12572-1:2017 (E)

## 4 Safety requirements and test methods

### 4.1 Layout and placement of individual protection points

If there are individual protection points, the height of the first point shall not exceed 3,10 m.

The distance  $x$  between the placement of the individual protection points (see Figure 1) from height  $h$  shall be determined as follows:

- 1 m if  $h \leq 4$  m;
- 1,10 m for  $h > 4$  m;
- 1,20 m for  $h > 5$  m;
- 1,30 m for  $h > 6$  m;
- 1,40 m for  $h > 7$  m;
- 1,50 m for  $h > 8$  m;
- 2,00 m for  $h > 10$  m.

The distance  $x$  may have a tolerance of 10 %.

$h$  is the distance between the point and the ground measured vertically, in metres, beneath the point in all cases.

For protection points, the maximum distance shall be measured from the lowest internal point of the attachment point.

If permanent quick draws are installed, the maximum distance shall be measured from lower quick draw end to lower quick draw end. A permanent quick draw (e.g. chain secure element, Maillon Rapide) shall be disassembled from the climbing wall by means of tools (see Figure 2).

Protection points attached with bolts shall be secured, so they cannot come undone, e.g. with lock nuts.



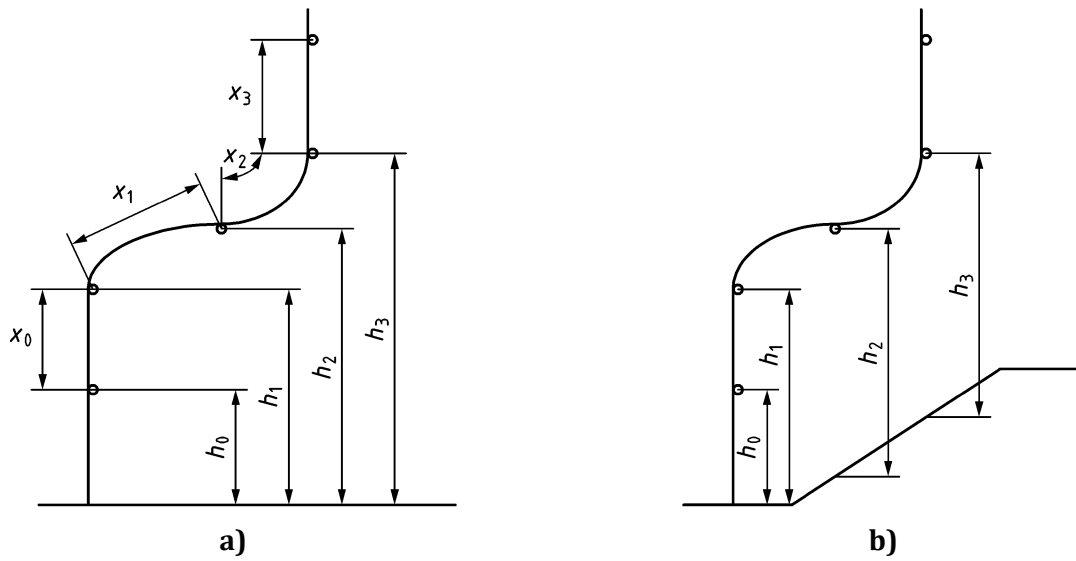


Figure 1 — Layout of protection points

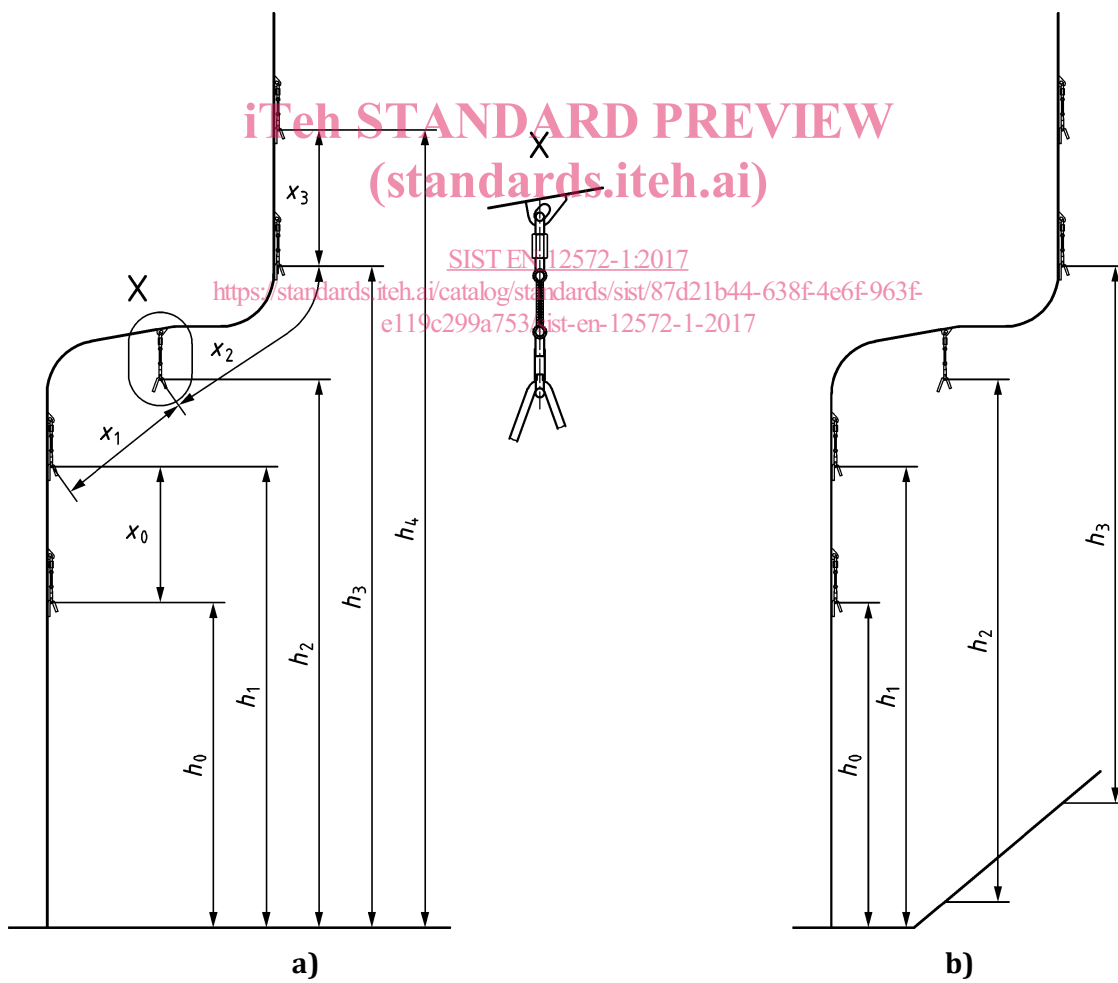


Figure 2 — Design and placement of permanent quick draws

## EN 12572-1:2017 (E)

## 4.2 Design of individual top protection points

### 4.2.1 General

The rope shall not be able to escape from the top protection points at an untimely moment, e.g. single-snap-gate karabiner is not sufficient.

Individual top protection points shall be attached to the structure by two or more points of fixation. Each fixation point shall be calculated as a protection point.

Each link between the fixing points shall have a resistance greater than or equal to each of the points which it joins together; this resistance shall be verified by either calculation (see Annex A), or a document of compliance, or tests as defined in Annex C.

### 4.2.2 Dimensions

The minimum dimensions of all protection points and stance points with the exception of individual and collective top protection systems shall be in accordance with Figure 3. Other designs meeting the requirements of Figure 3 are also permissible.

The bar or device over or through which the rope passes in either a collective top protection system or an individual top protection point shall be rounded in accordance with Figure 4.

Dimensions in millimetres

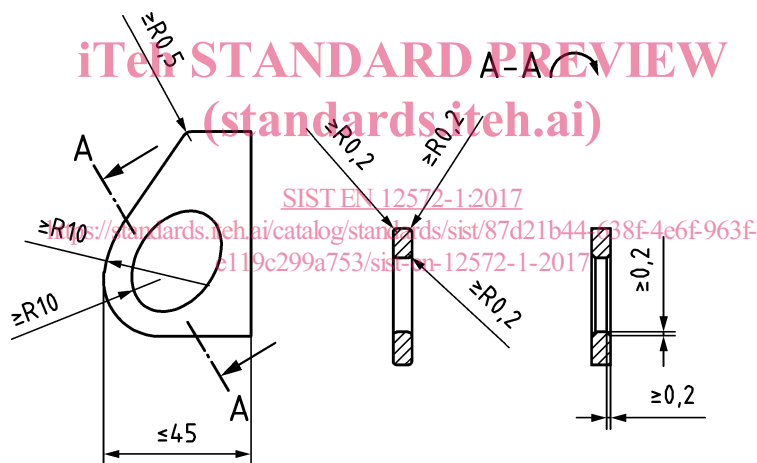
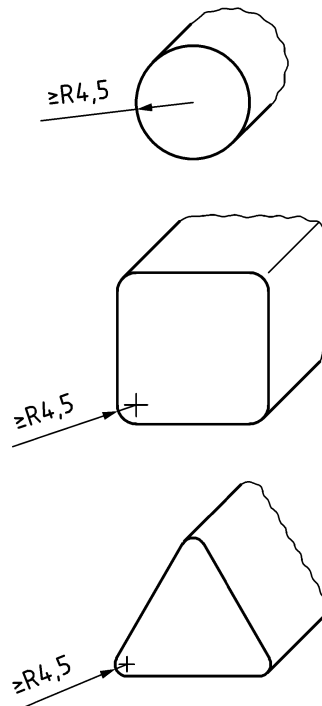


Figure 3 — Design of individual protection points

Dimensions in millimetres



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**Figure 4 — Rounding of parts**  
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### 4.3 Structural integrity

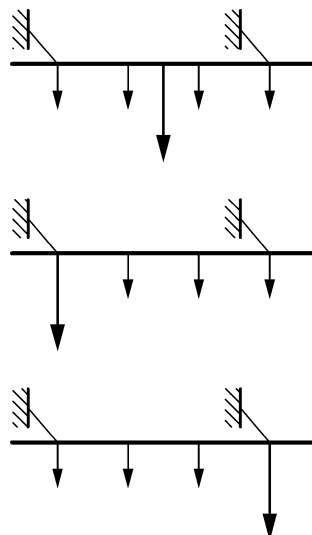
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#### 4.3.1 Structural integrity of an ACS

The structural integrity and stability of an ACS shall be justified by calculation using the characteristic loads given in Table A.1, in accordance with Annexes A, B and Figure 5. Ensure that the structure (e.g. building, concrete platform and ground) can safely accommodate the loads imposed by the ACS.

Permanent protection points shall be calculated in accordance with Annexes A and B (e.g. glued protection points in concrete walls).

Non-permanent protection points shall have a breaking strength in the main load direction of a minimum of 20 kN.



NOTE The larger arrow indicates 6,6 kN. The smaller arrow indicates 1,6 kN.

**Figure 5 — Placement of the loads on collective protection systems**

#### 4.3.2 Structural integrity of a protection point connection

All elements of an ACS shall be justified by calculation, however in exceptional cases for protection point connections only (the assembly that attaches the actual protection point to the sub frame), a load test as described in Annex C is acceptable as a method of evaluation.

After applying the design load to the protection point connection there shall be no permanent deformation. After applying the breaking load to the protection point connection there shall be no breakage.

#### 4.4 Impact resistance and deflection of surface elements

When tested in accordance with Annex D, there shall be no breaking or splitting of any surface element.

The deflection of the panels shall be calculated by using the load 0,8 kN (see Annex A) or be tested in accordance with Annex D, D.5.

When fixed according to the manufacturer's specification, the maximum deflection of the surface element shall not exceed  $l/100$ :

where

$l$  is the maximum length between the fixations of the surface.

#### 4.5 Panel insert resistance

To evaluate the panel insert concerning the resistance to breakage while mounting the climbing holds onto the wall or during climbing use, the panel inserts shall be tested in accordance with Annex E.

After test step c) any resulting deformation shall not exceed 0,5 mm at 1,2 kN.

After procedure e) there shall be no pull out of the panel insert.

Five samples (panel-insert combination) shall be tested.

#### 4.6 Proof testing

When tested in accordance with Annex F, after settling under load there shall be no breaking, tearing or destruction of the elements after testing.