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Artificial climbing structures

Part 3: Safety requirements and test methods for climbing holds

F : Structures artificielles d'escalade — Partie 3 : Exigences de sécurité
et méthodes d'essai pour prises d'escalade

D : Künstliche Kletteranlagen — Teil 3: Sicherheitstechnische Anforderungen
und Prüfverfahren für Klettergriffe

French standard approved

by decision of the Director General of AFNOR on January 21, 2009 taking effect on February 21, 2009.

With parts 1 and 2, replaces the approved standard NF EN 12572, dated March 1999.

Correspondence

The European standard EN 12572-3:2008 has the status of French standard.

Analysis

This document specifies the safety requirements and test methods for climbing holds.

It is applicable to climbing holds, which are used for the natural progression of the climber, i.e. without the use of artificial means (e.g. ice axes, crampons, hooks, nuts) on artificial climbing structures (ACS) and bouldering walls. Climbing holds are designed to be mounted on the ACS with bolts, screws etc. These climbing holds include large volumes or features that are designed for use without additional climbing holds being attached to them. (Volumes or elements that are designed for use with additional climbing holds attached to them satisfying the requirements of EN 12572-1) The main fixation points for climbing holds are part of the existing layout of the ACS and are examined in EN 12572-1 and EN 12572-2.

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

Descriptors

Technical International Thesaurus: sports, sports equipment, artificial climbing structures, safety, accident prevention, static loads, breaking load, stability, marking, technical notices, definitions.

Modifications

With respect to the replaced document, revision of the European standard by separation into three parts.

Corrections



National foreword*References to French standards*

The correspondence between the standards figuring in the clause "Normative references" and the identical French standards is as follows:

EN 12572-1 : NF EN 12572-1 (classification index: P 90-300-1)

EN 12572-2 : NF EN 12572-2 (classification index: P 90-300-2)

English Version

Artificial climbing structures - Part 3: Safety requirements and test methods for climbing holds

Structures artificielles d'escalade - Partie 3 : Exigences de sécurité et méthodes d'essai pour prises d'escalade

Künstliche Kletteranlagen - Teil 3: Sicherheitstechnische Anforderungen und Prüfverfahren für Klettergriffe

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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Foreword

This document (EN 12572-3:2008) 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 12572-2:2008.

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.

Introduction

The working group recognise that there is a potential danger to ACS users from being struck by falling pieces of climbing holds that break whilst in use on an ACS. Some propriety systems within climbing holds have been developed by manufacturers in response to this problem but the systems have not been perfected and further development work is required. The aim is to develop a system that would prevent 'large' pieces of a broken hold, that could cause serious injury to ACS users, from being able to 'break-off' and fall from the ACS.

Designers and manufacturers are requested to work on new systems that would address this problem.

1 Scope

This European Standard specifies the safety requirements and test methods for climbing holds.

This European Standard is applicable to climbing holds, which are used for the natural progression of the climber, i.e. without the use of artificial means (e.g. ice axes, crampons, hooks, nuts) on artificial climbing structures (ACS) and bouldering walls. Climbing holds are designed to be mounted on the ACS with bolts, screws etc. Climbing holds include large volumes or features that are designed for use without additional climbing holds being attached to them. (Volumes or features that are designed for use with additional climbing holds attached to them should meet the requirements of EN 12572-1) The main fixation points for climbing holds forms part of the existing layout of the ACS and are considered in EN 12572-1 and EN 12572-2.

A hold is not a belay anchor system; it is not designed to accommodate the latter and is therefore is not intended for belaying the climber. If a hold is designed as belay point it should meet EN 12572-1 and EN 12572-3 of the standard.

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

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 12572-1:2007, *Artificial climbing structures – Part 1: Safety requirements and test methods for ACS with protection points*

EN 12572-2:2008, *Artificial climbing structures – Part 2: Safety requirements and test methods for bouldering walls*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12572-1:2007 and EN 12572-2:2008 and the following apply.

3.1

hold

removable climbing component used for progression on an ACS or bouldering wall

4 Safety requirements

4.1 Material

Dangerous substances shall not be used in the manufacture of climbing holds in such a way that they can cause adverse health effects to the user of the equipment

NOTE Attention is drawn to the provisions of the Dangerous Substances Directive 76/769/EEC and its successive modifications. Prohibited materials include but are not limited to, asbestos, lead, formaldehyde, coal tar oils, carbolineums and polychlorinated biphenyls (PCBs).

4.2 Ergonomic requirements

- a) The climbing surface of a hold shall be free from accessible sharp edges with a radius less than 0,5 mm and burrs;
- b) There shall be no pointed climbing holds with a diameter less than 15 mm, which protrude more than 40 mm from the wall;
- c) 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 specifically designed for climbing.

4.3 Resistance to fixation force

Climbing holds shall be tested in accordance with 5.2 and they shall not fracture.

4.4 Resistance to rotation

When climbing holds exhibit features that are off centre to the fixation point(s) they shall not rotate when tested in accordance with 5.3.

4.5 Resistance to breakage in use

Climbing holds shall be tested in accordance with 5.4 and they shall not fracture.

4.6 Dimension Ratio

This requirement is to protect the surface of the ACS and the hold insert.

The hold shall be designed in such a way that the ratio between: the load implementation edge of the hold, to the fixation hole, to opposite edge at the base of the hold, will result in a force less than 5 kN in the insert hole when loaded with 1,5 kN at the load implementation edge.

Any hold with a ratio $> 3:1$ ($d_2 : d_1$ and/or $d_3 : d_1$) is not acceptable (see Figure 1).

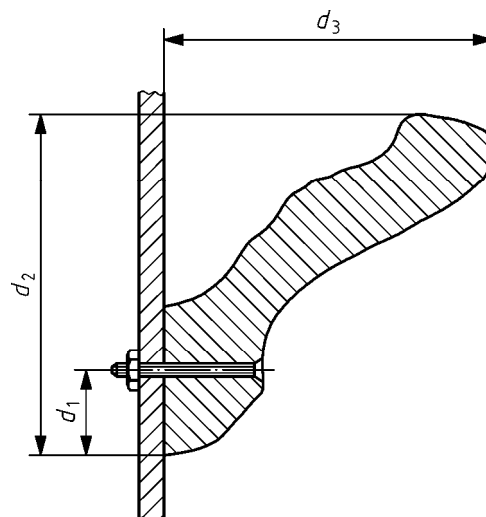


Figure 1 — Dimension Ratios of the hold

5 Test methods

5.1 Sample preparation

Hold samples shall be subjected to five temperature cycles each for a period of 1 h at $-30\text{ }^{\circ}\text{C}$ followed by a period of 1 h at $+70\text{ }^{\circ}\text{C}$. Before performing the test cycles the climbing holds shall be wetted by submerging in tap water for 10 min. There shall be no visible signs of damage to the climbing holds after conditioning. Undamaged climbing holds shall be dried after their last cycle and the following tests 5.2 to 5.4 shall be performed.

5.2 Resistance to fixation force

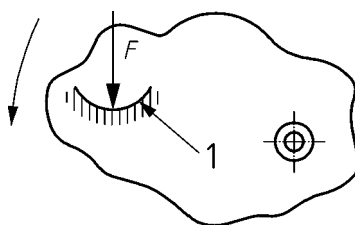
Testing shall be carried out using a wood panel of a minimum 18 mm thickness of untreated birch plywood with a suitable large washer and an ungreased nut, where appropriate.

Fix the hold to the wood panel with a torque on the fixation screw using the manufacturer's recommended maximum tightening torque, plus 10 %.

5.3 Resistance to rotation

If the manufacturer specifies in the instructions that the hold shall always be attached with more than one fixation point then there is no need to test this requirement.

Fix the hold to the manufacturer's recommended tightening torque to a wood panel of a minimum 18 mm thickness of untreated birch plywood. Load the hold with a device (e.g. a hook, sling, sky hook) which pushes or pulls in the most unfavourable usable position and direction (normally anticlockwise) against rotation with a force of 1,5 kN for 1 min parallel to the base of the hold (see Figure 2).



Key

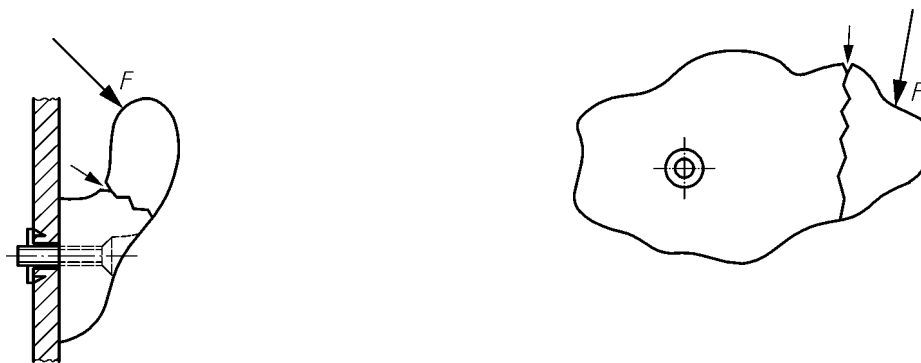
F applied load

1 unfavourable usable part of the climbing hold

Figure 2 — Resistance to rotation

5.4 Resistance to breakage in use

Fix the hold as prescribed in 5.2. Load the hold with a device (e.g. a hook, sling, sky hook) which pushes or pulls in the most unfavourable usable position and direction against breakage in use with a force of 1,5 kN for 1 min (see Figure 3 and Figure 4).



Key

F applied load

Figure 3 and Figure 4 — Resistance to breaking in use

6 Information to be provided by the manufacturer / supplier

The information to be supplied shall include the following information:

- a) details of the type of fixing;
- b) maximum fixation tightening torque for all types of fixation screws required to attach the climbing holds;
- c) recommended use;
- d) maintenance (intervals, cleaning, visually inspection);
- e) repair;
- f) disposal.

7 Marking

Each climbing hold shall be marked with the logo of the manufacturer/supplier, except for screw on climbing holds < 50 mm average diameter.

Bibliography

Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations