SLOVENSKI STANDARD
oSIST prEN 17235:2018

01-oktober-2018

Trajna sidrišča in varnostni kavlji

Permanent anchor devices and safety hooks

Permanente Anschlageinrichtungen und Sicherheitsdachhaken

Ta slovenski standard je istoveten z: **prEN 17235**

ICS:

13.340.60	Zaščita pred padci in zdrsi	Protection against falling and slipping

oSIST prEN 17235:2018 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 17235

August 2018

ICS 13.340.60

English Version

Permanent anchor devices and safety hooks

Permanente Anschlageinrichtungen und Sicherheitsdachhaken

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 128.

If this draft becomes a European Standard, 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.

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

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Ref. No. prEN 17235:2018 E

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European foreword

This document (prEN 17235:2018) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

Introduction

A reliable anchor device and safety hook are an essential components of any personal fall protection system.

This European Standard is intended to act as a complementary standard for existing European Standards covering other components used in fall protection systems.

The purpose and scope of application and the requirements and chracteristics are based on the need that, in case of fall from height anchor systems including safety hooks bear the dynamic force peak value generated by the mass of one person or more persons, including any equipment carried. In the end, to allow for foreseeable misuse of equipment, this standard applies also to systems whose intended use is for restraint.

This European Standard is intended for the type testing of new products before placing them on the market and gives only minimum performance requirements and chracteristics. It is essential that safety hooks and anchor devices are designed and manufactured so that, in the foreseeable conditions of use for which they are intended, the user is able to perform the risk-related activity while being appropriately protected at the highest possible level.

Manufacturers may wish to bear these points in mind when deciding on the actual performance of their products.

These products protect against fatal injury and therefore special requirements and chracteristics apply.

1 Scope

This document defines requirements for anchor devices and safety hooks permanently fixed to buildings and structures.

Anchor devices intend to prevent persons from falling and arrest falls used in and on buildings and civil engineering works. Anchor devices meant to be secured in such a way that they are part of the construction work and intended to ensure the safety in use or in the functioning of a construction work pursuant to Regulation (EU) No 305/2011 of the European Parliament and of the Council.

The anchor devices are intended for the attachment of personal fall protection systems complying with EN 363.

The safety hooks are intended as anchor points to which personal fall protection systems complying with EN 363 are attached. The safety hooks are also intended to attach mobile roof ladders or work platforms.

This document also covers the fixings used to secure the anchor devices or safety hooks into the load bearing structure.

It specifies essential dimensions, materials and load-bearing requirements.

This document contains requirements for the following systems:

— single anchor point system;

— safety hook system;

— wire anchor line system;

— rail anchor line system.

The systems described in this document consist usually of several components. They must be evaluated as a system in its entirety.

This document also includes requirements for the durability, marking, installation, assembly, documentation, operating and maintenance.

This document is not applicable to:

— temporary anchor devices according to EN 795;

— facilities for roof access according to EN 516;

— permanently fixed ladders on roofs according to EN 12951.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 354, *Personal fall protection equipment - Lanyards*

EN 363, *Personal fall protection equipment - Personal fall protection systems*

EN 364:1992, *Personal protective equipment against falls from a height - Test methods*

EN 365:2004, *Personal protective equipment against falls from a height - General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging*

EN 10088-1, *Stainless steels - Part 1: List of stainless steels*

EN 10088-2, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN ISO 9223, *Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation (ISO 9223)*

EN ISO 12944-2, *Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 2: Classification of environments (ISO 12944-2)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
permanent anchor device
anchor device installed to load bearing structure and is intended to remain on or in the structure

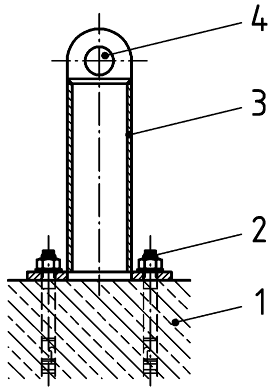
3.2
anchor device
assembly of elements which incorporates one or more anchor points or traveller to which a personal fall protection system can be attached

3.3
load bearing structure
part of the building and civil engineering work *which is able to carry potential loads*

3.4
anchor point
dedicated point on an anchor device, which is designed for connecting the personal fall protection system

3.5
anchor system
system incorporating the anchor device or safety hook, fastening system and the load-bearing structure to which the personal fall protection system can be connected

3.5.1
traveller single anchor device
anchor comprising a single permanent and stationary anchor device which includes one or more anchor points

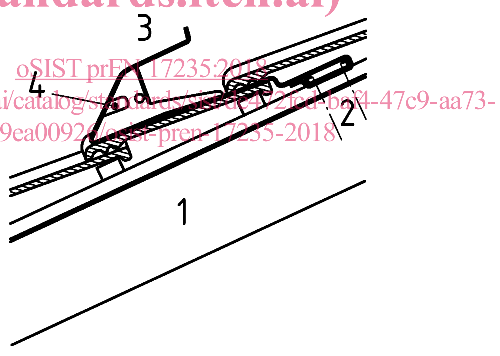


Key

1 load-bearing structure
2 fastening system (e.g. with resin bonding)
3 anchor device
4 anchor point

Figure 1 — Example of an anchor system including an anchor device

3.5.2
safety hook
anchor device providing an anchor point for personal fall protection systems and a hook shape to attach mobile roof ladders and work platforms

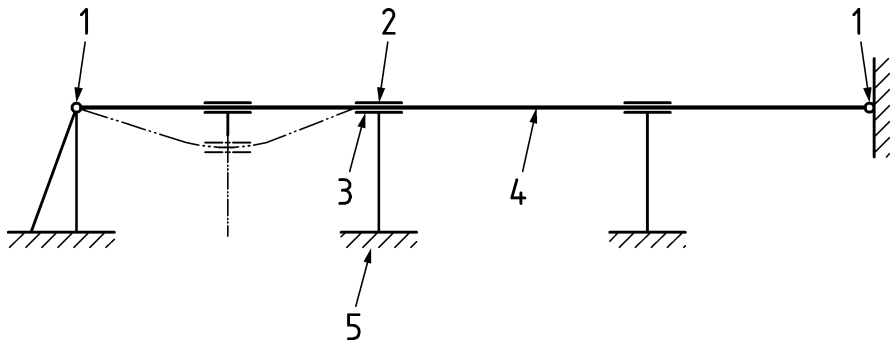


Key

1 load-bearing roof construction
2 fastening system
3 safety hook
4 anchor point

Figure 2 — Example of anchor system including a safety hook

3.5.3
wire anchor line
anchor device comprising a nominally taut wire anchor line to which the personal fall protection system can be attached directly either by a connector or a traveller

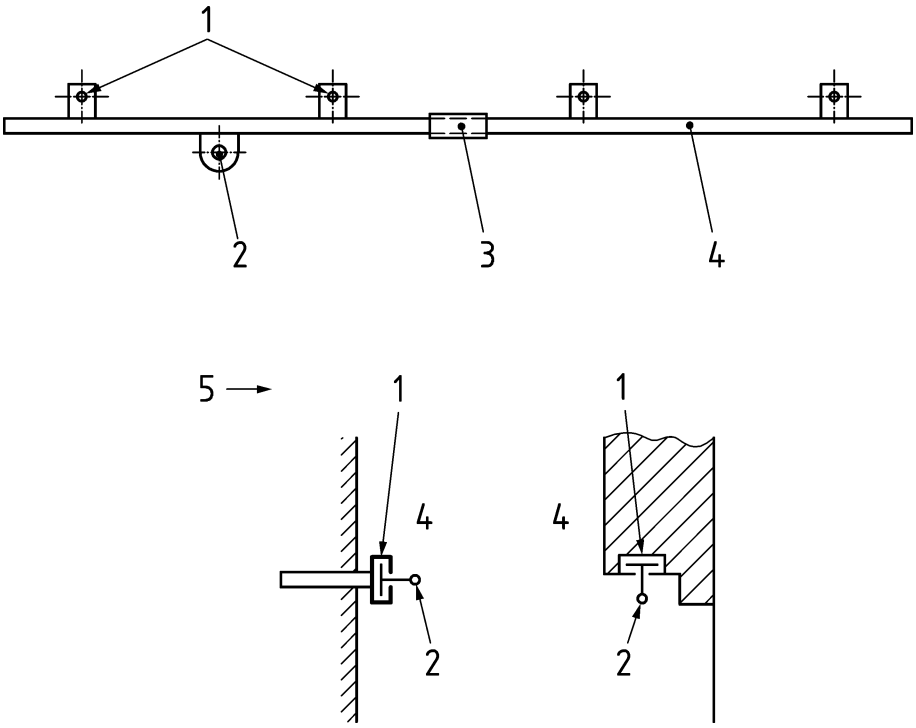


Key

1 extremity anchor
2 intermediate anchor
3 traveller
4 wire anchor line
5 load bearing structure

Figure 3 — Example of anchor system including a wire anchor line

3.5.4
rail anchor line
anchor device comprising a rigid rail anchor line to which the personal fall protection system can be attached directly either by a connector or a traveller



Key

1 rail fixing anchor
2 traveller
3 joiner
4 rail anchor line
5 load bearing structure

Figure 4 —

3.6
extremity anchor
initial or terminal element or device which connects the extremity of a wire anchor line to the structure

3.7
intermediate anchor
element or device located between the extremity anchors which connects the wire anchor line to the structure

3.8
rail fixing anchor
element or device which connects the rail anchor line to the load bearing structure

3.9
traveller
permenant or removeable element or device with an anchor point which is intended to travel along a wire or rail anchor line

3.10
fastening system
combination of products or process which connects an anchor device or safety hook to the load-bearing structure

Note 1 to entry: An example of a process is welding or casting in an anchor device to load-bearing structure.

3.11
energy absorbing element
component of an anchor system designed to absorb the kinetic energy developed during a fall from height

3.12
structure model
model used to describe a set of load bearing structures

3.13
structure mock-up
representative load bearing structure used for testing

4 Requirements and characteristics

The following requirements and characteristics are divided into general requirements and characteristics, application specific requirements and characteristics and type specific requirements and characteristics. Anchor systems have to fulfil the following general requirements and characteristics. Based on their intended application they have to fulfil the following application based requirements and characteristics. Each anchor system has to fulfil its type specific requirements and characteristics in addition to the general and application based requirements and characteristics.

4.1 General requirements and characteristics

This European Standard provides requirements and characteristics and test methods for anchor systems intended for the use by one or more user simultaneously. The following requirements and characteristics include specific requirements and characteristics to describe anchor systems supporting up to three users simultaneously.

Anchor systems shall be tested on load bearing structures on which they are intended to be used. This is done by testing the anchor system on a specific structure mock-up, which are listed in Clause 5.

In addition, all anchor systems shall be tested in the most critical cases for use in combination with the most critical intended implementation of the relevant load bearing structure.

4.1.1 Design and ergonomics

When checked in accordance with Clause 5, it shall not be possible for elements of anchor systems to become detached unintentionally. If an element or a traveller is intended to be detached, it shall be designed such that it can only be detached after executing two separate, consecutive and deliberate manual actions.

When checked in accordance with Clause 5, for anchor systems consisting of more than one element and for anchor systems with elements that can be detached, the design shall be such that those elements cannot appear to be positively locked together when incorrectly assembled.

Anchor systems shall not have sharp edges or burrs that may cause injury to the user or that may cut, abrade or otherwise damage itself or any part of the personal fall protection equipment that may come into contact.

If the anchor system is equipped with a fall indicator, the indicator shall clearly indicate a fall has occurred after the dynamic test(s).

4.1.2 Corrosion resistance and durability

Metal components of anchor devices [except stainless steel, components in accordance with EN 10088 and non-ferrous metals (e.g. copper, aluminium) components], above or within the roof structure,

including its fastening systems shall be corrosion resistant, or have an appropriate corrosion protection that they have in at least the corrosivity category C3 according to EN ISO 9223 with a minimum term of protection "high" according to EN ISO 12944-2.

Non-metallic load-bearing elements of anchor systems shall be demonstrated for the same minimum lifetime expectation as the metallic elements of the anchor system.

4.1.3 Robustness during installation process

Anchor systems shall be robust enough to withstand the installation process. Especially systems which get their maximum robustness at the end of the installation process shall be designed in a way that they will not be damaged unintentionally during construction works before the final installation has been done.

This is a problem mainly for systems which are strengthened by roof parts that are installed later than the anchor system itself (e.g. insulation).

When checked in accordance with Clause 5, the risk for the anchor system to be damaged in the time between the several installation steps has to be addressed.

When in doubt, a robustness test according to 4.1.4 can prove the needed robustness of an anchor system. This test is mainly intended for Anchor systems type AL which can be very sensitive to this problem.

4.1.4 Robustness tests

The robustness test shall prove the robustness of an anchor system to withstand the installation process as described in 4.1.3.

The test consists of a pre-test and a main-test. The pre-test is performed to check if the main test is obsolete. Anchor systems which pass the pre-test are proved to be robust enough. A main test is not necessary for them. Anchor systems which fail the pre-test have to pass the main-test to prove their robustness.

The test shall be carried out on a rigid base structure to simulate on-site conditions. This shall reflect the critical situation during the installation process, when the anchor system is installed but the surrounding roof parts, e.g. insulation, are not ready installed. Therefore, those parts will not strengthen the anchor system.

Robustness-pre test and robusteness main test shall be carried ou according to 5.3.

4.1.5 Water permeability

Anchor devices covered by this European standard are water impermeable provided that they are free of defects such as holes e.g. cracks.

The absence of such defect shall be checked by visual inspection of the finished product.

4.2 Application specific requirements and charactersitics

Specific requirements and chracteristics apply for an anchor system according to its intended application and use. Therefore, most of the following requirements and chracteristics are linked to these applications.

Test procedures and test set-ups are described in Clause 5 in detail. However, the relevant test loads, deformations, deflections and other relevant requirements and chracteristics are described in the following paragraphs.

4.2.1 Dynamic fall arrest

The fall arrest tests shall be performed to prove the ability of an anchor system to take the forces and the energy of a fall arrest system according to EN 363. The anchor system shall have the stability to hold fallen users for a specific time after the accident occurs.