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Temporary edge protection systems - Product specification, test methods

Temporäre Seitenschutzsysteme - Produktfestlegungen und Prüfverfahren

Garde-corps périphériques temporaires - Spécification du produit, méthodes d'essai

Ta slovenski standard je istoveten z: EN 13374:2004

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13374

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English version

Temporary edge protection systems - Product specification, test methods

Garde-corps périphériques temporaires - Spécification du produit, méthodes d'essai

Temporäre Seitenschutzsysteme - Produktfestlegungen und Prüfverfahren

This European Standard was approved by CEN on 24 December 2003.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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

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Foreword

This document EN 13374:2004 has been prepared by Technical Committee CEN/TC 53 “Temporary works 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of an identical text or by endorsement, at the latest by December 2004, and conflicting national standards shall be withdrawn at the latest by December 2004.

The standard is intended to cover equipment for temporary edge protection appropriate for use throughout Europe.

Annex A is normative. Annex B is informative.

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

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Introduction

Temporary edge protection systems are used in construction work, primarily to prevent persons and objects from falling to a lower level from roofs, edges, stairs and other areas where protection is required.

In several European countries temporary edge protection, or other types of fall protection devices, are required when the fall height is more than 2 m. In contrast to being secured by a lanyard, greater mobility in the working area is provided when edge protection is in place. The temporary edge protection can in some situations also act as a handrail for people to hold onto when working or walking close to an edge.

While this standard also includes requirements to protect people from falling objects, e.g. by the provision of toeboards, there could be circumstances where this is insufficient and additional measures, which are beyond the scope of this document, will need to be taken.

Classes specified in this standard are intended to cater for the varied requirements appropriate for different uses.

It is important that the structure to which temporary edge protection is attached can support the forces that the system is designed for.

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1 Scope

This European Standard specifies the requirements and test methods for temporary edge protection systems for use during construction or maintenance of buildings and other structures.

This standard applies to edge protection systems for flat and inclined surfaces and specifies the requirements for three classes of temporary edge protection.

For edge protection systems with an arrest function (e.g. falling or sliding down a sloping roof) this standard specifies requirements for energy absorption.

This standard includes edge protection systems, some of which are fixed to the structure and others, which rely on gravity and friction on flat surfaces.

This standard does not provide requirements for edge protection systems intended for:

- Protection against impact from vehicles or from other mobile equipment,
- Protection from sliding down of bulk loose materials, snow etc.,
- Protection of the general public from falling.

This standard does not apply to side protection systems on scaffolds.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 74-1, *Couplers, spigot pins and baseplates for use in falsework and scaffolds — Part 1: Couplers for tubes — Requirements and test methods.*

EN 338, *Structural timber — Strength classes.*

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

EN 596, *Timber structures - Test methods — Soft body impact test of timber framed walls.*

EN 1263-1, *Safety nets — Part 1: Safety requirements, test methods.*

EN 12811-1, *Temporary works equipment — Part 1: Scaffolds — Performance requirements and general design.*

EN 12811-2, *Temporary works equipment — Part 2: Information on materials.*

EN 12811-3:2002, *Temporary works equipment — Part 3: Load testing.*

ENV 1990, *Eurocode 1 — Basis of structural design.*

ENV 1993-1-1, *Eurocode 3 — Design of steel structures — Part 1-1: General rules and rules for buildings.*

ENV 1995-1-1, *Eurocode 5 — Design of timber structures — Part 1-1: General rules and rules for buildings.*

ENV 1999-1-1, *Eurocode 9 — Design of aluminium structures — Part 1-1: General rules — General rules and rules for buildings.*

EN 13374:2004 (E)**3 Terms and definitions**

For the purposes of this European Standard the following definitions apply.

3.1**edge protection system**

set of components intended to protect people from falling to a lower level and to retain materials, see Figure 1

3.2**principal guardrail**

rail or continuous element forming the top of the edge protection system

3.3**intermediate guardrail**

guardrail positioned between the principal guardrail and the working surface

3.4**intermediate protection**

protection barrier formed (e.g. as a fencing structure or a safety net) between the principal guardrail and the working surface, see Figure 2.

3.5**toeboard**

upstand provided specifically to prevent materials or persons from falling or sliding off a surface

3.6**post**

principal vertical support of the edge protection system to which the guardrails and toeboards are attached

3.7**falling height, H_F**

vertical distance between the point on which a person stands and the lowest point on the protection intended to arrest any fall

NOTE See Figure 3.

3.8**height of the edge protection**

distance between the uppermost point of the principal guardrail and the working surface measured perpendicular to the working surface

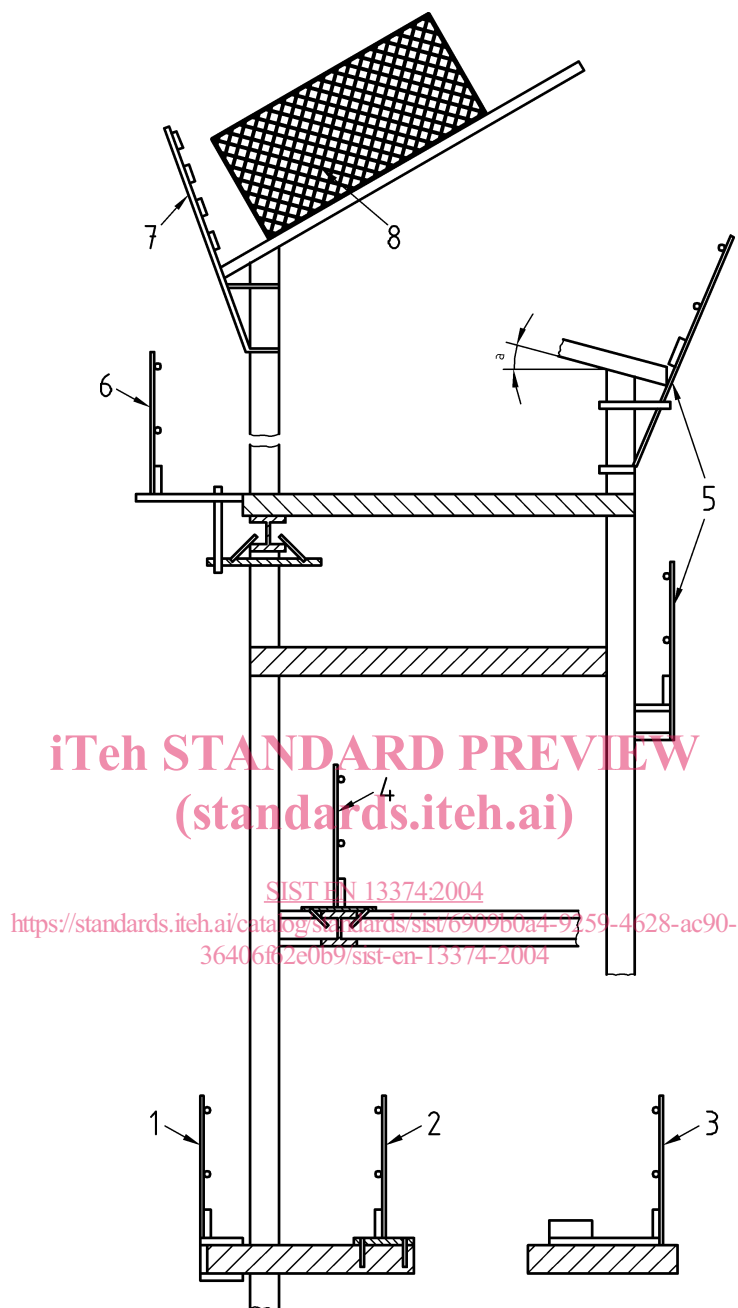
3.9**working surface**

surface on which persons stand, walk or work.

3.10**counterweight**

component intended to restrain the edge protection system from sliding acting by friction or overturning

NOTE Figure 1 illustrates some of the various types of edge protection.



Key

- | | | | |
|---|------------------------------|---|---|
| 1 | Slab edge clamp system | 5 | Column clamp system – floors and flat roofs |
| 2 | Fixed to floor type system | 6 | Beam bottom flange clamp |
| 3 | Counterweighted system | 7 | Column clamp system – sloping roof |
| 4 | Beam top flange clamp system | 8 | Fencing system |

Figure 1 — Diagrammatic examples of different types of temporary edge protection

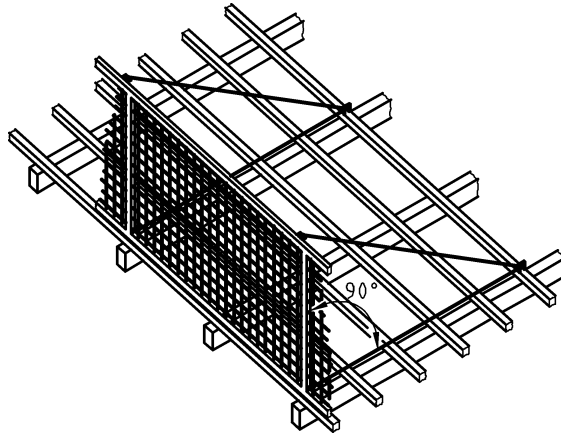
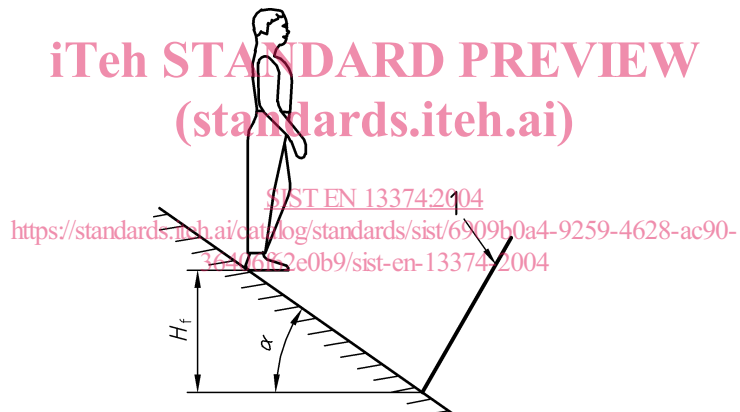


Figure 2 — Example of an edge protection system with a net as intermediate protection on a sloping roof



Key

- H_f Falling height
 α Angle of inclination of the working surface
 1 Edge protection system

Figure 3 — Falling height on an inclined surface

4 Classification of edge protection systems

4.1 Class A

Class A protection provides resistance to static loads only, based on the requirements to:

- support a person leaning on the protection or provide a handhold when walking beside it; and
- arrest a person who is walking or falling towards the protection.

4.2 Class B

Class B protection provides resistance to static loads and low dynamic forces only, based on the requirements to:

- support a person leaning on the protection or provide a handhold when walking beside it; and
- arrest a person who is walking or falling towards the protection;
- arrest the fall of a person sliding down a sloping surface.

4.3 Class C

Class C protection provides resistance to high dynamic forces based on the requirements to arrest the fall of a person sliding down a steeply sloping surface.

- arrest the fall of a person sliding down a steeply sloping surface.

NOTE More guidance about the use of classes is given in annex B.

5 Requirements

5.1 General

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5.1.1 Basic requirements

An edge protection system shall comprise at least a principal guardrail and an intermediate guardrail or intermediate protection, and it shall be possible to attach a toeboard.

NOTE It is important that components have a surface and be so located that injury to a person from puncturing or lacerating the skin is minimised.

5.1.2 Nets

Safety nets used as side protection shall be system U in accordance with EN 1263-1.

5.1.3 Principal guardrail

The distance between the uppermost part of the edge protection and the working surface shall be at least 1,0 m measured perpendicular to the working surface, see Figures 4 .

5.1.4 Toeboard

The upper edge of the toeboard shall be at least 150 mm above the working surface, see Figures 4 and 5.

The toeboard should be designed to avoid gaps between it and the working surface on normally a flat working surface.

If there are gaps, a sphere with a diameter of 20 mm shall not pass through them.

NOTE For other situations for example where the working surface is not flat, any gaps should be maintained as close as practicable to this figure.

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5.2 Additional requirements for individual classes

5.2.1 Edge protection system class A

The inclination of edge protection system class A shall not deviate from the vertical by more than 15°.

If an intermediate guardrail is provided, any gap shall be so dimensioned that a sphere of 470 mm diameter will not pass through the protection. If there is no intermediate guardrail or if it is not continuous, the edge protection system shall be so dimensioned that a sphere with a diameter of 250 mm will not pass through it.

If it is not possible to verify the load requirements by calculation (see 6.1.1), the static load tests specified in 7.4.2 and 7.4.3 shall be carried out and for class A edge protection. In this case, to comply with this standard:

- On the completion of the test specified in 7.4.2 the adjusted elastic deflection δ shall not exceed the value specified in 6.3.5;
- On completion of the test specified in 7.4.3, the adjusted strength R_U shall be not less than 1.2 times the maximum test load; and
- The residual deflection, δ_3 , shall not exceed 10 % of the deflection at maximum load, δ_{max} .

NOTE δ , δ_3 , δ_{max} and R_U are defined in 7.4.2 and 7.4.3.

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Dimensions in millimetre

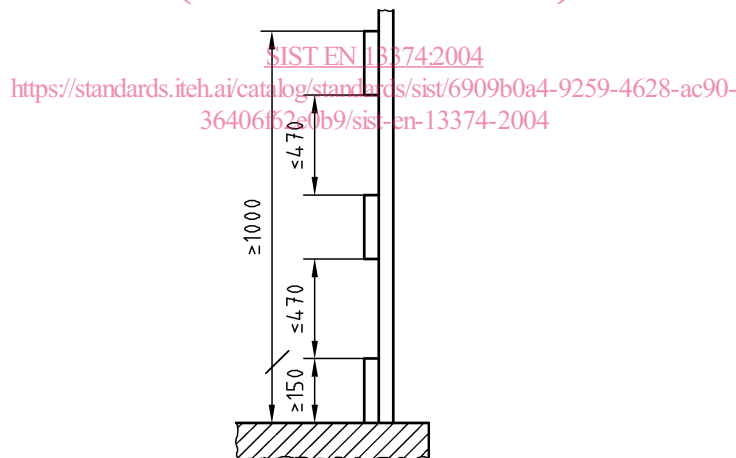


Figure 4 — Limiting dimensions for class A edge protection

5.2.2 Edge protection system class B

The inclination of edge protection system class B shall not deviate from the vertical line AC by more than 15°, see Figure 5.

Any gap in a class B side protection shall be so dimensioned that a sphere of 250 mm diameter will not pass through the protection.