SLOVENSKI STANDARD
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Varovalne mreže – 1. del: Varnostne zahteve, preskusne metode

Safety nets - Part 1: Safety requirements, test methods

Schutznetze (Auffangnetze) - Teil 1: Sicherheitstechnische Anforderungen, Prüfverfahren

Filets de sécurité - Partie 1 : Exigences de sécurité, méthodes d'essai

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ICS:

13.340.60	Zaģļ ita pred padci in zdrsi	Protection against falling and slipping

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EUROPEAN STANDARD

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ICS

Supersedes EN 1263-1:1997

English version

Safety nets - Part 1: Safety requirements, test methods

Filets de sécurité - Partie 1: Exigences de sécurité, méthodes d'essai

Schutznetze (Sicherheitsnetze) - Teil 1: Sicherheitstechnische Anforderungen, Prüfverfahren

This European Standard was approved by CEN on 16 November 2001.

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 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 Management Centre has the same status as the official versions.

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

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

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Contents

Foreword

This document (EN 1263-1:2002) 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of an identical text or by endorsement, at the latest by October 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

This document supersedes EN 1263-1:1997.

This European Standard is one of a series of standards as listed below:

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

EN 1263-2, Safety nets — Part 2: Safety requirements for the erection of safety nets.

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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The annexes A and B are informative.

Introduction

Safety nets for use in construction and other assembly work, e.g. as devices to catch falling persons during the construction of halls and bridges, in open line construction as side protection, as anti-fall devices or devices to catch falling persons on working scaffolds, as side protection for safety scaffolds at roofs and in tunnelling can be chosen as a technically suitable and economic solution to catch persons falling from a height. They serve to protect from deeper falls even when large areas in plan occur.

In contrast to being secured by a lanyard and harness the mobility of persons working above the area protected by safety nets is not impaired during all work activity. Moreover, the use of safety nets has the advantage to catch persons falling from a height more softly than lanyards caused by large plastic deformations of the net.

Attention should be paid to the fact that the ageing sensitivity of safety nets due to exposure to UV requires that they are exposed to open air condition a limited time only and then be withdrawn from service. For the evaluation of the ageing behaviour tests have been carried out over a period between 6 months and 24 months which apply to the most commonly used materials polyamide and polypropylene. The specifications of the limit values of breaking energy are based on these tests and on drop tests with articulated dummies and test spheres. After having been subjected to respective loading by persons falling from height the safety nets should be replaced, if appropriate.

1 Scope

This European Standard applies to safety nets and their accessories for use in construction and assembly work to protect from deeper fall. It specifies safety requirements and test methods and is based on the performance characteristics of polypropene and polyamide fibres. Materials used in nets should have no significant reduction in mechanical properties between – 10 °C and + 40 °C.

This standard is not applicable to the installation of safety nets. For a European Standard covering the installation of safety nets see EN 1263-2.

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).

EN 919, *Fibre ropes for general service — Determination of certain physical and mechanical properties.*

EN 1263-2, *Safety nets — Part 2: Safety requirements for the erection of safety nets.*

EN ISO 7500-1, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines (ISO 7500-1:1999).*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications.*

ISO 1806, *Fishing nets — Determination of mesh breaking load of netting.*

ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance.*

3 Symbols and definitions

3.1 Symbols

The mainly used symbols are given in Table 1.

Table 1 — Main symbols

Number	Symbol	Denomination	Unit
1	γ_1	general safety factor for production and handling of the material; γ_1 = 1,5	—
2	γ_2	specific coefficient for the deterioration due to ageing, see 7.7 and/or 7.8, γ_2 never less than 1 and shows at least 12 months service life	—
3	l_M	mesh size	mm
4	E_A	action value of energy for a net of class A (characteristic value)	kJ
5	E_B	action value of energy for a net of class B (characteristic value)	kJ
6	E_0	value of breaking energy under reference conditions obtained from the recorded data of a net sample in the as new state	kJ
7	E_{12}	calculated value of breaking energy under reference conditions of a net sample after 12 months of ageing	kJ
8	E_6	calculated value of breaking energy as of a net sample after six month of ageing	kJ
9	E_{vi}	from recorded test data calculated value of energy capacity of a mesh sample subjected to ageing adjacent to the breaking point at $\Delta v_{v,\,min}$, see line 15	J
10	E_{oj}	from recorded test data calculated value of energy capacity of a mesh sample in the as new state adjacent to the breaking point at $\Delta v_{0,\,min}$, see line 16	J
11	A_{vi}	definite integral in the interval $0 \le \Delta v \le \Delta v_{v,\,min}$ obtained from the recorded data of the breaking test with the mesh sample *i* subjected to ageing, see Figure 9	cm^2
12	A_{oj}	definite integral in the interval $0 \le \Delta v \le \Delta v_{0,\,min}$ obtained from the recorded data of the breaking test with the mesh sample *j* in the as new state, see Figure 10	cm^2
13	F_{vi}	recorded tensile force at the breaking point $\Delta v_{v,\,min}$ (see line 15) of the sample *i* subjected to ageing	N
14	F_{oj}	recorded tensile force at the breaking point $\Delta v_{o,\,min}$ (see line 16) of the sample *j* in the as new state	N
15	$\Delta v_{v,\,min}$	smallest failure elongation (minimum breaking point) of the mesh samples *i* (*i* = 1,2,3) subjected to ageing	m
16	$\Delta v_{o,\,min}$	smallest failure elongation (minimum breaking point) of the mesh samples *j* (*j* = 1,2,3) in the as new state	M
NOTE "as new state" means : of the same properties as a new one.			

3.2 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

3.2.1
mesh
a series of ropes arranged in a basic geometric pattern (either in squares or diamonds) forming a net

3.2.2
net
connection of meshes

3.2.3
safety net
net supported by a border rope, other supporting elements or a combination of these designed to catch persons falling from a height

3.2.4
mesh size
distance between two knots or connections of mesh rope measured from the centre to the centre of these connections

3.2.5
mesh rope
rope from which the meshes of a net are manufactured

3.2.6
border rope
rope which passes through each mesh at the perimeter of a net and determines the perimetric dimensions of the safety net

3.2.7
tie rope
rope used for securing the border rope to a suitable support

3.2.8
coupling rope
rope that joins two or more safety nets together

3.2.9
test mesh
mesh which is worked into the safety net and which can be removed to determine any deterioration due to ageing without impairing the performance of the net

3.2.10
supporting framework
structure to which nets are attached and which contributes to the absorption of kinetic energy in case of dynamic actions

3.2.11
class
classification for the net respective to energy absorption capacity and mesh size

3.2.12
system
assembly of safety net components, which forms an equipment to be used in accordance with the instruction manual

4 Classification

4.1 Nets

This standard specifies four classes of net with maximum mesh sizes (l_M, see Figure 6) and energy acting on the net (E_A and E_B) as follows:

— Class A 1: E_A = 2,3 kJ; l_M = 60 mm

— Class A 2: E_A = 2,3 kJ; l_M = 100 mm

— Class B 1: E_B = 4,4 kJ; l_M = 60 mm

— Class B 2: E_B = 4,4 kJ; l_M = 100 mm

NOTE The above values E_A and E_B represent the characteristic values of energy and do not include the general safety factor γ, and not the specific coefficient for the deterioration due to ageing γ_2. These coefficients are described in 6.3.

4.2 Safety nets

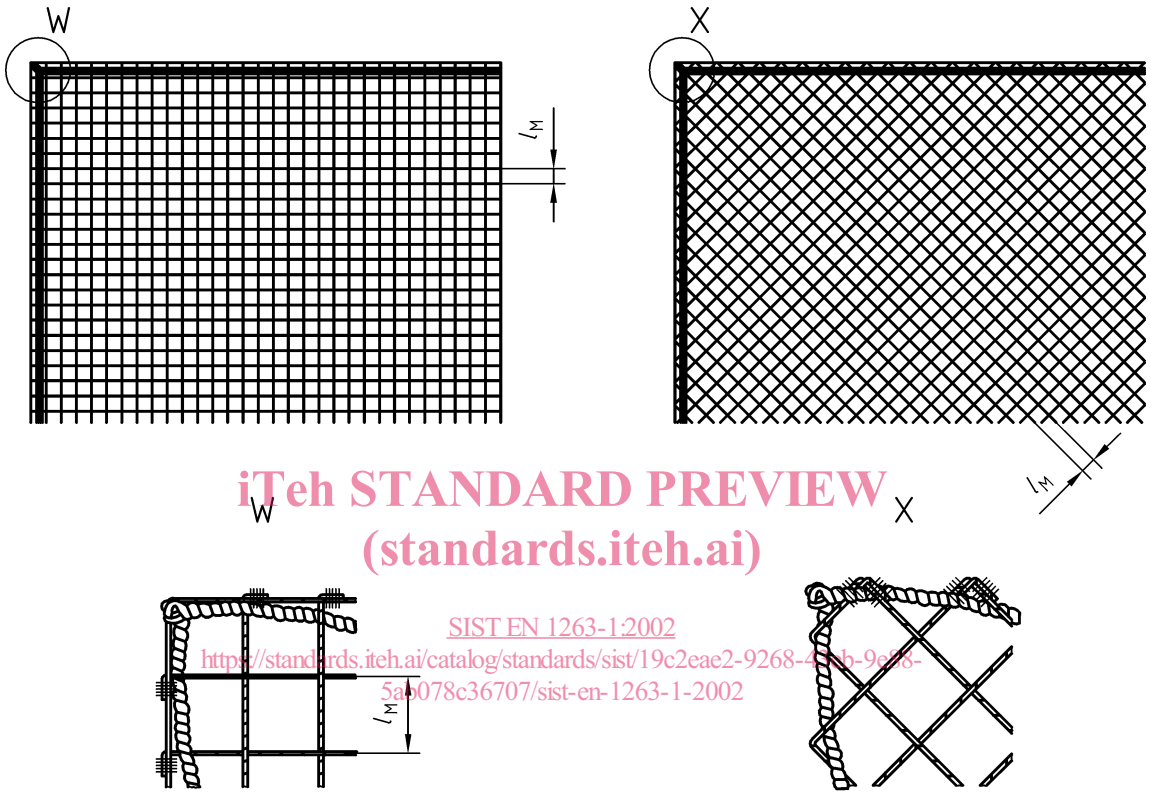
Four systems of safety net shall be identified:

System S: Safety net with border rope (see Figure 1)

System T: Safety net attached on brackets for horizontal use (see Figure 2)

System U: Safety net attached to supporting framework for vertical use (see Figure 3)

System V: Safety net with border rope attached to a gallow type support (see Figure 4)



a) square mesh (Q)

b) diamond mesh (D)

Figure 1 — Safety net System S (net with border rope)

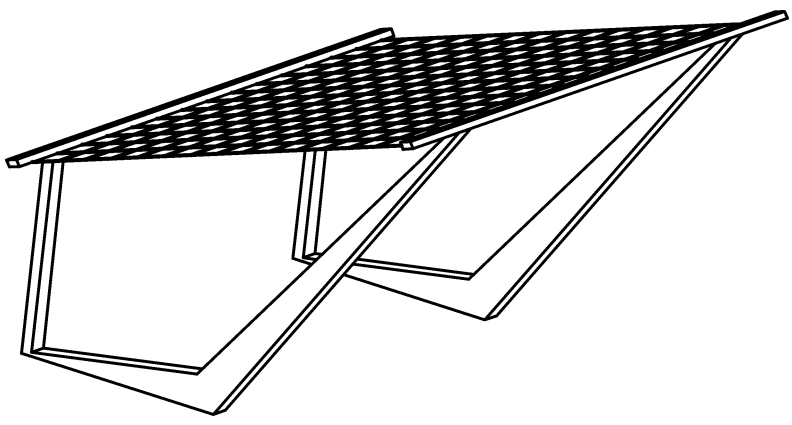


Figure 2 — Safety net System T (net attached on brackets for horizontal use)

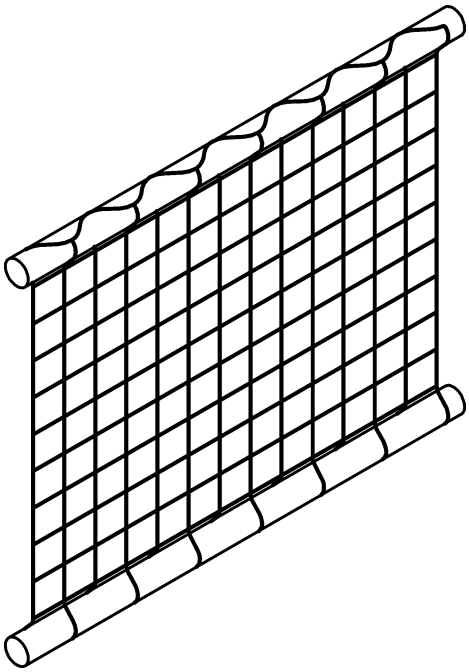


Figure 3 — Safety net System U (net attached to supporting construction for vertical use)

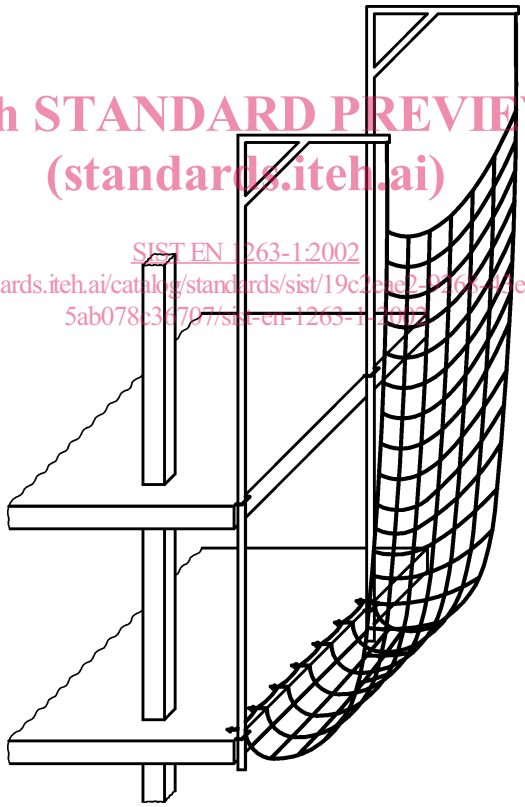


Figure 4 — Safety net System V (net with border rope attached to a gallow type support)

4.3 Ropes

Rope				Minimum tensile strength (kN)					System	Note(s)	Fig. 5
Deno-minat-ion	without ends	with a loop	without a loop	7,5	10	15	20	30			
F		x					x[a]		V	Tie rope	b
G			x				x[a]		V	Tie rope	c
H		x			x[b]				V	Tie rope	b
J			x		x[b]				V	Tie rope	c
K	x							x	S	Border rope	a
L		x						x[a]	S	Tie rope	b
M			x					x[a]	S	Tie rope	c
N		x		x					S,T,U,V	Coupling rope	d
O			x	x					S,T,U,V	Coupling rope	e
P	x						x		V	Border rope	a
R		x				x[b]			S	Tie rope	b
Z			x			x[b]			S	Tie rope	c

[a] if the net is attached by single ropes

[b] if the net is attached with double ropes