SLOVENSKI STANDARD
SIST EN 1731:1998

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Ġļ itniki za oļ i in obraz za industrijsko in neindustrijsko uporabo za varovanje pred mehanskimi nevarnostmi in/ali toploto

Mesh type eye and face protectors for industrial and non-industrial use against mechanical hazards and/or heat

Augen- und Gesichtsschutzgeräte aus Draht- oder Kunststoffgewebe für den gewerblichen und nichtgewerblichen Gebrauch zum Schutz gegen mechanische Gefährdung und/oder Hitze

Protecteurs de l'oeil et de la face de type grillagé, a usage industriel et non industriel, pour la protection contre les risques mécaniques et/ou contre la chaleur

Ta slovenski standard je istoveten z: **EN 1731:1997**

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13.340.20 Varovalna oprema za glavo Head protective equipment

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English version

Mesh type eye and face protectors for industrial and non-industrial use against mechanical hazards and/or heat

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This European Standard was approved by CEN on 1996-12-19. 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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 85 "Eye-protective equipment", the sectretariat of which is held by AFNOR.

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 1997, and conflicting national standards shall be withdrawn at the latest by July 1997.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

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

1 Scope

This European Standard specifies materials, design, performance requirements, test methods and marking requirements for personal mesh eye protectors against mechanical and/or thermal hazards for industrial and non-industrial use.

Such equipment includes :

a) mesh goggles and mesh spectacles ;

b) mesh visors for forestry work and /or trimming or gardening or park work for combination with or without safety helmets ;

c) mesh visors for combination with safety helmets or brow guards as used for example, in steel works and foundries.

This standard is not applicable to mesh eye protectors for protection against molten metal splash, hot solid risks or electrical hazard. Mesh eye protectors as for use in sports as ice hockey and fencing are excluded from this standard.

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.

EN 165:1995	Personal eye-protection - Vocabulary
EN 166:1995	Personal eye-protection - Specifications
EN 167:1995	Personal eye-protection - Optical test methods
EN 168:1995	Personal eye-protection - Non-optical test methods
EN 169:1992	Personal eye-protection - Filters for welding and related techniques - Transmittance requirements and recommended use
EN 170:1992	Personal eye-protection - Ultraviolet filters - Transmittance requirements and recommended use
EN 171:1992	Personal eye-protection - Infrared filters - Transmittance requirements and recommended use

3 Definitions

For the purposes of this European Standard the definitions given in EN 165:1995 apply together with the following :

3.1 mesh

A metal mesh may be woven or perforated, a plastic mesh may be moulded, woven or perforated.

3.2 mesh type eye protectors

Either mesh spectacles, mesh goggles, mesh face screens or mesh face screens with one or two oculars.

3.3 mesh spectacle

An eye protector with mesh oculars mounted in a spectacle type frame with or without side shield.

NOTE : Mesh spectacles are usually held in place by temples.

3.4 mesh goggle

An eye protector with mesh ocular(s) that tightly encloses the orbital area and sits on the face. (A typical example is shown in figure A.1).

NOTE : Mesh goggles are usually held in position by a headband.

3.5 mesh face screen

A mesh type eye protector with mesh face protection that can be worn with a support directly on the head or in conjunction with a safety helmet. (Typical examples are shown in figures A.2 to A.7).

3.6 mesh visor

Part of a mesh face screen covering the eye area and all or parts of the face which can be removed from the frame or housing and be replaced.

3.7 ocular area

That part of a mesh type eye protector, other than the frame, which permits vision (see 4.2.2).

3.8 additional or alternative ocular(s)

3.8.1 mesh face screen with additional or alternative protective ocular(s)

A mesh face screen incorporating one or two additional or alternative protective oculars. (Typical examples are shown in figures A.2 and A.3).

3.8.2 additional ocular

An ocular used in front of or behind the mesh ocular area to provide supplementary protection.

3.8.3 alternative ocular

An ocular replacing the mesh ocular area to provide specific protection.

3.9 mesh type eye protector resisting high speed particles

A mesh type eye protector which is able to withstand the impact of high speed particles. Such a mesh type eye protector can be used in applications where a risk of high speed particles impact exists together with the need for good ventilation.

3.10 mesh face screen resisting radiant heat

A mesh face screen that resists radiant heat as for example encountered in steel works, foundries and the like.

4 Basic requirements

4.1 Materials

4.1.1 Resistance to corrosion

No metal parts of a mesh type eye protector, including the mesh if made from metal, shall show a significant sign of corrosion when examined by a trained observer after having undergone the test for resistance to corrosion specified in clause 8 of EN 168:1995.

4.1.2 Resistance to ignition

When tested according to clause 7 of EN 168:1995 no part of a mesh type eye protector shall ignite or continue to glow after removal of the heated rod.

4.1.3 Cleaning and disinfection

All parts of a mesh type eye protector shall withstand cleaning and disinfection in accordance with the agents and procedures recommended by the manufacturer.

4.1.4 Skin irritation

Materials that come into contact with the wearer's skin shall not be known to be likely to cause irritation or any other adverse effect to health.

4.1.5 Number of apertures in a mesh

The minimum number of apertures in the mesh shall be 15 per cm^2.

4.2 Design and manufacture

4.2.1 General construction

Mesh eye protectors shall be free from projections, sharp edges or other defects which are likely to cause discomfort or injury to the wearer during use.

4.2.1.1 Headbands and harnesses

Headbands or head harnesses where provided and used as the principal means of support shall be at least 10 mm wide where in direct contact with the head.

4.2.1.2 Adjustability and/or replacement of components

Adjustable parts or components incorporated in mesh eye protectors shall be easily adjustable and where intended to shall be easily replaceable without the use of special tools.

4.2.1.3 Basic dimensions of a mesh face screen

A mesh face screen with or without ocular(s) shall be such that a rectangle with minimum dimensions of 160 mm (horizontal length) x 130 mm (vertical length) can be described in full on the surface of the face screen.

4.2.2 Minimum dimension of ocular area(s)

The ocular area of a mesh face screen, a mesh goggle, mesh spectacle or a mesh face screen with ocular(s) shall be such that a rectangle with minimum dimensions of 32 mm (horizontal length) x 25 mm (vertical depth) can be described in full for each eye (pupillary distance : nominally 64 mm).

4.3 Performance

4.3.1 Luminous transmittance of the mesh ocular area

The luminous transmission of the mesh ocular area shall be greater than 20,0 % when measured in accordance with clause 6 of EN 167:1995.

4.3.2 Variations in luminous transmittance

In accordance with 7.1.2.2.3 of EN 166:1995.

4.3.3 Additional or alternative oculars

Additional or alternative oculars fitted to a mesh type eye protector shall comply with 7.1 of EN 166:1995.

4.3.4 Robustness of construction

4.3.4.1 Increased robustness

The complete mesh type eye protector shall be submitted to the impact of a steel ball striking the ocular area and the lateral protection at a specified speed.

Testing in accordance with 3.2 of EN 168:1995.

The following defects shall not occur during testing :

a) Mesh fracture in the ocular area :

The mesh shall be considered to have fractured if the steel ball passes through the mesh or if at any point in the ocular area a gap or tear is produced which will allow a (300 ± 3) mm long and (3,0 ± 0,1) mm diameter steel rod with end faces which are flat and perpendicular to its longitudinal axis to pass through under its own weight in any orientation.

b) Ocular area deformation :

The mesh ocular area shall be considered to have been deformed when a mark appears on the white paper on the opposite side to that struck by the steel ball.

c) Failure of ocular housing, mesh face screen or frame :

An ocular housing or mesh face screen or frame shall be considered to have failed if it separates into two or more pieces, or if it is no longer capable of holding an ocular in position, or if an unbroken ocular detaches from the frame, or if the ball breaks through the housing, mesh face screen or frame.

A mesh face screen tested with an additional or alternative ocular shall be fitted with an ocular meeting the increased robustness requirements. If the use of any cover and/or backing lens is recommended by the manufacturer the test shall be performed with a mesh face screen conforming to this recommendation.

5 Requirements for eye protectors with special characteristics

5.1 Mesh type eye protectors protecting against high speed particles

This requirement is only applicable to mesh eye protectors which comply with 7.2.2 of EN 166:1995.

The area of coverage of mesh face screens protecting against high speed particles shall meet the requirements given in 7.2.4 b, of EN 166:1995.

5.2 Mesh face screens resisting radiant heat

A mesh face screen designed to resist radiant heat shall have a reflecting outer surface (for example unpainted, uncoated wire mesh). This requirement shall be assessed by visual inspection. The diameter of the wire or the space between two adjacent holes shall be 0,2 mm minimum.

The area of coverage of these face screens shall meet the requirements given in 7.2.4 b of EN 166:1995.

When tested in accordance with 6.6 of this standard, no part of the mesh type eye protector complete with additional or alternative oculars, shall ignite, melt, separate into two or more parts or continue to glow after the test. After exposure to radiant heat, the complete eye protector shall continue to meet the requirement for area of coverage, increased robustness, or if appropriate, resistance to high speed particles.

6 Test methods

6.1 Test method for resistance to corrosion of metal parts

In accordance with clause 8 of EN 168:1995.

6.2 Test method for resistance to ignition

In accordance with clause 7 of EN 168:1995.

6.3 Test method for luminous transmittance

In accordance with clause 6 of EN 167:1995.

6.4 Test method for increased robustness

In acordance with 3.2 of EN 168:1995.

6.5 Test method for resistance against high speed particles (optional)

In accordance with clause 9 of EN 168:1995.

6.6 Test method for resistance to radiant heat (optional)

6.6.1 Principle

The complete mesh face screen, with any additional or alternative oculars, is exposed to thermal radiation from a source with calibrated radiative output.

6.6.2 Test equipment

The test equipment consists mainly of a metallic headform and a suitable calibrated source of thermal radiation.

A typical arrangement for testing is shown in figure 1 (for general information only).

A suitable source of thermal radiation as shown schematically in figure 1 provides a thermal energy flux of 8,3 kW/m^2 ± 5 % at a distance of (175 ± 5) mm measured at the centre line. Any other suitable source of thermal radiation may be used.