SLOVENSKI STANDARD
SIST EN 14458:2018

01-oktober-2018

Nadomešča:
SIST EN 14458:2004

Osebna oprema za varovanje oči - Vizirji z visoko stopnjo zaščite, namenjeni le uporabi z zaščitnimi čeladami

Personal eye-equipment - High performance visors intended only for use with protective helmets

Persönlicher Augenschutz - Hochleistungsvisiere zur ausschließlichen Verwendung an Schutzhelmen

Équipement de protection des yeux - Visières haute performance uniquement destinées à une utilisation avec des casques de protection

Ta slovenski standard je istoveten z: **EN 14458:2018**

ICS:

13.220.10	Gašenje požara	Fire-fighting
13.340.20	Varovalna oprema za glavo	Head protective equipment

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EUROPEAN STANDARD

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English Version

Personal eye-equipment - High performance visors intended only for use with protective helmets

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

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European foreword

This document (EN 14458:2018) has been prepared by Technical Committee CEN/TC 85 “Eye protective equipment”, the secretariat 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of an identical text or by endorsement, at the latest by February 2019, and conflicting national standards shall be withdrawn at the latest by February 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14458:2004.

This document 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 Regulation.

For relationship with EU Regulation, see informative Annex ZA, which is an integral part of this document.

The main changes regarding EN 14458:2004 are:

— change of title;

— correction of discrepancies between this European Standard and the designated helmet standards, e.g. EN 443, EN 14052; EN 16473;

— modifications regarding terms and definitions;

— clarification and extension of the scope; not only useable for firefighter helmets;

— clarifications regarding the three different types of visors covered by this standard and the corresponding tests and requirements;

— clarification regarding the two forms of visors considered in this standard, e.g. only face guards for increased thermal performance;

— introduction of two radiant heat exposure levels and the corresponding tests for increased thermal performance visors;

— revision and extension of the practical performance test;

— new normative Annex A which summarizes the conditioning, number of test samples and the sequence of tests to be done.

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

1 Scope

This European Standard specifies the minimum requirements for visors designed specifically to be used only with protective helmets e.g. firefighter helmets conforming to EN 443, EN 16471 and EN 16473 and high performance industrial helmets conforming to EN 14052. These visors may be permanently fitted to, or be removable from the helmet.

Three types of visors in two forms are described in this document.

The two forms are:

— face guards provide both eye and face protection, and

— eye guards that are shorter and effectively provide only eye protection.

The three types are:

— visors for general use: eye guards and face guards providing resistance and/or protection against mechanical, liquid chemical and basic physical hazards;

— visors with increased thermal performance: face guards that additionally provide resistance and/or protection against higher than basic levels of heat and flame;

— mesh visors: eye guards and face guards that incorporate mesh lenses with defined levels of performance from EN 1731, and other additional mechanical requirements described in this European Standard.

These visors are not intended to protect against smoke and gas /vapour hazards.

Visors for sporting use, those with corrective effect, and goggles used with a protective helmet are not covered by this European Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 136:1998, *Respiratory protective devices — Full face masks — Requirements, testing, marking*

EN 166:2001, *Personal eye-protection — Specifications*

EN 167:2001, *Personal eye-protection — Optical test methods*

EN 168:2001, *Personal eye-protection — Non-optical test methods*

EN 170:2002, *Personal eye-protection — Ultraviolet filters — Transmittance requirements and recommended use*

EN 171:2002, *Personal eye-protection — Infrared filters — Transmittance requirements and recommended use*

EN 172:1994, *Personal eye protection — Sunglare filters for industrial use*

EN 407:2004, *Protective gloves against thermal risks (heat and/or fire)*

EN 443:2008, *Helmets for fire fighting in buildings and other structures*

EN 659:2003+A1:2008, *Protective gloves for firefighters*

EN 1731:2006, *Personal eye protection — Mesh eye and face protectors*

EN 12477:2001, *Protective gloves for welders*

EN 13087-1:2000, *Protective helmets — Test methods — Part 1: Conditions and conditioning*

EN 13087-7:2000, *Protective helmets — Test methods — Part 7: Flame resistance*

EN 13087-8:2000, *Protective helmets — Test methods — Part 8: Electrical properties*

EN 13087-10:2012, *Protective helmets — Test methods — Part 10: Resistance to radiant heat*

EN 16128:2015, *Ophthalmic optics — Reference method for the testing of spectacle frames and sunglasses for nickel release*

EN ISO 4007:2012, *Personal protective equipment — Eye and face protection — Vocabulary (ISO 4007:2012)*

EN ISO 9185:2007, *Protective clothing — Assessment of resistance of materials to molten metal splash (ISO 9185:2007)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 4007 and the following 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
visor
device providing protection to all or part of the face including at least the eyes

3.2
eye guard
visor which provides protection to essentially only the eyes, when in the in-use position

Note 1 to entry: See 5.2.8.2.

3.3
face guard
visor which provides protection to the eyes and a substantial area of the face, when in the in-use position

Note 1 to entry: See 5.2.8.1.

3.4
means of fixing
means by which the visor is supported and interfaced with the designated helmet(s)

Note 1 to entry: This means may be an integral part of the helmet, may be fixed permanently or temporarily to it, or may be worn separately but at the same time as the helmet.

3.5
helmet
headwear intended to primarily protect the upper part of the wearer's head against hazards

4 Classification

4.1 General

Visors in accordance with this document shall be classified as one of the following three types (see 4.2 to 4.4). Specific warning shall be included in the information provided by the manufacturer on the limitations of use of each type (see Clause 8 f)), and the need to ensure that suitable helmet-visor combinations are used (see Clause 8 m). Table 1 outlines the clauses of this document applicable to the three types of visors.

4.2 Visor for general use

Eye guards and face guards providing resistance and/or protection against mechanical, liquid chemical and basic physical hazards. Intended for use where there is no foreseeable exposure to significant levels of heat, flame or molten metals.

NOTE For example but not limited to technical rescue, industrial applications, emergency medical activities.

4.3 Face guards with increased thermal performance

Face guards that additionally provide resistance and/or protection against higher than basic levels of heat and flame. Intended for use where exposure to significant levels of heat and/or flame and molten metal is foreseeable.

NOTE 1 Eye guards are not suitable for applications where increased thermal performance is needed.

NOTE 2 For example but not limited to firefighting, foundry or furnace work with exposure to the heat source, hot cutting.

4.4 Mesh visor

Eye guards and face guards that incorporate mesh lenses with defined levels of performance from EN 1731. Intended for use to protect against mechanical hazards and where is no foreseeable need for protection against heat and/or flame, sparks, chemicals or liquid / molten materials, or electrical contact.

NOTE For example but not limited to chainsaw use during tree clearance and related activities. There will be only a few other situations where mesh visors can be considered suitable.

Table 1 — Allocation of requirements for the three types of visors covered by this standard

Requirement	Eye guards and face guards for general use	Face guards with increased thermal performance	Mesh
5.1 General	M	M	M
5.2.1 Construction	M	M	M
5.2.2 Materials	M	M	M
5.2.3 Resistance to UV radiation	M	M	-
5.2.4 Cleaning and disinfection	M	M	M
5.2.5 Resistance to thermal shock	m/o	m/o	m/o
5.2.6 Resistance to corrosion	M	M	M
5.2.7.1 Optical properties	M	M	-
5.2.7.2 Field of view	M	M	M
5.2.8 Area to be protected	M	M	M
5.2.9 Electrical properties	m/o	m/o	-
5.2.10 Protection against high-speed particles	M	M	-
5.2.11.1 Flammability	M	M	M
5.2.11.2 Verification of the helmet flammability performance	m/o	m/o	m/o
5.2.12 Resistance to contact by liquid chemicals	m/o	m/o	-
5.2.13 Visors attached to helmets with radiant heat performance	m/o	m/o	-
5.2.14 Ergonomics and practical performance	M	M	M
5.3.2.1 Radiant heat protection	-	M	-
5.3.2.2 Radiant heat resistance	-	M	-
5.3.3 Flammability	-	M	-
5.3.4 Resistance to molten metals and hot solids	-	M	-
5.4 Mesh visors	-	-	M
5.5.1 General	O	O	O
5.5.2 Optical filtering performance	O	O	-
5.5.3 Resistance to high energy impact	O	O	O

Requirement	Eye guards and face guards for general use	Face guards with increased thermal performance	Mesh
5.5.4 Resistance to fogging	O	O	-
5.5.5 Abrasion resistance	O	O	-
Clause 7 Marking	M	M	M
Clause 8 Information	M	M	M
M = mandatory requirement for this type of visor O = optional requirement for this type of visor m/o = mandatory for the visor if any designated helmet meets this requirement, otherwise optional for the visor - = not applicable for this type of visor			

5 Performance requirements

5.1 General

Visors conforming to this document shall not add any risks to the user under foreseeable conditions of use. Therefore visors conforming to this European Standard shall meet:

— the general requirements given in 5.2;

— for face guards with increased thermal performance in addition the requirements of 5.3;

— for mesh visors the requirements of 5.4; and

optional requirements are given in 5.5.

Visors, when fitted to helmets designated by the visor manufacturer, in both the in-use (protective) position, and the out-of-use (standby) position, shall not detrimentally affect the performance of the helmets with which they are used. This requirement shall be assessed within the relevant helmet standard, applied to the combination.

5.2 Visors for general use

5.2.1 Construction

The visor shall be free from projections, sharp edges or other defects, which are likely to cause discomfort or injury during use. Test in accordance with 6.3.

5.2.2 Materials

No parts of the visor assembly, which may be in contact with the wearer shall be made of materials which, under foreseeable conditions of use, are known to be likely to cause skin irritation or any adverse effect on health. Test in accordance with 6.3.

In the case of metallic materials in direct and prolonged contact with the skin, the release of nickel shall be less than 0,5 µg/cm²/week when tested according to EN 16128:2015.

5.2.3 Resistance to UV radiation

Visors shall meet the requirements of EN 166:2001, 7.1.5.2 when preconditionned according to EN 168:2001, Clause 6 and assessed according to EN 167:2001, Clauses 4 and 6. Three test samples shall be tested, two in one of the eye positions and one in the other.

5.2.4 Cleaning and disinfection

Substances and procedures recommended by the manufacturer for cleaning, maintenance or disinfection shall have no adverse effect on the exposed components of the helmet or visor, nor leave residues, which may enhance flammability. Neither shall they be known to be likely to have any adverse effect on the wearer when applied in accordance with the manufacturer's instructions. After cleaning and disinfection in accordance with the manufacturer's instructions, the visor shall show no visible degradation and shall continue to meet the requirements of either 5.2.11 for general use visors or 5.3.3 for increased thermal performance visors.

Where anti-fogging compounds are specified by the manufacturer they shall be compatible with the eyes, the skin, and the visor assembly under the foreseeable conditions of use. Test in accordance with 6.3.

5.2.5 Resistance to thermal shock

The visor and means of fixing shall show no apparent deformation when subjected to thermal shock conditioning according to 6.2.3. At the end of each of the periods 6.2.3 a) to e) the raising/ lowering mechanism for the visor shall operate correctly in accordance with the manufacturer's instructions.

Optionally, period 6.2.3 a) of the sequence may be conducted at −20 °C, −30 °C or −40 °C (all ± 2 °C). Where one of these lower temperatures is used, conditioning at −10 °C is not required. The test report and marking shall identify the temperature used.

Visors shall match or exceed the extremes of temperature against which designated helmets have been tested for thermal shock.

5.2.6 Resistance to corrosion

After having undergone the test for resistance to corrosion specified in EN 168:2001, Clause 8, all metal parts of the visor and means of fixing shall display smooth surfaces and shall be free from corrosion.

5.2.7 Vision

5.2.7.1 Optical properties

The optical properties of the lens shall meet the minimum requirements specified in Table 2.

Table 2 — General optical properties

Property	Minimum requirement	Test in accordance with
Refractive power	EN 166:2001, 7.1.2.1, Optical Class 2	EN 167:2001, Clause 3
Transmittance	EN 166:2001, 7.1.2.2	Depends on visor characteristics. See EN 166:2001, 7.1.2.2 for relevant documents
Diffusion of light	≤ 0,75 cd/m²lx	EN 167:2001, Clause 4
Quality of material surface	EN 166:2001, 7.1.3	EN 167:2001, Clause 5

5.2.7.2 Field of view

The visor, when attached to the designated helmet, and tested according to EN 443:2008, 5.16, shall meet the following angular requirements:

a) horizontal field of view of not less than 105°;

b) vertical field of view in the upwards direction of not less than 7°;

c) vertical field of view in the downwards direction of not less than 45°.

The specified field of view shall be achieved with the visor in both the in-use and out-of-use positions. The periphery of the face guard may fall within the specified field of view.

There shall be no undue distortion of vision as subjectively determined during testing in accordance with 6.9.

5.2.8 Area to be protected

5.2.8.1 Face guard

In the in-use position, the face guard in conjunction with designated helmet(s) shall cover at least the facial region rectangle EFGH of the appropriate headform, defined in EN 168:2001, Figure 11, when assessed in accordance with EN 168:2001, 10.2, but using a maximum angle of 15° instead of 45° for rotation about the horizontal axis.

In addition, the face guard in conjunction with designated helmet(s) shall cover the rectangular region CDEF of the appropriate headform, when assessed with EN 168:2001, 10.2 using an angle of 45° for rotation about the horizontal axis.

5.2.8.2 Eye guard

In the in-use position, the eye guard, in conjunction with designated helmet(s) shall cover at least circular areas of diameter *m* centred on the pupils of the appropriate headform, as defined in EN 168:2001, Figure 11, when assessed in accordance with EN 168:2001, 10.2.

5.2.9 Electrical properties

Visors shall at least match the electrical properties against which designated helmets have been tested.

Where a designated helmet complies with any electrical property requirements from the relevant standard, the visor /helmet assembly shall at least satisfy the "conductive headform" requirement when tested according to 6.4.1. If the helmet also claims "surface insulation", the visor/helmet assembly shall also satisfy this requirement when tested according to 6.4.2.

Where the designated helmet standard does not contain electrical requirements, the visor/helmet assembly may optionally satisfy the "conductive headform" /or "conductive headform" and "surface insulation" requirements when tested according to 6.4.1 and 6.4.2 as appropriate.

5.2.10 Protection against high speed particles

Testing to this clause is not required if optional testing to 5.5.3 is carried out.

Visors shall match or exceed the extremes of temperature against which designated helmets have been tested. Before testing for protection against high-speed particles the conditioning shall be according Annex A. Subsequently, the two test samples shall be impacted within 60 s of removal from conditioning at each of the environments according to Table A.1 for 4 h.

The visors in the in-use position, in conjunction with designated helmet(s) shall meet at least the requirements of EN 166:2001, 7.2.2 when tested at 120 m/s (medium energy impact) together with:

a) on impact, no part of the visor shall come into contact with any part of the headform (or any designated corrective eyewear) with which it was not in contact before the impact;

b) after impact, the raising / lowering mechanism of the visor shall operate normally.