SLOVENSKI STANDARD
SIST EN 174:1998

01-april-1998

Osebno varovanje oči - Smučarska očala

Personal eye protection - Ski goggles for downhill skiing

Persönlicher Augenschutz - Skibrillen für alpinen Skilauf

Protection individuelle de l'oeil - Masques pour le ski alpin

Ta slovenski standard je istoveten z: **EN 174:1996**

ICS:

13.340.20	Varovalna oprema za glavo	Head protective equipment
97.220.20	Oprema za zimske športe	Winter sports equipment

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Descriptors: personal protective equipment, accident prevention, eyes, safety masks, alpine skis, design, specifications, dimensions, field of visibility, mechanical strength, radiation resistance, tests, information

English version

Personal eye protection - Ski goggles for downhill skiing

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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.

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CEN

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

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Contents

Foreword

This European Standard 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of an identical text or by endorsement, at the latest by June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.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.

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 is applicable to goggles which are used for eye-protection during downhill skiing.

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 172:1994	Personal eye protection - Sunglare filters for industrial use
EN 1836:1997	Personal eye protection - Sunglasses and sunglare filters for general use

3 Definitions

For the purposes of this standard, the definitions of EN 165:1995 apply together with the following:

solar UVA-transmittance τ_{SUVA}

Mean of the spectral transmittance from 315 nm to 380 nm weighted with the solar radiation $E_{S\lambda}(\lambda)$ at sea level for air mass 2[1] and the relative spectral effectiveness function for UV radiation $S(\lambda)$. The complete weighting function is the product of both : $W(\lambda) = E_{S\lambda}(\lambda) \cdot S(\lambda)$. The weighting functions are given in annex A. τ_{SUVA} is defined by the following equation :

$$t_{SUVA} = \frac{\int_{315\ nm}^{380\ nm} \tau_F(\lambda) \cdot E_{s\lambda}(\lambda) \cdot S(\lambda) \cdot d\lambda}{\int_{315\ nm}^{380\ nm} E_{s\lambda}(\lambda) \cdot S(\lambda) \cdot d\lambda} = \frac{\int_{315\ nm}^{380\ nm} \tau_F(\lambda) \cdot W_\lambda(\lambda) \cdot d\lambda}{\int_{315\ nm}^{380\ nm} W_\lambda(\lambda) \cdot d\lambda}$$

4 Design and manufacture

4.1 General requirements

Ski goggles shall be free from sharp edges or other defects which are likely to cause discomfort or injury during intended use.

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1) P. Moon, Journal of the Franklin Institute, Vol. 230 (1940), pp 583-617

4.2 Materials

No parts of the eye-protector which are in contact with the wearer shall be made of materials which are known to cause any skin irritation.

4.3 Sit and fit

Ski goggles shall sit reliably when used as intended and adopt to the contours of the face. The surfaces in contact with the face shall be made of soft flexible material. The head strap shall be designed to be flexible or adjustable and sit securely on the back of the head. The head strap shall withstand any stress which occurs during proper use without tearing or being permanently deformed.

4.4 Ventilation

Design measures shall ensure that the inside of the goggles is well ventilated during skiing. The necessary change of air and the design of the ventilation openings depend heavily on the weather, style of skiing and the individual conditions (e.g. sweating), which means that generally applicable requirements cannot be stipulated.

5 Requirements

All eye-protectors shall meet the requirements given in 5.1 to 5.5 except for the optional specifications of table 2.

Optional specifications related to additional properties of eye-protectors are given in 5.6.

5.1 Optical requirements

5.1.1 Field of vision

Ski goggles shall exhibit a field of vision with the following minimum values :

- vertical: 55°
- horizontal:150°

The test shall be carried out in accordance with 6.1.

5.1.2 Lens requirements

The lens requirements are summarized in tables 1 and 2.

Table 1 : Requirements for lenses used in ski goggles for downhill skiing

Optical power	In accordance with 4.2 of EN 1836:1997
Transmittance	In accordance with table 2
Variations in luminous transmittance	In accordance with 4.1.2 of EN 172:1994
Maximum reduced luminance coefficient	Scattered light class 1 $1{,}0\ \frac{cd/m^2}{lx}$ Scattered light class 2 $2{,}0\ \frac{cd/m^2}{lx}$
Quality of material and surface	In accordance with 7.1.3 of EN 166:1995
Resistance to ultraviolet radiation	In accordance with 4.6 of EN 1836:1997

Table 2 : Permissible transmittance of lenses for downhill skiing

Filter category	Requirements					Optional specifications
	Ultraviolet spectral range			Visible spectral range		Enhanced infrared absorption
	Maximum value of spectral transmittance $\tau(\lambda)$		Maximum value of solar UVA transmittance τ_{SUVA}	Range of luminous transmittance τ_V		Maximum value of solar infrared transmittance τ_{SIR}
	280 nm to 315 nm	over 315 nm to 350 nm	315 nm to 380 nm	from over %	to %	%
S 0	$0{,}03 \cdot \tau_V$	$0{,}3 \cdot \tau_V$	$0{,}3 \cdot \tau_V$	80,0	100	τ_V
S 1				43,0	80,0	
S 2				18,0	43,0	
S 3		$0{,}15 \cdot \tau_V$	$0{,}15 \cdot \tau_V$	8,00	18,0	
S 4				3,00	8,00	

5.2 Mechanical strength

The requirement is satisfied if the ski goggle withstands the impact of a steel ball when tested in accordance with 6.4.

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The requirement is satisfied if the ski goggle withstands the impact of a steel ball when tested in accordance with 6.4.

On so testing, the following defects shall not occur :

a) ocular fracture :

An ocular shall be considered to have fractured if it cracks trough its entire thickness into two or more pieces, or if the ball passes through the ocular.

b) ocular deformation :

An ocular shall be considered to have been deformed if a mark appears on the white paper on the opposite side to that struck by the ball.

c) ocular housing or frame fracture :

An ocular housing 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 becomes detached from the frame, or if the ball passes through the housing or frame.

5.3 Protection against water and snow

The ski goggle shall be designed so that no snow or water can penetrate the goggle.

The result shall be considered to be satisfactory if no liquid enters the inside of the goggle during the test in accordance with clause 12 of EN 168:1995 when spraying from the front only.

5.4 Resistance to ignition

Ski goggles shall be tested in accordance with the method specified in clause 7 of EN 168:1995 and shall be considered to be satisfactory if no part of the eye-protector ignites or continues to glow after removal of the steel rod.

5.5 Suitability for cleaning and care

All parts of the eye-protector shall be capable or withstanding, without visible change, cleaning in accordance with manufacturer's recommended methods.