



**SLOVENSKI STANDARD**  
**SIST EN 171:1996**

**01-december-1996**

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**Osebno varovanje oči - Infrardeči filtri - Zahteve za prepustnost in priporočena uporaba**

Personal eye-protection - Infrared filters - Transmittance requirements and recommended use

Persönlicher Augenschutz - Infrarotschutzfilter - Transmissionsanforderungen und empfohlene Verwendung

Protection individuelle de l'oeil - Filtres pour l'infrarouge - Spécifications de transmission et utilisation recommandée

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**Ta slovenski standard je istoveten z: EN 171:1992**

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**ICS:**

13.340.20 Varovalna oprema za glavo Head protective equipment

**SIST EN 171:1996**

**en**

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EUROPEAN STANDARD

EN 171:1992

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Descriptors: Safety, accident prevention, eyes, optical filters, radiation, protection, infrared radiation, transmittance, designation, use

English version

**Personal eye-protection - Infrared filters -  
Transmittance requirements and recommended use**

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Protection individuelle de l'oeil - Filtres  
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**CEN**

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

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

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## Foreword

This European Standard was drawn up by the Technical Committee CEN/TC 85 "Eye protection equipment", the secretariat of which is held by AFNOR.

This standard supersedes EN 171:1986.

In accordance with the Common CEN/CENELEC Rules, 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.

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of an identical text or by endorsement, at the latest by April 1993, and conflicting national standards shall be withdrawn at the latest by April 1993. (standards.iteh.ai)

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## 1 Object and field of application

This European Standard specifies the scale numbers and transmittance requirements for filters for protection against infra-red radiation. The other applicable requirements for these types of filters are given in EN 166. Guidance on the selection and use of these filters is given in annex A.

## 2 References

- EN 165 Personal eye-protection — Vocabulary
- EN 166 Personal eye-protection — Specifications
- EN 167 Personal eye-protection — Optical test methods
- EN 168 Personal eye-protection — Non-optical test methods
- CIE 17 International lighting vocabulary.

## 3 Designation and identification

The complete table of numbering of filters is given in clause 5 of EN 166.

The tables concerning the identification of oculars and frames form the subject of clause 9 of EN 166.

The scale number of infra-red filters comprises the code number 4, and the shade number corresponding to the filter, from 1.2 to 10 (see table 1).

## 4 Transmittance requirements

The definitions of transmittance are given in EN 165.

The determination of luminous transmittance is described in clause 6 of EN 167.

The transmittance requirements for filters used for protection against infra-red radiation are given in table 1.

Table 1. Transmittance requirements

Scale number	Luminous transmittance $\tau_V$		Maximum mean spectral transmittance in the infra-red	
	maximum %	minimum %	$\tau_A$ 780 nm to 1400 nm %	$\tau_N$ 780 nm to 2000 nm %
4 - 1,2	100	74,4	5,5	52,9
4 - 1.4	74,4	58,1	4,8	47,2
4 - 1.7	58,1	43,2	4,1	42,2
4 - 2	43,2	29,1	3,6	37,9
4 - 2.5	29,1	17,8	2,9	32,3
4 - 3	17,8	8,5	1,9	22,9
4 - 4	8,5	3,2	1,2	15,9
4 - 5	3,2	1,2	0,71	10,6
4 - 6	1,2	0,44	0,43	7,1
4 - 7	0,44	0,16	0,23	4,4
4 - 8	0,16	0,061	0,14	2,9
4 - 9	0,061	0,023	0,075	1,8
4 - 10	0,023	0,0085	0,050	1,3

NOTE 1. The luminous transmittance, as shown in table 1, is based on the spectral distribution for a full radiator at 1900°K and the CIE (1931) standard observer (2°) (see CIE 17).

NOTE 2. Infra-red filters should protect the user against infra-red radiation whilst permitting proper vision of the visual task to be performed, including the recognition of safety signals.

It is necessary in particular to take care that the chromaticity coordinates of the filters are compatible with good recognition of colour especially for good evaluation of melting furnace temperatures. Filters that do not conform to these criteria could lead to difficulties for users.

## Annex A (informative) Guidance on selection and use

A.1 For protection against infra-red radiation filters should be selected from those classified by code number 4 (see table 2).

When the level of radiation is very high, filters with reflective surface treatment are recommended for IR protection because the reflection of the IR radiation results in a smaller rise in filter temperature.

Scale number	Typical application in terms of mean temperature sources °C
4 - 1.2	up to 1 050
4 - 1.4	1 070
4 - 1.7	1 090
4 - 2	1 110
4 - 2.5	1 140
4 - 3	1 210
4 - 4	1 290
4 - 5	1 390
4 - 6	1 500
4 - 7	1 650
4 - 8	1 800
4 - 9	2 000
4 - 10	2 150

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