

ILNAS

Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
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ILNAS-EN 379:2003

Personal eye-protection - Automatic welding filters

Protection individuelle de l'œil - Filtres de
soudage automatique

Persönlicher Augenschutz - Automatische
Schweißerschutzfilter

09/2003



National Foreword

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English version

Personal eye-protection - Automatic welding filters

Protection individuelle de l'oeil - Filtres de soudage
automatique

Persönlicher Augenschutz - Automatische
Schweißerschutzfilter

This European Standard was approved by CEN on 1 August 2003.

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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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 379:2003) 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of an identical text or by endorsement, at the latest by March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.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 Directive.

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

Annexes A and B are informative.

This document supersedes EN 379:1994.

In the revision of this European standard, and that of EN 169, which was performed concurrently, it was decided to remove from EN 379 welding filters with dual scale numbers and include them within EN 169.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European standard specifies requirements for automatic welding filters which switch their luminous transmittance to a lower predetermined value when a welding arc is ignited (referred to as welding filters with switchable scale numbers). It also specifies requirements for automatic welding filters which switch their luminous transmittance to a lower value, where the lower value of luminous transmittance is set automatically in dependence on the illuminance generated by the welding arc (referred to as welding filters with automatic scale number setting).

The requirements of this standard apply if such a filter is to be used for continuous viewing of the welding process, (including gas welding and cutting), and if it is to be used only during the period when the arc is being ignited.

These filters are used in welders' eye protectors or are fixed to equipment.

If they are to be used in welders' eye protectors, other applicable requirements for these types of filters are given in EN 166. The requirements for the frames/mountings to which they are intended to be fitted are given in EN 175.

Guidance on the selection and use of these filters is given in annex A.

The specifications for welding filters without switchable luminous transmittance are given in EN 169.

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 165:1995, *Personal eye-protection – Vocabulary*.

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 169:2002¹⁾, *Personal eye-protection - Filters for welding and related techniques - Transmittance requirements and recommended use*.

ISO 9211-2:1994, *Optics and optical instruments -- Optical coatings -- Part 2: Optical properties*

ISO/CIE 10526:1999, *CIE standard illuminants for colorimetry*.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 165:1995 and the following apply.

3.1

automatic welding filter

a protective filter which automatically switches its scale number from a lower value (light state scale number) to a higher value (dark state scale number) when the welding arc is ignited

1) To be published

3.1.1**automatic welding filter with manual scale number setting**

a protective filter which automatically switches its scale number from a lower value (light state scale number) to a higher value (dark state scale number) selected by the user when the welding arc is ignited.

3.1.2**automatic welding filter with automatic scale number setting**

A welding filter with switchable scale number, in which the dark state scale number depends upon the illuminance generated by the welding arc.

3.2**light state scale number**

the scale number corresponding to the maximum value of luminous transmittance τ_1 (see Figure 1)

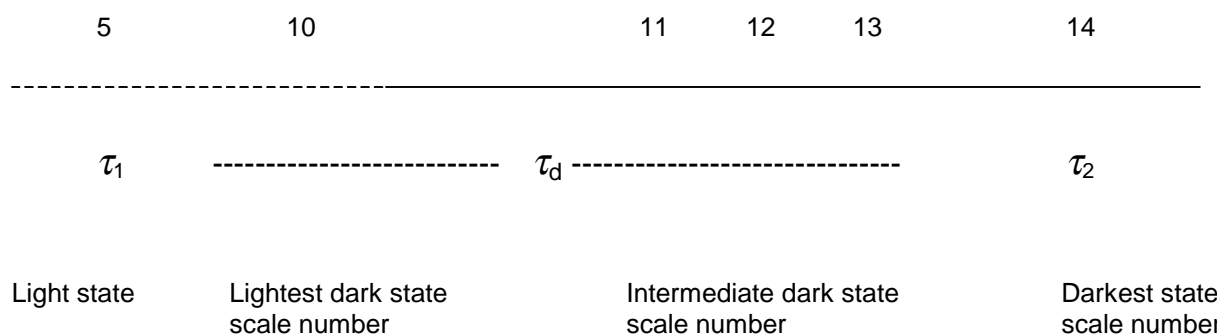


Figure 1 - Example showing the meaning of the terms in the case of an automatic welding filter with a light state scale number of 5 and dark state scale numbers between 10 and 14

3.3**dark state scale number**

the scale number corresponding to the value of the luminous transmittance τ_d reached after the ignition of the welding arc by an automatic welding filter (see Figure 1)

3.4**darkest state scale number**

the highest scale number corresponding to the minimum value of luminous transmittance τ_2 of an automatic welding filter claimed by the manufacturer (see Figure 1)

3.5**switching time**

the switching time t_s of an automatic welding filter is defined by the following integral:

$$t_s = \frac{1}{\tau_1} \int_{t=0}^{t=t(\tau(t)=3\tau_2)} \tau(t) dt$$

where

$t = 0$ is the time at which the arc ignites;

$\tau(t)$ is luminous transmittance at a time t after the ignition of the welding arc;

$t = t(\tau(t)=3\tau_2)$ is the time at which the luminous transmittance falls to 3 times the luminous transmittance in the darkest state.

NOTE In the case of short term exposure to light, the glare is approximately proportional to the product of the illuminance at the eye and time. The time relationship of the darkening process can be very different depending on the construction of the welding filter with switchable scale number. It is therefore appropriate to define the switching time as an integral of the luminous transmittance over time and not merely by the initial and final luminous transmittances.