

# SVENSK STANDARD

## SS-EN ISO 25980:2014



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### **Hälsa och säkerhet vid svetsning och besläktade metoder – Genomsynliga svetsdraperier, remsor och skärmar för bågsvetsmetoder (ISO 25980:2014)**

### **Health and safety in welding and allied processes – Transparent welding curtains, strips and screens for arc welding processes (ISO 25980:2014)**

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Denna standard ersätter SS-EN 1598:2011, utgåva 2.

The European Standard EN ISO 25980:2014 has the status of a Swedish Standard. This document contains the official version of EN ISO 25980:2014.

This standard supersedes the Swedish Standard SS-EN 1598:2011, edition 2.

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EUROPEAN STANDARD

**EN ISO 25980**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2014

ICS 13.100; 25.160.10

Supersedes EN 1598:2011

English Version

## Health and safety in welding and allied processes - Transparent welding curtains, strips and screens for arc welding processes (ISO 25980:2014)

Hygiène et sécurité en soudage et techniques connexes - Rideaux, lanières et écrans transparents pour les procédés de soudage à l'arc (ISO 25980:2014)

Arbeits- und Gesundheitsschutz beim Schweißen und bei verwandten Verfahren - Durchsichtige Schweißvorhänge, -streifen und -abschirmungen für Lichtbogenschweißprozesse (ISO 25980:2014)

This European Standard was approved by CEN on 23 August 2014.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## **Foreword**

This document (EN ISO 25980:2014) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding" the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by April 2015, and conflicting national standards shall be withdrawn at the latest by April 2015.

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

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### **Endorsement notice**

The text of ISO 25980:2014 has been approved by CEN as EN ISO 25980:2014 without any modification.





# Health and safety in welding and allied processes — Transparent welding curtains, strips and screens for arc welding processes

## 1 Scope

This International Standard specifies safety requirements for transparent welding curtains, strips, and screens to be used for shielding of work places from their surroundings where arc welding processes are used. They are designed to protect people who are not involved in the welding process from hazardous radiant emissions from welding arcs and spatter.

Welding curtains, strips, and screens specified in this International Standard are not intended to replace welding filters. For intentional viewing of welding arcs other means of protection are used.

This International Standard is not applicable for welding processes where laser radiation is used.

NOTE Darker welding curtains or screens are advisable for mutual separation of adjacent work places for reasons of comfort.

## 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.

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

ISO 11664-2:2007, *Colorimetry — Part 2: CIE standard illuminants*

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

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

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4007 and the following apply.

### 3.1

#### **transparent**

characteristic of welding curtains, strips, and screens that admit visibility to the working place without implying to be glass clear

### 3.2

#### **hazard level**

*G*

dimensionless number representing the risk exposition to visible and near IR radiations

## 4 Requirements

### 4.1 General

For transparent welding curtains, strips, and screens consisting of different materials, all requirements for the whole material combination shall be met.

For optical test methods, see EN 167.

After preparation, the test specimens shall be maintained at a temperature of  $(23 \pm 5)$  °C and relative humidity of  $(65 \pm 10)$  % for a minimum of 16 h before testing.

## 4.2 Transmittance

The luminous transmittance,  $r$ , based on the spectral distribution of CIE standard illuminant A according to ISO 4007 shall be greater than  $1 \times 10^{-6}$  scattered light diffused within  $1^\circ$  to the direction of the incident radiation shall be included in the measurement.

The spectral transmittance in the wavelength range between 210 nm and 313 nm shall be less than  $2 \times 10^{-5}$ , in the wavelength range between 313 nm and 400 nm less than  $3 \times 10^{-2}$ .

In the wavelength range from 400 nm to 1 400 nm the hazard level  $G$  shall be less than 1.

The hazard level is defined by

$$G = \frac{1}{C} \sum_{\lambda_i=400}^{1400} G(\lambda_i) \cdot \tau(\lambda_i) \cdot \Delta\lambda \quad (1)$$

where

- $\lambda_i$  is the individual wavelength, expressed in nanometers (nm);
- $\tau(\lambda_i)$  is the spectral transmittance of the wavelength  $\lambda_i$ ;
- $\Delta\lambda$  is the wavelength step for the summation, expressed in nanometers (nm);
- $G(\lambda_i)$  is the spectral risk factor at the wavelength  $\lambda_i$ ;
- $C$  is a constant equal to 1 000 nm.

The values of the spectral individual risk factors are given by Formula (2):

$$g(\lambda_i) = G(\lambda_i) \times D \quad (2)$$

where

- $g(\lambda_i)$  is the spectral individual risk factor at the wavelength  $\lambda_i$ , expressed in nanometers (nm)
- $G(\lambda_i)$  is the spectral risk factor at the wavelength  $\lambda_i$ ;
- $D$  is a constant equal to  $1 \times 10^{-3}$  nm.

These values are given for  $\Delta\lambda = 10$  nm in [Table 1](#). If a larger step width is used (e.g. 20 nm), the intermediate values can be omitted. For other wavelengths the risk factors can be calculated as follows:

- For  $\lambda \geq 600$  nm,  $g(\lambda_i) = 0,0015$  nm;
- For  $\lambda < 600$  nm,  $g(\lambda_i) = 2,25 - 0,00375\lambda$ , where  $\lambda$  is the wavelength, expressed in nanometers (nm).

**Table 1 — Wavelength dependence of the spectral individual risk factor**

Wavelength, $\lambda_i$ , nm	Spectral individual risk factor $g(\lambda_i)$ nm
400	0,750 0
410	0,712 5
420	0,675 0
430	0,637 5
440	0,600 0
450	0,562 5
460	0,525 0
470	0,487 5
480	0,450 0
490	0,412 5
500	0,375 0
510	0,337 5
520	0,300 0
530	0,262 5
540	0,225 0
550	0,187 5
560	0,150 0
570	0,112 5
580	0,075 0
590	0,037 5
600 to 1 400	0,001 5

NOTE To separate close welding places it is recommended to use translucent welding curtains.

### 4.3 Reflectance

When measured with an Ulbricht sphere, the spectral reflectance between 230 nm and 400 nm shall be less than 10 %. The luminous reflectance shall be less than 10 % (based on the spectral distribution of CIE standard illuminant A according to ISO 11664-2).

### 4.4 UV-Stability

The relative change of the luminous transmittance due to the test in EN 168 shall not be greater than  $\pm 20$  %. Exceedance is allowed unless the level of hazard  $G$  of 1 according to 4.2 is not reached or exceeded.

### 4.5 Resistance to ignition

4.5.1 Testing shall be done at  $(23 \pm 5)$  °C.

4.5.2 3 samples, 190 mm long and 90 mm wide, are cut from the welding curtain, strip, or screen. The samples are put in the sample holder (see Figure 1). The lower end of the sample shall be 40 mm above the lower end of the sample holder.