



# SLOVENSKI STANDARD

## oSIST prEN ISO 9185:2025

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Nadomešča:  
SIST EN ISO 9185:2007

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**Varovalna obleka - Ocenitev odpornosti materialov proti obrizgu staljene kovine  
(ISO/DIS 9185:2024)**

Protective clothing - Assessment of resistance of materials to molten metal splash  
(ISO/DIS 9185:2024)

Schutzkleidung - Beurteilung des Materialwiderstandes gegen flüssige Metallspritzer  
(ISO/DIS 9185:2024)

Habillement de protection - Évaluation de la résistance des matériaux aux projections de  
métal fondu (ISO/DIS 9185:2024)

**Ta slovenski standard je istoveten z: prEN ISO 9185**

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**ICS:**

13.340.10      Varovalna obleka      Protective clothing

**oSIST prEN ISO 9185:2025**      **en,fr,de**





# DRAFT International Standard

## ISO/DIS 9185

### Protective clothing — Assessment of resistance of materials to molten metal splash

*Vêtements de protection — Évaluation de la résistance des  
matériaux aux projections de métal fondu*

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## ISO/DIS 9185:2024(en)

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee [or Project Committee] ISO/TC [or ISO/PC] 94, *Personal safety -- Personal protective equipment*, Subcommittee SC 13, *Protective clothing*.

This third edition cancels and replaces the second edition (ISO 9185:2007), which has been technically revised.

The main changes are as follows:

- reference to the new PVC sensor film (footnote in [5.2](#));
- addition of a metal support ([Figure 3](#), [5.10](#), [clause 12](#) and [Annex B](#));
- addition of a performance level-based testing procedure ([10.2](#))
- addition of [Annex A](#)
- adjustments and updates in [annexes B](#) and [C](#)

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

**ISO/DIS 9185:2024(en)****Introduction**

This revision of ISO 9185:2007 introduces changes intended to again improve reproducibility when using a new batch of PVC sensor film.

These changes are, principally, more precise definitions of damage to the PVC sensor film that indicate a test result fail plus also the introduction of a metal support that is located beneath the test specimen.

A new batch of PVC sensor film, produced by a new world-wide distributor – see note in the text – has been shown by thorough inter-laboratory trials to behave comparably to the now exhausted previous batch.

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# Protective clothing — Assessment of resistance of materials to molten metal splash

## 1 Scope

This International Standard specifies a method for assessing the heat penetration resistance of materials intended for use in clothing to protect against large splashes of molten metal. It provides specific procedures for assessing the effects of splashes of molten aluminium, molten cryolite, molten copper, molten iron and molten mild steel.

The principle of the test method is applicable to a wider range of hot molten materials than those for which specific procedures are set out, provided that appropriate measures are applied to protect the test operator. It is important to note that good resistance of a material to a pure molten metal does not guarantee a good performance against any slag that can be present in a manufacturing process.

## 2 Normative references

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

ISO 683-1, *Heat-treatable steels, alloy steels and free-cutting steels — Part 1: Non-alloy steels for quenching and tempering*.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1 damage

<PVC sensor film> any smoothing or modification to the embossing on the front and/or back of the PVC sensor film, extending in total for at least 5 mm across its width, or pinholing with a diameter of at least 1 mm.

Note 1 to entry: Where the visual change in appearance is in discrete spots, damage occurs when the summation of the width of each spot exceeds 5 mm across any horizontal section. For cryolite, experience indicates that damage can be defined as less than 5 mm in width, but greater than 10 mm in length.

### 3.2 molten metal splash index

figure equal to the minimum mass of molten metal poured which just causes damage to the PVC sensor film

[SOURCE: ISO 11610:2023, 6.5.40]

## 4 Principle

Materials are tested by pouring quantities of molten metal onto the test specimen supported at an angle to the horizontal on a pin frame. Damage is assessed by placing an embossed thermoplastic PVC sensor film directly behind, and in contact with, the test specimen and noting changes to the film after pouring. Any adherence of the metal to the test specimen surface is also noted. Depending on the result, the test is repeated, using a greater or smaller mass of metal, until the minimum quantity to cause damage to the film is observed.

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### 5 Apparatus and materials

**5.1 Metals and cryolite** complying with the specifications set out in [Annex B](#). Other metals or substrates appropriate to the end use.

NOTE It is advisable that coarse filings or small pieces cut from solid bar or sheet be used, because fine filings have proved difficult to melt. A range of pouring temperatures used in industry for different metals and for cryolite is given in [Annex B](#).

**5.2 PVC sensor film**,<sup>1)</sup> comprising an embossed PVC sheet, of mass per unit area  $(300 \pm 30)$  g/m<sup>2</sup>, which when tested as described in [Annex C](#) shows no smoothing or modification of the embossing of the central area at the lower temperature but which shows smoothing or modification of the central area at the higher temperature. The procedure set out in [Annex C](#) shall be undertaken no more than 30 days before any one day of testing in accordance with this International Standard.

NOTE The reason for this continuous calibration of the PVC sensor film is that it is likely to change over time because of plasticizer loss.

It is advisable that the PVC sensor film be stored in a cool and dark location so as to minimize such changes.

**5.3 Crucible**, whose approximate external dimensions are a height of 97 mm, a top diameter of 80 mm, a bottom diameter of 56 mm and a capacity (brim full) of 190 ml (see [Figure 1](#)).

NOTE For most molten metals, including iron, a graphite impregnated material (if an induction furnace is used) has been found suitable for the crucible.

NOTE 2 A crucible with larger dimensions can be used if the mentioned crucible dimensions are insufficient for the necessary quantity of molten metal or cryolite.

**5.4 Detachable crucible holder**, to enable the crucible containing the molten metal to be moved quickly and safely from the furnace to the test apparatus.

**5.5 Furnace**, capable of operating at a temperature 100 °C above the pouring temperature specified in [Annex B](#). The furnace type may be either a muffle furnace or an induction type furnace.

NOTE Muffle furnaces are capable of holding at least four crucibles (i.e. internal furnace size is typically 135 mm × 190 mm × 780 mm), but they take several hours to melt metals such as steel, iron and copper. Induction furnaces melt a single crucible of these metals in less than half an hour.

**5.6 Temperature probe**, either a small thermocouple<sup>2)</sup> or an optical non-contact temperature device, capable of measuring molten metal temperatures up to 1 650 °C with a precision of  $\pm 10$  °C. To determine the temperature, the molten metal should be stirred at a depth of at least 1 cm below its surface.

**5.7 Pouring apparatus**, shown in [Figure 1](#), consisting of the pouring device, a means of rotating the pouring device at constant angular velocity, a specimen holder with supporting frame and a sand tray.

The pouring device, consisting of crucible holder and drive shaft, shall be designed and constructed so that the point at which the molten metal pours from the crucible lies on the axis of rotation of the drive shaft. The pouring device shall be manufactured from steel.

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1) The PVC sensor film is supplied by SDC Enterprises Limited, Holmfirth, HD9 3JL, United Kingdom (<https://www.sdcenterprises.co.uk/new-product-launch-pvc-sensor-film/>). This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO. Equivalent products may be used if they can be shown to lead to the same results.

2) A suitable device is a long U-tube thermocouple unit known as a dipstick, which can be obtained from Heraeus Electro - Nite Ltd., Chesterfield, S41 9ED, England. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO. Equivalent products may be used if they can be shown to lead to the same results.