
Varovalna obleka - Zaščita pred učinki plamena - Materiali, kombinacije materialov in obleka z omejeno stopnjo gorljivosti (ISO/DIS 14116:2023)

Protective clothing - Protection against flame - Limited flame spread materials, material assemblies and clothing (ISO/DIS 14116:2023)

Schutzkleidung - Schutz gegen Flammen - Materialien, Materialkombinationen und Kleidung mit begrenzter Flammenausbreitung (ISO/DIS 14116:2023)

Vêtements de protection - Protection contre les flammes - Matériaux, assemblages de matériaux et vêtements à propagation de flamme limitée (ISO/DIS 14116:2023)

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13.340.10	Varovalna obleka	Protective clothing

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Protective clothing — Protection against flame — Limited flame spread materials, material assemblies and clothing

Vêtements de protection — Protection contre les flammes — Matériaux, assemblages de matériaux et vêtements à propagation de flamme limitée

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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).

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

This third edition cancels and replaces the second edition (ISO 14116:2015), which has been technically revised.

The main changes are as follows:

- Dated normative references added;
- Correction made to burst strength in [clause 6.2.3](#) related to 7,3 cm² test area. Corrected from 200 kPa to 260 kPa based on Pascal's law; a diameter of 50 cm² is 7,98 cm, and a diameter of 7,3 cm² is 3,05 cm. The ratio of the diameter is 2,61;
- Expanded guidance on Uncertainty of Measurement; [Annex A](#);
- Risk Assessment added ; [Annex B](#) (informative);

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.

Introduction

The purpose of this document is to provide minimum performance requirements for clothing in order to reduce the possibility of the clothing and/or its materials burning when in occasional and brief contact with small flames and thereby, itself constituting a hazard.

For complete protection against exposure to flame, it will be necessary to protect the head, face, hands, and/or feet with suitable PPE and, in some cases, appropriate respiratory protection might also be considered necessary.

Attention is drawn to ISO/TR 2801:2007,^[5] which sets out guidelines for selection, use, care, and maintenance of protective clothing against flame.

Nothing in this document is intended to restrict any jurisdiction, purchaser, or manufacturer from exceeding these minimum requirements.

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Protective clothing — Protection against flame — Limited flame spread materials, material assemblies and clothing

1 Scope

This document specifies the performance requirements for the limited flame spread properties of all materials, all material assemblies, and protective clothing in order to reduce the possibility of the clothing burning when in occasional and brief contact with small flames and thereby constituting a hazard. Additional requirements for clothing are also specified, including design requirements, mechanical requirements, marking, and information supplied by the manufacturer.

When protection against heat hazards is necessary, in addition to protection against flame, this document is not appropriate. International Standards such as ISO/DIS 11612:2023 are to be used instead.

A classification system is given for materials, material assemblies, and garments which are tested according to ISO 15025:2016, Procedure A.

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 13934-1:2013, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method*;

ISO 13935-2:2014, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 2: Determination of maximum force to seam rupture using the grab method*;

ISO 13937-2:2000, *Textiles — Tear properties of fabrics — Part 2: Determination of tear force of trouser-shaped test specimens (Single tear method)*;

ISO 13938-1:2019, *Textiles — Bursting properties of fabrics — Part 1: Hydraulic method for determination of bursting strength and bursting distension*;

ISO 13938-2:2019, *Textiles — Bursting properties of fabrics — Part 2: Pneumatic method for determination of bursting strength and bursting distension*;

ISO 15025:2016, *Protective clothing — Protection against heat and flame — Method of test for limited flame spread*;

ISO 13688:2013, *Protective clothing — General requirements*;

ISO 13688:2013/AMD 1:2021, *Protective clothing — General requirements — Amendment 1*;

ISO 9073-4:2021, *Textiles — Test methods for nonwovens — Part 4: Determination of tear resistance*;

ISO 5077:2007, *Textiles — Determination of dimensional change in washing and drying*

3 Terms and definitions

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

ISO/DIS 14116:2023(E)

3.1 ageing

changing of the product performance over time during use or storage

Note 1 to entry: Ageing is caused by a combination of several factors, such as the following:

- cleaning, maintenance, or disinfecting process;
- exposure to visible and/or ultra-violet radiation;
- exposure to high or low temperatures or to changing temperatures;
- exposure to chemicals, including humidity;
- exposure to biological agents such as bacteria, fungi, insects, or other pests;
- exposure to mechanical action such as abrasion, flexing, pressure, and strain;
- exposure to contaminants such as dirt, oil, splashes of molten metal, etc.;
- exposure to wear and tear.

3.2 cleaning

process by which an item of PPE is made serviceable and/or hygienically wearable again by removing any dirt or contamination

Note 1 to entry: A cleaning cycle is typically a washing plus drying or a dry cleaning treatment followed, if required, by ironing or other finishing.

3.3 cleaning index

letter indicating that the material or material assembly was subjected to a cleansing procedure specified in [5.2](#) before being tested for limited flame spread

3.4 clothing assembly

series of garments arranged in the order as worn

Note 1 to entry: They might contain multilayer materials, material combinations, or a series of separate garments in single layers.

3.5 component assembly

combination of all materials and hardware presented exactly as the finished garment construction

3.6 conditioning

keeping of the samples under standard conditions of temperature and relative humidity for a minimum period of time

3.7 garment

single item of clothing which can consist of single or multiple layers

3.8 hole

any opening, break, or discontinuity of any size in the original structure of the test specimen's fabric caused by application of the test flame

[SOURCE: ISO 15025:2016, 2.8, modified]