ISO/FDIS 11999-9:2025(en)

ISO/TC94/SC14TC 94/SC 14

Secretariat: SA

Date: 2025-1-02xx

PPE for firefighters — Test methods and requirements for PPE used by firefighters who are at risk of exposure to high levels of heat and/or flame while fighting fires occurring in structures – Part 9: Fire hoods —

Part 9: Firehoods

Équipement de protection personnelle pour pompiers — — Méthodes d'essai et exigences pour les équipements de protection personnelle utilisés par les pompiers qui sont à risque d'une exposition à des niveaux élevés de chaleur et/ou de flamme quand la lutte contre les incendies survient dans les structures — —

Partie 9 : Cagoules 9: Hottes de feu

FDIS stage

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Style Definition

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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 document 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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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.htmlwww.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 14, *Fire-fighters' personal equipment*.

The documentThis second edition cancels and replaces the first edition (ISO 11999-9:2016), which has been completely rewritten but the technically revised.

The main changes are as follows:

— the design requirement have been amended and added to (particulate protection)

— all the heat and flame properties have been brought to amended single levels (see Table 1);Table 1);

— all the mechanical properties have been brought to amended single levels (see Table 1);Table 1);

— additional tests have been added or changed (including resistance evaporative transfer (RET), size retention)

A list of all parts in the ISO 11999 series can be found on the ISO website.

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.www.iso.org/members.html.

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PPE for ~~Firefighters~~firefighters — Test methods and requirements for PPE used by firefighters who are at risk of exposure to high levels of heat and/or flame while fighting fires occurring in structures — ~~Part 9: Fire hoods~~

Part 9: Firehoods

1 Scope

This document specifies the minimum design and performance requirements for a fire hood as part of personal protective equipment (PPE) to be used by firefighters, primarily but not solely to protect against exposure to flame, high thermal loads and particulate protection.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

~~<std>~~ISO 3146, *Plastics — Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods*~~</std>~~

~~<std>~~ISO ~~3175~~ ISO 3175-2, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 2: Procedure for testing performance when cleaning and finishing using tetrachloroethene*~~</std>~~

~~<std>~~ISO 5077, *Textiles — Determination of dimensional change in washing and drying*~~</std>~~

~~<std>~~ISO 6942:2022, *Protective clothing — Protection against heat and fire — Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat*~~</std>~~

~~<std>~~ISO 8559-1:2017, *Size designation of clothes — Part 1: Anthropometric definitions for body measurement*~~</std>~~

~~<std>~~ISO 9151, *Protective clothing against heat and flame — Determination of heat transmission on exposure to flame*~~</std>~~

~~<std>~~ISO 11092, *Textiles — Physiological effects — Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded-hotplate test)*~~</std>~~)

~~<std>~~ISO ~~11999~~-ISO 11999-1:2024, *PPE for firefighters — Test methods and requirements for PPE used by firefighters who are at risk of exposure to high levels of heat and/or flame while fighting fires occurring in structures — Part 1: General*~~</std>~~

~~<std>~~ISO/DIS ~~11999~~-ISO 11999-2, *PPE for firefighters — Test methods and requirements for PPE used by firefighters who are at risk of exposure to high levels of heat and/or flame while fighting fires occurring in structures — Part 2: Compatibility*~~</std>~~

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<std>ISO 13688:2013+Amd 1:2021, *Protective clothing — General requirements*</std>

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

<std>ISO 13938-ISO 13938-1, *Textiles — Bursting properties of fabrics — Part 1: Hydraulic method for determination of bursting strength and bursting distension*</std>

<std>ISO 13938-ISO 13938-2, *Textiles — Bursting properties of fabrics — Part 2: Pneumatic method for determination of bursting strength and bursting distension*</std>

<std>ISO 15025:2016, *Protective clothing — Protection against flame — Method of test for limited flame spread*</std>

<std>ISO 16900-ISO 16900-5, *Respiratory protective devices — Methods of test and test equipment — Part 5: Breathing machine, metabolic simulator, RPD headforms and torso, tools and verification tools*</std>

<std>ISO 16900-ISO 16900-5:2016/A1:2018, *respiratory protective devices – Methods of test and test equipment – Part 5: Breathing machine, metabolic simulator, RPD headforms and torso, tools and verification tools*</std>

<std>ISO 17492, *Clothing for protection against heat and flame — Determination of heat transmission on exposure to both flame and radiant heat*</std>

<std>ISO 17493, *Clothing and equipment for protection against heat — Test method for convective heat resistance using a hot air circulating oven*</std>

<std>ISO/TR 19591, *Personal protective equipment for firefighters — Standard terms and definitions*</std>

<std>NFPA 1970 *ed. 2025*NFPA 1970-P2025, *Standard on Protective Ensembles for Structural and Proximity Fire Fighting, Work Apparel and Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, and Personal Alert Safety Systems (PASS)*</std>]

<std>ASTM F2299/F2299M-ASTM F2299/F2299M-24, *Standard Test Method for Determining the Initial Efficiency of Materials Used in Medical Face Masks to Penetration by Particulates Using Latex Spheres*</std>

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO/TR 19591 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obphttps://www.iso.org/obp

3.1 3.1
fire hood
item worn directly in contact with the head to protect exposed parts of the head and neck where the protective coat/helmet/respiratory protective device (RPD) facepiece interface

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3.2 ~~3.2~~
particulate protection
barrier layer that principally inhibits airborne particles of solid or liquid substance in the finely divided state

3.3 ~~3.3~~
yoke
area of the fire hood interfacing with the coat

4 General design requirements

4.1 General

General requirements which are not specifically covered in this document shall be in accordance with ISO 13688 and ISO 11999-1.

The design requirements for fire hood, the face mask of RPD and helmet (including shikoro) shall be verified by visual inspection during the procedure laid out in ISO/DIS 11999-2.

NOTE Shikoro requirements, providing coverage of the neck, ears, chin, and facial area, are covered in ISO 11999-5.

4.2 Innocuousness

Acceptability of materials in relation to innocuousness shall be according to ISO 13688:2013+Amd 1:2021 ~~clause~~ 4.2 with due consideration to Note 1 and Annex F, materials shall not release substances generally known to be toxic, carcinogenic, mutagenic, allergenic, toxic to reproduction or otherwise harmful.

4.3 Flexibility

The fire hood shall fit close to the head and be able to be worn without discomfort. It shall not restrict head movement, reduce the field of view, or interfere with use of the respiratory protective device. The fire hood shall also be compatible with the respiratory device.

NOTE 1 Excess material in the construction of the fire hood may hamper the wearer and compromise the wearing of other personal protective equipment.

4.4 Facial opening

The fire hood shall have a facial opening creating an interface to fit around an RPD face mask.

The design requirements specified shall be verified by visual inspection during the procedure laid out in ISO/DIS 11999-2.

4.5 Yoke interface area

The fire hood shall have a yoke creating an interface with the protective coat (see ISO 11999-3) that stays secure under the protective coat without being attached.

The design requirements specified shall be verified by visual inspection during the procedure laid out in ISO/DIS 11999-2.

NOTE The yoke is not always symmetrical on the back, upper shoulders and front (upper chest).

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4.6 Sizing

The fire hood shall be manufactured in various sizes or be sufficiently elastic to be compatible with various head sizes, shapes and hair styles. The design requirements specified shall be verified by visual inspection during the procedures in Annex A.Annex A.

NOTE Overstretching has the potential to reduce the thermal protection.

4.7 Labels

The label(s) for the marking requirement shall be positioned in the area defined as the front dorsal plane of the yoke of the fire hood. Assess by visual inspection.

4.8 Seam construction

Seams shall be constructed to give the minimum loss of strength and to maintain the integrity of the fire hood. Seams shall meet the requirements of 6.2.6.2.

4.9 Particulate protection

The fire hood shall meet the requirements in 6.116.11 and 6.126.12 and the requirements in this sub-clause.

The particulate protection surface shall include at least the area from 50 mm below the side of the neck point, and from 100 mm below both the front of the neck point and back of the neck point up to the top of the head as defined in ISO 8559-1:2017, Figure 1.

The elastic and stitching around the facial opening shall be permitted to exclude particulate blocking material specifically for meeting the requirements of 4.24.2 for a distance of (20 ± 2) mm from the leading edge of the fire hood face opening to the innermost row of stitching.

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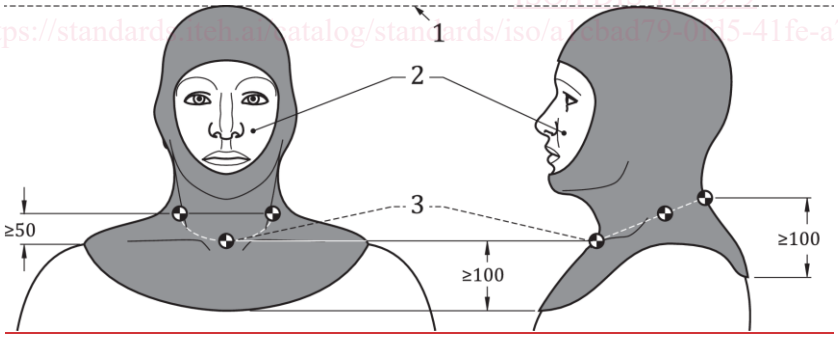
Dimensions in millimetres



Key

1 top of fire hood
2 face opening
3 base neck line with neck points at back, front and sides (see ISO 8559-1:2017, clause 3.1.6-3.1.8 and 3.2.1)

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