Technical Report

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Best practices on the selection and use of personal protective equipment (PPE) designed to provide protection for firefighters

Meilleures pratiques sur la sélection, l'utilisation, le soin et l'entretien des équipements de protection individuelle (PPE) conçus pour pourvoir à la protection des pompiers

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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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

This document was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective equipment*, Subcommittee SC 14, *Firefighters personal equipment*.

This third edition cancels and replaces the second edition (ISO/TR 21808:2021), which has been technically revised and completely rewritten.

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.

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Introduction

The information in this document has been produced to assist firefighters, fire services and purchasers (or the person who advises the employer) in making the necessary decisions regarding the selection, use, care and maintenance of PPE for firefighters.

The purpose of this document is to establish a best practices document for PPE with the goal to evaluate and reduce the hazards and potential health risks associated with firefighting. This selection and use, guideline provides basic answers, criteria, and options for the fire service personnel that are selecting or using PPE through its life cycle with respect to protection it provides related to heat and flame or damaged PPE.

The main topics that the fire service needs to consider are highlighted in this document. This best practices document goes through the various steps and considerations such as risk assessment, compatibility, testing, information to be provided with the PPE so that the right management choices can be made for each fire service. Many paragraphs of the document contain bullet-lists as thought provokers or options that may need to be considered. The annexes provide additional information that if included, would make the main body of this document too complicated to read, but are necessary to describe hazards and risks, the value of the test methods for the end user, for example Annex E and Annex F provide importance guidance information.

The selection of appropriate PPE for heat and flame are based on your own risk assessment and procurement documents.

In the past 10 years, the world has experienced a rise in temperature due to climate change. As a result of this temperature rising, firefighters are facing the danger of heat stress, heat stroke and other fatal heat sicknesses. Many fire departments have begun considering heat stress management, taking into account the rising temperature and hot and humid climates, and have established new firefighting strategies, including tactics, training, equipment, and organization. Although some countries are placing more emphasis on heat and flame protection, the increased frequency and danger of heat stress and heat stroke incidents are estimated to result from the heavier and thicker PPE required. The risk of these newly generated risks, including dangerous heat stress/stroke, can not be underestimated. Risk assessments of firefighters' PPE(s) are to include the risks associated with heavier and thicker PPE(s) under various environmental conditions.

The compatibility in this document focused mainly on the physical compatibility between each element of PPE and the documentation.

This document is not intended for cleaning, inspection or repair of firefighter PPE. ISO 23616 is used for cleaning, inspection and repair of firefighters personal protective equipment (PPE).

Currently, TC 94/WG1 works to establish a parent standard for the development of this document. In case of the parent standard publication, consider the consistency of this document.

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Best practices on the selection and use of personal protective equipment (PPE) designed to provide protection for firefighters

1 Scope

This document sets out the best practices for the selection and use of PPE designed to provide protection for firefighters while carrying out their duties.

The PPE covered in this document is intended for firefighting personnel exposed to risks associated with but not necessarily limited to the following activities:

— structural firefighting;

— wildland firefighting;

— incidents involving hazardous materials;

— incidents involving motor vehicle;

— urban search and rescue.

The purpose of this document is to highlight the main areas that a fire service needs to consider when providing PPE to its members. This document is a supplement to the information provided in the PPE standards or used in conjunction with them. Most paragraphs of the document contain bullet lists, these lists are provided for guidance only and they are not exhaustive.

Cleaning, inspection and repair of firefighters' personal protective equipment (including care and maintenance) are covered by ISO 23616.

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.

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

3 Terms and definitions

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

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

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

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

3.1
base-layer garment
the first layer of a textile structure that is in direct contact with the skin (i.e. briefs, t-shirts, bras, socks)

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