International Standard

ISO 11999-10

First edition
2026-03

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 in structures —

Part 10: Respiratory protective devices (RPD)

Équipement de protection individuelle pour pompiers — Méthodes d'essai et exigences pour les équipements de protection individuelle utilisés par les pompiers qui risquent d'être exposés à des niveaux élevés de chaleur et/ou de flamme lorsqu'ils combattent des incendies dans des structures —

Partie 10: Appareils de protection respiratoire (APR)

Reference number
ISO 11999-10:2026(en)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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 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 — Personal protective equipment*, Subcommittee SC 14, *Firefighters' personal equipment*.

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.

Introduction

In a world where there is an ever-increasing focus on worker occupational health and safety, fire services are faced with the dilemma of trying to provide firefighters with as safe a work environment as is reasonably possible whilst also having to deal with the ever-increasing risks our firefighters face whilst fighting fires in both the urban, rural, industrial and wildland environments.

In the course of their duties, firefighters are exposed to many hazardous chemicals and carcinogens that include smoke, soot, and the products of combustion such as heavy metals, benzene, perfluoroalkyl and polyfluoroalkyl substances (PFASs) which are inhaled, ingested, dermally absorbed, or both.

With the recent statement by the World Health Organization (WHO) elevating the classification of occupational exposure as a firefighter to Group 1, ISO/TC 94/SC 14 Project Group on contaminates are taking all possible steps to reduce the exposures to firefighters by reviewing all standards pertaining to PPE used by firefighters and making recommendations to address identified shortfalls.

The following is an extract from the statement released by the WHO:

— International Agency for Research on Cancer (IARC)[7], the cancer agency of the World Health Organization (WHO), has evaluated the carcinogenicity of occupational exposure as a firefighter

— A Working Group of 25 international experts, including 3 Invited Specialists, from 8 countries was convened by the IARC Monographs program for a meeting in Lyon

— After thoroughly reviewing the available scientific literature, the Working Group classified occupational exposure as a firefighter as carcinogenic to humans (Group 1), on the basis of sufficient evidence for cancer in humans.

ISO/TR 21808 provides guidance on how to carry out a risk assessment, the guidelines were developed previously based on the work of CEN Technical Committee TC 162, Joint Working Group for firefighters personal protective equipment and has been modified to encompass PPE worn by all emergency service personnel.

During incidents being undertaken by emergency service personnel, many different hazards may be encountered, including exposures to a range of chemicals that are biproducts of fires occurring in the urban and wildland environment. Where possible, the level of risk that each hazard presents to firefighters must be eliminated or reduced to an acceptable level. The guidance given in ISO/TR 21808 indicates how to carry out a risk assessment by acknowledging the hazards that may be present, the likelihood of the firefighters becoming exposed to them and possible consequence of such exposure if not addressed.

This document provides minimum design and performance requirements for respiratory protective devices (RPD) worn by firefighters, by referencing requirements of ISO 17420-5 which will reduce injury and loss of life whilst fighting fires occurring in structures. Amongst other hazards faced by firefighters is exposure to high thermal loads, flames, particulates and other hazardous chemicals.

This document forms part of the ISO 11999 series, ISO/TS 11999-2 specifies design and performance requirements to achieve compatibility across the PPE covered in ISO 11999-3 to this document, when all the items are worn together, thereby creating a PPE ensemble, whether sold by a manufacturer or composed by a user. In either case, the PPE ensemble should meet the requirements of ISO/TS 11999-2. This becomes significantly important when considering the issue of particulate protection and potential health risks posed to firefighters from exposure to products of combustion.

This document supports the structure identified in ISO 11999-1 for a harmonised approach across all parts of this series by setting single minimum design and performance requirements for PPE, including optional requirements where identified, and for product markings and manufacturer's instructions. Selection of an appropriate system of PPE is dependent upon an effective risk assessment which identifies the hazards to be faced, evaluates the likelihood of those hazards, and provides the means to reduce or eliminate these hazards (see ISO/TR 21808).