PD ISO/TS 11999-2:2015

BSI Standards Publication

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

bsi.

...making excellence a habit.™

National foreword

This Published Document is the UK implementation of ISO/TS 11999-2:2015.

The UK participation in its preparation was entrusted to Technical Committee PH/14, Firefighters' personal protective equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 85362 3

ICS 13.340.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 June 2015.

Amendments issued since publication

Date	Text affected

PD ISO/TS 11999-2:2015

TECHNICAL SPECIFICATION

ISO/TS 11999-2

First edition
2015-06-01

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

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 2: Compatibilité

Reference number
ISO/TS 11999-2:2015(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

ISO/TS 11999-2 was prepared by Technical Committee ISO/TC 94, *Personal safety – Protective clothing and equipment*, Subcommittee SC 14, *Fire-fighters' personal equipment*.

ISO 11999 consists of the following parts, under the general title *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*

— *Part 2: Compatibility*

— *Part 3: Clothing*

— *Part 4: Gloves*

The following parts are under preparation:

— *Part 5: Helmets*

— *Part 6: Footwear*

— *Part 7: Face and eye protection*

— *Part 8: Hearing*

— *Part 9: Firehoods*

— *Part 10: Respiratory protection*

Introduction

This International Standard provides minimum design and performance requirements for personal protective equipment (PPE) worn by firefighters to reduce injury and/or the loss of life. Amongst other hazards faced by firefighters is exposure to high thermal loads and to flames.

This International Standard details the design and performance requirements for the various items of PPE covered in all parts and for the compatibility of items of PPE when worn together.

This International Standard specifies design and performance requirements for the compatibility of ISO 11999-3, ISO 11999-4, ISO 11999-5, ISO 11999-6, ISO 11999-7, ISO 11999-8, ISO 11999-9, and ISO 11999-10 when all items covered in this International Standard are worn together, thereby creating an ensemble standard. All items have to meet the general requirements for marking and manufacturer's instructions (ISO 11999-1), as well as the specific marking and manufacturer's instructions of the respective parts of ISO 11999.

Under best practice for health and safety procedures, prior to choosing any PPE, a risk assessment of the workplace is carried out. Where hazards are identified and cannot be removed from a workplace, the items of PPE chosen to protect the personnel need to be fit for their intended use while allowing the personnel to carry out the work required of them. In environments where firefighters may be required to work, not only must the PPE protect the firefighters while enabling them to achieve their objectives at an incident, but it must also safeguard them and allow a safe escape. The PPE chosen must also allow firefighters to carry out their duties without undue stress being caused by the PPE.

Some PPE, particularly PPE to protect against mortal danger, can have failure levels far above the limit of exposures of human beings. On sites where such PPE is being used, it is important to ensure that proper and suitable safety procedures are in place which can identify when personnel should be withdrawn from dangerous or potentially dangerous situations and which can ensure that the relevant medical support is available for firefighters.

Since the decision on which PPE ensemble to use following risk assessment will dictate the parameters for protection of the persons who have to wear it, it is critical that decision-makers have knowledge of the risks against which the PPE is supposed to protect and its limitations. It is recommended that those who make the decision on the choice of PPE for particular workplaces should be competent in their knowledge and understanding of both the workplace hazards and the PPE from which to choose, prior to making these decisions, to ensure that informed decisions are taken.

Further detail on carrying out risk assessment to ascertain the type of PPE required to protect personnel working in specific areas is included in ISO 11999-1:2015, Annex A.

Hazards in the workplaces of firefighters are varied but can be common from workplace to workplace; therefore, some uses of PPE for firefighters can be multipurpose. Because this International Standard has been developed on a risk assessment approach, a number of different types, levels, or classes are given for certain performance requirements of various parts of a PPE ensemble. Based on their risk assessment, users of this International Standard can make a choice of which levels or classes are required for the particular workplace where their personnel are expected to work. This can include fires in domestic and commercial buildings, fires in industry, including aviation, petrochemical, chemical, pharmaceutical, land-based marine incidents, rescue, etc.

This International Standard includes separate parts for each item of a firefighter's ensemble. As PPE to protect each part of the body can be complex, this International Standard draws from the expertise of other Technical Committees in ISO which specialize in such protection.

The results of the user risk assessment for certain workplaces can require the use of PPE with higher and/or different levels or classes of performance than those in this International Standard. PPE covered in this part of ISO 11999 will not protect from all possible exposures. Nothing in this International Standard is intended to restrict any jurisdiction, purchaser, or manufacturer from exceeding the minimum performance requirements specified in this International Standard.

Another objective in the Business Plan of ISO/TC 94/SC 14 is to provide guidance on the selection, use, care, and maintenance for firefighters' PPE. Such activities are critical to the lifespan and continuing protective ability of any PPE and policies covering these aspects should be implemented as soon as the PPE is introduced into use. ISO/TC 94/SC 14 has developed a Technical Report on this subject, ISO/TR 21808. Firefighters should be trained in the selection, use, care, and maintenance of their PPE. Firefighters should also be trained in the performance and limitation of their PPE.

TECHNICAL SPECIFICATION **ISO/TS 11999-2:2015(E)**

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**

1 Scope

This Technical Specification describes compatibility for ensembles of firefighters personal protective equipment (PPE) to be used by firefighters, who are at risk of exposure to high levels of heat and/or flame while fighting fires occurring in structures.

This Technical Specification includes methods for compatibility testing in laboratories and procedures for compatibility testing including the identification of any limitations to be performed by wearers.

NOTE Where the presence of more than one risk to health and safety makes it necessary to wear or use simultaneously more than one item of personal protective equipment, such equipment is compatible and continues to be effective against the risk or risks in question.

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 6330, *Textiles — Domestic washing and drying procedures for textile testing*

ISO 11999-1, *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*

ISO 17491-5, *Protective clothing — Test methods for clothing providing protection against chemicals — Part 5: Determination of resistance to penetration by a spray of liquid (manikin spray test)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11999-1 and the following apply.

3.1
compatibility
ability of a part of an ensemble of PPE to be used in conjunction with other parts of PPE

3.2
human interface
interaction between PPE and the wearer

3.3
PPE interface
interaction between different PPEs adjacent to other components