

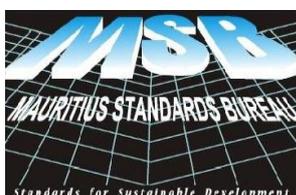
MAURITIAN
STANDARD

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**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**

ICS 13.340.10



**Mauritius Standards Bureau
Moka**

National Foreword

This Mauritian Standard is identical with the International Standard **ISO 11999-1:2015**, *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* published by the International Organization for Standardization (ISO). It was adopted by the Mauritius Standards Bureau on the recommendation of the **Textiles and Protective Clothing Standards Committee** and approval of the **Standards Council** on **27 September 2017**. It was notified in the Government Gazette on **06 January 2018***.

For the purposes of this standard the following change should be made:

The words “International Standard” should be replaced by “Mauritian Standard”.

The following Mauritian Standards are identical to the International Standards, which are referenced in the adopted standard:

International Standard
ISO /TR 11610, Protective clothing - Vocabulary
ISO 13688, Protective clothing – General requirements

Corresponding Mauritian Standard
MS ISO /TR 11610, Protective clothing - Vocabulary
MS ISO 13688, Protective clothing – General requirements

General notice no 22 of 2018



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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is 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*

NOTE The number of this draft has been changed from ISO/DIS 11613-1 to ISO 11999-1. The Committee agreed a new number for this project was appropriate given the scope of the publication of the ISO 11999 series was to cover ensemble standards. It was further agreed that ISO 11613:1999 would remain current.

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, in ISO 11999-2, 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 (this part of ISO 11999), 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 [Annex A](#) of this part of ISO 11999.

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.

PREVIEW

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

1 Scope

This International Standard specifies minimum design and performance requirements for personal protective equipment (PPE) to be used by firefighters, primarily but not solely to protect against exposure to flame and high thermal loads.

To assist with choice based on user risk assessment, types and performance levels for different categories of protection are included.

The scope of this International Standard does not include PPE for use in high-risk fire exposures where, for example, protective clothing with reflective surface according to ISO 15538 might be more appropriate, or for use in long-term firefighting operations in high ambient temperature (for example, bush, wildland, or forest firefighting) where equipment according to ISO 16073 might be more appropriate.

Similarly, this International Standard does not include PPE to protect against chemical and biological hazards, other than against short-term and accidental exposure while engaged in firefighting and associated activities when fighting fires occurring in structures.

This part of ISO 11999 describes the general structure of this International Standard, sets design and performance requirements for PPE, and includes requirements for marking and manufacturer's instructions.

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/TR 11610, *Protective clothing — Vocabulary*

ISO 11999-3:2013, *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 3: Clothing*

ISO 12947-2, *Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 2: Determination of specimen breakdown*

ISO 13688, *Protective clothing — General requirements*

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

EN 469, *Protective clothing for firefighters — Performance requirement clothing for firefighting*

EN 960:2006, *Headforms for use in the testing of protective helmets*