
**Wildland firefighting personal
protective equipment —
Requirements and test methods —**

**Part 8:
Hearing**

*Équipement de protection individuelle pour la lutte contre les feux
d'espaces naturels — Exigences et méthodes d'essai —*

Partie 8: Protecteurs individuels contre le bruit

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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 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/TC94, *Personal safety — Protective equipment*, Subcommittee SC14, *Firefighters personal equipment*.

This first edition of ISO 16073-8, together with ISO 16073-1 to ISO 16073-7, cancels and replaces ISO 16073:2011.

The main changes are as follows:

- the content has been reviewed and separated into several parts;
- the respiratory protection has been deleted from the document.

A list of all parts in the ISO 16073 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

Wildland firefighting involves work carried out mostly in summer temperatures and for many hours, during which the firefighter can develop high levels of metabolic heat. As a consequence, the personal protective equipment (PPE) is required to be light, flexible and commensurate with the risks to which the firefighter can be exposed in order to be effective without introducing excessive heat stress to the wearer.

It is important to train firefighters in the selection, use, care and maintenance of the PPE covered by this document, including an understanding of its limitations.

It is intended that a risk assessment be undertaken to determine if the PPE covered by this document is suitable for its intended use and the expected exposure.

This document provides minimum performance requirements for wildland firefighters' personal protective equipment hearing protection, designed for use for extended periods during wildland firefighting.

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Wildland firefighting personal protective equipment — Requirements and test methods —

Part 8: Hearing

1 Scope

This document specifies the minimum performance requirements and methods of test for hearing protection used when wildland firefighting.

This document covers the general design of the personal protective equipment (PPE), the minimum levels of performance for the materials employed and the methods of test used. The PPE is not intended to provide protection during fire entrapment.

This document does not cover PPE for structural firefighting (see ISO 11999 series), for use against chemical, biological, radiological and nuclear hazards, or for use where a reflective outer surface is required (see ISO 15538).

Activities in support of wildland firefighting, such as the cutting of trees and the use of a chainsaw can require additional protection to that provided in this document. Users are directed to those relevant standards for the requirements associated with such 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.

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

EN 352-1, *Hearing protectors — General requirements — Part 1: Ear-muffs*

EN 352-2, *Hearing protectors — General requirements — Part 2: Ear-plugs*

EN 352-3, *Hearing protectors — General requirements — Part 3: Ear-muffs attached to an industrial safety helmet*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 19591 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 <http://www.electropedia.org/>

4 Hearing protectors

4.1 General

Hearing protectors may be required to protect wildland firefighters from mechanically generated noise produced from equipment such as chainsaws, pumps and blowers. A risk assessment should be carried out to determine the need, if any, for the provision of hearing protectors. These should not be used during firefighting. The risk assessment defines the basic requirements to choose the relevant hearing protection. Additional and supporting information can be found in EN 458.

Items of hearing protection may need to interface with other items of PPE used for wildland firefighting, e.g. helmet.

4.2 Ear-muffs

Ear-muffs shall comply with the requirements given in EN 352-1.

4.3 Ear-plugs

Ear-plugs shall comply with the requirements given in EN 352-2.

4.4 Ear-muffs attached to an industrial safety helmet

Ear-muffs attached to an industrial safety helmet shall comply with the requirements given in EN 352-3.

5 Marking

The ear-muffs shall be durably marked with the following information:

- a) the name, trade mark or other identification of the manufacturer or their authorized representative;
- b) the model designation;
- c) in case of hearing protectors intended to be worn in a particular orientation by design, an indication of the FRONT and/or TOP, and/or an indication of LEFT and RIGHT on the product.

NOTE A product can meet the requirements of other parts in the EN 352 series simultaneously.

6 Manufacturer's information

The PPE shall be supplied to the client accompanied by instructions written at least in the official language(s) of the country of use. At a minimum, it shall comprise (if possible or applicable):

- a) name, trademark or other means of identification of the manufacturer or their authorized representative;
- b) designation of the product type, commercial name or code;
- c) pictograms and levels of performance, if applicable;
- d) statement for optional requirements, if applicable;
- e) name and full address and identification number of the certification body, if applicable;
- f) reference to this document, i.e. ISO 16073-8:2019;
- g) size range(s) for each mode of wearing as determined in the requirements;
- h) materials of the headband (where appropriate);

- i) for each basic combination, and, if required, the sound attenuation values;
- j) instructions for use as appropriate for the specific standard:
 - 1) tests to be carried out by the wearer before use;
 - 2) method of adjustment/replacement/assembling (where appropriate);
 - 3) instructions for fitting and use which shall indicate the need for proper fitting;
 - 4) limitations on use (temperature range, etc.);
 - 5) instructions for storage and maintenance, with maximum periods between maintenance checks;
 - 6) complete instructions for cleaning and/or decontamination (e.g. cleaning temperature, drying process, pH value, mechanical action, maximum number of cleaning cycles) which shall specify, and require the use of agents that are not known to be harmful to the wearer;
 - 7) warnings against problems likely to be encountered;
 - 8) information about any materials used in the product that may cause allergic responses or may be carcinogenic, toxic or mutagenic;
 - 9) details of any significant ergonomic penalties incurred by using the product, such as a reduction of the field of vision, acuity of hearing or a risk of heat stress;
 - 10) instructions on how to recognize ageing and loss of performance in the product;
 - 11) the mean mass of the hearing protector to the nearest gram;
 - 12) if helpful, illustrations, part numbers, etc.
- k) reference to accessories and spare parts, if relevant;
- l) type of packaging suitable for transport, if relevant;
- m) the address from which additional information can be obtained.