



SLOVENSKI STANDARD
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Guidance for selection, use, care and maintenance of protective clothing against heat and flame

Leitfaden für Auswahl, Gebrauch, Pflege und Instandhaltung von Schutzkleidung gegen Hitze und Flammen

Guide pour la sélection, l'utilisation, l'entretien et la maintenance des vêtements de protection contre la chaleur et la flamme

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13.340.10 Varovalna obleka Protective clothing

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Guidance for selection, use, care and maintenance of protective clothing against heat and flame

Leitfaden für Auswahl, Gebrauch, Pflege und
Instandhaltung von Schutzkleidung gegen Hitze und
Flammen

This Technical Report was approved by CEN on 19 January 2003. It has been drawn up by the Technical Committee CEN/TC 162.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document CEN/TR 14560:2003 has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, the secretariat of which is held by DIN.

The Annexes A, B, C and D are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

The information in this report has been produced to assist employers (or the person who advises the employer) in making the necessary decisions regarding the selection, use, care and maintenance of protective clothing, for employees exposed to risks related to heat and flame (e.g. welding, fire-fighting).

The purpose of this document is to highlight the main areas that an employer needs to consider. Most paragraphs of the document contain bullet-lists. All of these lists are provided to give guidance only. They are not exhaustive.

Normative references are not provided in this report. All references are of an informative nature only. Annex A gives details of the current EN Standards relating to clothing designed to provide protection from heat and flame.

For European legislation on PPE see Directive 89/656/EEC and Directive 89/686/EEC.

1 Scope

This technical report sets out guidance for the selection, use, care and maintenance of clothing designed to provide protection against heat and flame.

2 Terms and definitions

For the purpose of this report the following terms and definitions will apply:

2.1

hazard

the substances, situations or events that can cause harm/injury

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2.2

risk

the product (R) of:

L : Likelihood of the occurrence of a hazard in a particular situation

and

S : Severity : the consequences or extent of harm to the individual to be expected from the hazard.

$R = L \times S$.

2.3

selection

the process of determining the type of protective equipment (garments) that is necessary for the required protection

2.4

use

the application of protective clothing including its limitations.

2.5

care

to keep in good working order, including procedures for cleaning, decontamination and storage.

2.6

maintenance

procedure for inspection, cleaning, decontamination and repair with the aim of retaining the protective properties and preventing excessive deterioration of the clothing

3 Selection

3.1 General

Subject to requirements, the process of selecting protective clothing can be divided into a number of stages.

3.2 Risk assessment

The process of carrying out a risk assessment should include :

- identification of the activities to be undertaken by the person(s) who will require to wear the protective clothing
- a list of the hazards present
- a quantification of the risks that would result from exposure to the hazards
- considerations of the protection provided by other control measures before the application of PPE
- determination of the level and extent of protection required from the protective clothing (in absolute or relative terms)
- Determining whether adding badges to a garment may increase the risk (e.g. adding a badge may make for a raised surface for molten splash to cling to)

A number of risk assessment models may be used to determine the level of risk associated with the activities. Annex B gives reference to some of the existing documents on this subject.

3.3 Defining the level of protection required for each activity from the protective clothing

- determine what parts of the body require protection
- identify the appropriate Standard or method which will provide the protection required
- determine the level(s) of protection required (for the relevant parts of the body) in relative or absolute terms for each item of protective clothing.

Annex C provides guidance and examples of hazards and applicable Standards.

3.4 Collecting information on available protective clothing

- carry out market research to determine products that are available
- obtain information from the potential suppliers on performance levels and manufacturer information. Clothing that protects against heat and flame is covered by the PPE Directive (89/686/EEC— **category 2 : EC type examination or category 3 : EC type examination and production inspection**) and therefore must be certified by a notified body.
- gather information from comparable organisations using similar items of protective clothing for similar tasks.
- determine compatibility of all items of PPE to be used.

NOTE If after collating all available data, it is established that suitable protective clothing is not available, then it may be necessary for an organisation to carry out research and development work.

Annex A provides a list of the relevant EN standards for clothing designed to protect against heat and flame.

CEN/TR 14560:2003 (E)**3.5 Wearer trials**

The purpose of a wearer trial is to assess the compatibility and the ergonomic practicality of the protective clothing. Obtaining feedback from the intended users is imperative at this stage, as such information will provide valuable data relating to the practical performance of the protective clothing, and also give confidence to the users, thus ensuring that the selected items are used.

When conducting wearer trials, the following issues should be considered:

- ease and speed of putting on and taking off
- ease and extent of adjustability
- acceptance in terms of comfort and weight
- compatibility with all other items of PPE
- ability to undertake all tasks expected without hindrance or difficulty
- preservation of the protection in all working positions
- Whether adding badges to a garment may increase the risk. The positioning of a badge (will it be in a high risk area?) and the type of badge (is it flame retardant?) should be considered

When wearer trials are conducted a systematic approach should be adopted :

- participants should be selected based on a cross section of the relevant occupational group (height, weight, age, gender, etc.)
- participants should individually evaluate each item of the protective clothing assembly on trial.
- evaluation feedback should be obtained in a structured manner allowing for both qualitative and quantitative data collection and analysis. This may be achieved by using a structured questionnaire, structured or semi-structured interviews and / or group discussions.
- the number of participants has to be sufficient to ensure that the results obtained are statistically significant and representative of the total workforce.

3.6 Additional testing

To assist any decision making process, additional testing may be required :

- instrumented manikin testing
- laboratory testing :
 - assessment of / behaviour after laundry / cleaning
 - assessment of / behaviour after decontamination
 - assessment of / behaviour after UV exposure
 - abrasion resistance
 - chemical repellency

3.7 Other considerations

In order to establish the overall performance and the total cost of ownership of the protective clothing, other considerations may need to be made :

- is training offered as part of the procurement package (including training provided by third parties) ?
- is a post procurement service offered ?
- what quality assurance measures are in place prior to the delivery ?
- what are the requirements for cleaning and decontamination ?
- what are the inspection and maintenance requirements ?
- what are the replacement requirements and costs for components ?
- what is the delivery time for standard and special sizes ?
- what sizes are available ?
- are stock items held by the supplier ?
- what are the collection and delivery arrangements ?
- should stock be held within the organisation ?
- how is the internal distribution to the users to be organised ?
- how is the protective clothing to be safely disposed of ?
- can corporate / role identity be incorporated without affecting performance ?

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NOTE When the outcome of a selection process results in the employer providing a number of items of protective clothing for different tasks/activities, the user/wearer may be permitted (after being provided with appropriate training) to select the item(s) that provide the necessary protection at the time of use. Any selection made at that stage must be based upon the risk assessment carried out by the employer or based upon an informed dynamic risk assessment by the user at time of use.

4 Use

4.1 General

After the selection of the protective clothing, a number of stages should be followed to ensure its correct use.

4.2 Training

European Directive 89/656/EEC (Section II Article 4 paragraph 8) requires that all employees / users are trained how to use their protective clothing correctly, prior to the equipment being introduced into active service. Such training should include :

- information concerning limitations and capabilities of the protective clothing
 - what the protective clothing will protect from
 - what the protective clothing will not protect from
 - what the effects are (if any) of long term use

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- how to use / wear the protective clothing
- the importance of complying with the manufacturers or suppliers instructions
- how to store the protective clothing when not in use
- information concerning arrangements for cleaning and decontamination
- how to determine when the protective clothing is no longer fit for purpose
- how to obtain replacements
- the importance of using garments which are not contaminated by inflammable liquids or substances which could create a spontaneous combustion

NOTE The instructions/training provided to the wearer/user will depend on the level of risk and complexity of the protective clothing to be provided. The provision of written instructions or information may not be sufficient and the users/wearers may need to be involved in practical demonstrations, training and exercise.

4.3 Introducing protective clothing into service

Warning: When individual items of a PPE ensemble are replaced, care should be taken to ensure that the required level of protection to the body is maintained.

4.4 Record keeping

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In the overall management of protective clothing it is essential to build a full life history for each item, from manufacture to disposal (Ref. PPE Directives 89/656/EEC and 89/686/EEC).

Record keeping should incorporate the following:

- the specification of the protective clothing (manufacturer, delivery date, batch number, ...)
- the service history of the protective clothing (date of issue, name of wearer, ...)
- training records of operatives using the protective clothing, including the duration of exposure to risks and the identity of the risks
- details of hazards to which the protective clothing has been exposed
- information relating to care :
 - cleaning
 - decontamination
 - storage
- records of maintenance
 - inspection
 - damage and repair
 - disposal
- problems arising from the use of the protective clothing

NOTE These records should be easily available to the current user.

4.5 Routine examination

Each individual item of protective clothing should be examined before and after use. Ideally the examinations should be carried out by the user, who must be trained appropriately. Routine examinations should include checks for :

- soiling
- contamination from hazardous materials or biological agents
- physical damage (rips, tears, cuts, missing hardware and closing systems)
- thermal damage (charring, burn holes, melting, change in colour)
- damaged or missing accessories (reflective trimming, labelling)
- on going evaluation of system fit and interfaces / overlaps

4.6 In service evaluation and monitoring

A system should be in place to ensure that the performance of all protective clothing is constantly evaluated and monitored.

The items to be monitored may include :

- accident / injury statistics
- failure rates of protective clothing including trends for similar repairs, ...
- feedback from users <https://standards.iteh.ai/catalog/standards/sist/45f8fcea-746a-44c3-b7a6-a5c308870dc3/sist-tp-cen-tr-14560-2003>
- feedback from service company
- changes in working conditions and available protective clothing on the market

5 Care

5.1 General

European Directive 89/686/EEC requires that all protective clothing must be provided with manufacturer information, including care instructions (both on a label attached to the item and/or separately in writing).

Based on this information, the employer should determine the arrangements for care and inform all parties involved (including the user).

Care arrangements should include :

- cleaning
 - what cleaning methods should be used ?
 - who will carry out the cleaning ?
 - when should the items be cleaned ?
 - third party collection and deliveries ?
 - is re-application of finishes/treatments necessary ?