

English version

**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

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Contents

Foreword	3
Introduction	4
1 Scope.....	4
2 Terms and definitions.....	4
3 Selection	5
3.1 General	5
3.2 Risk assessment	5
3.3 Defining the level of protection required for each activity from the protective clothing	5
3.4 Collecting information on available protective clothing	5
3.5 Wearer trials.....	6
3.6 Additional testing.....	6
3.7 Other considerations	7
4 Use.....	7
4.1 General	7
4.2 Training	7
4.3 Introducing protective clothing into service	8
4.4 Record keeping	8
4.5 Routine examination	9
4.6 In service evaluation and monitoring	9
5 Care	9
5.1 General	9
5.2 Cleaning	10
5.3 Decontamination	10
5.4 Storage	11
6 Maintenance.....	11
6.1 General	11
6.2 Inspection	12
6.3 Repairs and alterations	13
6.4 Disposal	13
Annex A (informative) EN standards and their performance levels relating to clothing designed to provide protection from heat and flame	14
A.1 General.....	14
A.2 Standards describing performance requirements for protective clothing or materials.....	14
A.3 Standards describing test methods.....	16
A.4 Draft standards describing test methods.....	16
Annex B (informative) Risk assessment	17
Annex C (informative) Examples of relationship between type of heat/flame hazard and clothing to be chosen for protection	18
Annex D (informative) Guidance on some of the items that may be addressed in labelling, subject to the required use of garments.....	20
Bibliography	21

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.

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.

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.

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