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Protective clothing – General requirements (ISO 13688:2013)

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EUROPEAN STANDARD

EN ISO 13688

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Protective clothing - General requirements (ISO 13688:2013)

Vêtements de protection - Exigences générales (ISO
13688:2013)

Schutzkleidung - Allgemeine Anforderungen (ISO
13688:2013)

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Foreword

This document (EN ISO 13688:2013) has been prepared by Technical Committee ISO/TC 94 "Personal safety - Protective clothing and equipment" in collaboration with Technical Committee CEN/TC 162 "Protective clothing including hand and arm protection and lifejackets" the secretariat of which is held by DIN

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2014, and conflicting national standards shall be withdrawn at the latest by January 2014.

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This document supersedes EN 340:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

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Endorsement notice

The text of ISO 13688:2013 has been approved by CEN as EN ISO 13688:2013 without any modification.

Introduction

This International Standard is a reference standard to be called up as appropriate by specific standards. This International Standard is not intended to be used alone but only in combination with another standard containing requirements for the specific performance of the product which provides protection.

Protective clothing — General requirements

1 Scope

This International Standard specifies general performance requirements for ergonomics, innocuousness, size designation, ageing, compatibility and marking of protective clothing and the information to be supplied by the manufacturer with the protective clothing.

This International Standard is only intended to be used in combination with other standards containing requirements for specific protective performance and not on a stand-alone basis.

2 Normative references

The following referenced documents are indispensable for the application 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 3071, *Textiles — Determination of pH of aqueous extract*

ISO 3175-1, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 1: Assessment of performance after cleaning and finishing*

ISO 3635, *Size designation of clothes — Definitions and body measurement procedure*

ISO 3758, *Textiles — Care labelling code using symbols*

ISO 4045, *Leather — Chemical tests — Determination of pH*

ISO 5077, *Textiles — Determination of dimensional change in washing and drying*

ISO 7000, *Graphical symbols for use on equipment — Registered symbols*

ISO 17075, *Leather — Chemical tests — Determination of chromium(VI) content*

ISO 30023, *Textiles — Qualification symbols for labelling workwear to be industrially laundered*

EN 1811, *Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin*

EN 14362-1, *Textiles — Methods for determination of certain aromatic amines derived from azo colorants — Part 1: Detection of the use of certain azo colorants accessible with and without extracting the fibres*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

ageing

change of one or more initial properties of protective clothing materials during the passage of time

3.2 hazard

situation which can be the cause of harm or damage to the health of the human body

Note 1 to entry: There are different general types of hazards, e. g. mechanical hazards, chemical hazards, cold hazards, heat and/or fire hazards, biological agents hazards, radiation hazards. Certain types of these hazards can, according to circumstances, derive from more specific hazards. Thus, a heat hazard can derive from contact heat, radiant heat etc. for each of which there can be separate test methods.

Particular garments have been designed to give protection against the hazards encountered in specific types of activities. Examples of such garments are aprons that provide protection against hand knives, trousers for use with chainsaws, clothing for protection against chemicals, high visibility clothing and motorcycle rider's protective clothing.

3.3 risk

combination of the frequency, or probability, of occurrence and the consequence of a specified hazardous event

Note 1 to entry: The concept of risk always has two elements: the frequency or probability with which a hazardous event occurs and the consequences of the hazardous event.

3.4 performance level

number that designates a particular category or range of performance by which the results of testing can be graded

Note 1 to entry: For further information see [Annex A](#).

3.5 protective clothing

clothing including protectors which cover or replace personal clothing, and which is designed to provide protection against one or more hazards

3.6 waist to waist over the shoulder length

maximum length measured from the plane of the waist over the shoulder to the plane of the waist

Note 1 to entry: See also [Clause 6](#).

3.7 torso

thorax and abdomen or section of the body to which the limbs, head and neck are attached

4 Basic health and ergonomic requirements

4.1 General

In the following paragraphs some basic health and ergonomic requirements are stated that are relevant for many types of protective clothing.

NOTE For general ergonomic principles to be used in designing and specifying personal protective equipment see EN 13921.^[7]

Protective clothing shall be designed and manufactured as follows.

4.2 Innocuousness

Protective clothing shall not adversely affect the health or hygiene of the user. The materials shall not, in the foreseeable conditions of normal use, release substances generally known to be toxic, carcinogenic, mutagenic, allergenic, toxic to reproduction or otherwise harmful.

NOTE 1 Information on the classification and identification of harmful substances can be found, e.g. in^[9] of the Bibliography.

NOTE 2 Guidance on how to consider acceptability of materials in protective clothing is given in the flow chart in informative [Annex B \(Figure B.1\)](#).

The following list of documents is given for information and as examples of documents to be examined:

- Information supplied by the manufacturer could include evidence-based information confirming that the product does not contain any substances at levels that are known or suspected to adversely affect user hygiene or health,
- Materials specifications,
- Safety data sheets relating to the materials,
- Information relating to the suitability of the materials for use with food, in medical devices, or other relevant applications,
- Information relating to toxicological, allergenic, carcinogenic, toxic to reproduction or mutagenic investigations on the materials,
- Information relating to ecotoxicological and other environmental investigations on the materials.

Materials should be selected to minimize the environmental impact of the production and disposal of protective clothing (see also [Annex F](#)).

The examination shall determine whether the claim that the materials are suitable for use in the protective clothing or protective equipment is justified. Particular attention shall be paid to the presence of plasticisers, unreacted components, heavy metals, impurities and the chemical identity of pigments and dyes.

Each layer of material of the protective clothing shall comply with the following requirements:

- a) Chromium VI content in leather clothing shall not exceed 3 mg/kg according to ISO 17075.
- b) All metallic materials which could come into prolonged contact with the skin (e.g. studs, fittings) shall have a release of nickel of less than 0,5 µg/cm² per week. The method of test shall be according to EN 1811.
- c) Protective clothing material shall have a value greater than pH3,5 and less than pH9,5. The test method for leather shall be according to ISO 4045 and for textile materials according to ISO 3071.
- d) Azo colorants which release carcinogenic amines listed in EN 14362-1 shall not be detectable by the method in these standards.

4.3 Design

4.3.1 The design of protective clothing shall facilitate its correct positioning on the user and shall ensure that it remains in place for the foreseeable period of use, taking into account ambient factors, together with the movements and postures that the wearer could adopt during the course of work or other activity. For this purpose, appropriate means, such as adequate adjustment systems or adequate size ranges shall be provided so as to enable protective clothing to be adapted to the morphology of the user. (See [Annex C](#)).

4.3.2 The design of protective clothing shall ensure that no parts of the body get uncovered by expected movements by the wearer (e.g. a jacket should not rise above the waist when the arms are raised) if