SLOVENSKI STANDARD
SIST EN 15614:2007

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Zaščitna obleka za gasilce – Laboratorijske preskusne metode in zahtevane lastnosti oblek za gašenje v naravi

Protective clothing for firefighters - Laboratory test methods and performance requirements for wildland clothing

Schutzkleidung für die Feuerwehr - Laborprüfverfahren und Leistungsanforderungen für Schutzkleidung für die Brandbekämpfung im freien Gelände

Vetements de protection pour sapeurs-pompiers - Méthodes d'essai de laboratoire et exigences de performance pour vetements portés pendant la lutte contre les feux d'espaces naturels

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13.220.10	Gašenje požara	Fire-fighting
13.340.10	Varovalna obleka	Protective clothing

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Protective clothing for firefighters - Laboratory test methods and performance requirements for wildland clothing

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This European Standard was approved by CEN on 10 May 2007.

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Foreword

This document (EN 15614:2007) 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.

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of an identical text or by endorsement, at the latest by December 2007, and conflicting national standards shall be withdrawn at the latest by December 2007.

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 89/686/EEC.

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

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

Introduction

The purpose of this European Standard is to provide minimum performance requirements for protective clothing designed for use for extended periods during wildland firefighting and associated activities.

Wildland firefighting involves work primarily in summer temperatures, for many hours during which the firefighter may develop high levels of metabolic heat. Consequently the protective clothing should be light, flexible and commensurate with the risks to which the firefighter may be exposed in order to be effective without introducing heat stress to the wearer.

Accordingly a risk assessment should be undertaken to determine if the clothing covered by this European Standard is suitable for its intended use and the expected exposure. This European Standard does not cover clothing for use in situations where clothing complying with EN 469 is more suitable, nor does this European Standard cover clothing to protect against chemical, biological or radiation hazards.

The risk assessment should include what additional personal protective equipment is necessary for head, hands and feet. In some situations respiratory protection may be required.

Firefighters should be trained in the selection, use, care and maintenance of the protective clothing covered by this European Standard, including an understanding of its limitation.

Nothing in this European Standard is intended to restrict any jurisdiction, purchaser or manufacturer from exceeding the minimum requirements in this standard.

A list of standards related to EN 15614 is given in the Bibliography.

1 Scope

This European Standard specifies methods of test and minimum performance requirements for protective clothing, designed to protect the wearer's body, except the head, hands and feet, to be worn in wildland firefighting and associated activities. This clothing is not intended to provide protection during fire entrapment. This European Standard covers the general design of the clothing, the minimum level of performance for the materials employed and the methods of test to determine these levels.

This European Standard is not applicable to clothing for use in situations encountered in structural firefighting (EN 469 and ISO 11613) or where a high level of infrared radiation is expected (EN 1486), nor does this European Standard cover clothing to protect against chemical, biological, electrical or radiation hazards.

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.

EN 340:2003, *Protective clothing — General requirements*

EN 471:2003, *High-visibility warning clothing for professional use — Test methods and requirements*

EN 25077, *Textiles — Determination of dimensional change in washing and drying (ISO 5077:1984)*

EN 31092, *Textiles — Determination of physiological properties — Measurement of thermal and water–vapour resistance under steady–state conditions (sweating guarded – hotplate test) (ISO 11092:1993)*

EN ISO 139, *Textiles — Standard atmospheres for conditioning and testing (ISO 139:2005)*

EN ISO 3146, *Plastics — Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods (ISO 3146:2000)*

EN ISO 6942:2002, *Protective clothing — Protection against heat and fire — Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat (ISO 6942:2002)*

EN ISO 13934-1, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:1999)*

EN ISO 13935-2, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 2: Determination of maximum force to seam rupture using the grab method (ISO 13935-2:1999)*

EN ISO 13937-2, *Textiles — Tear properties of fabrics — Part 2: Determination of tear force of trouser-shaped test specimens (Single tear method) (ISO 13937-2-2000)*

EN ISO 15025:2002, *Protective clothing — Protection against heat and flame — Method of test for limited flame spread (ISO 15025:2000)*

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

CIE 54.2, *Retroreflection — Definition and measurement*

3 Terms and definitions

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

3.1
ageing
change of the product performance over time during use or storage. Ageing is caused by a combination of several factors, such as:

- cleaning, maintenance or disinfecting processes;
- exposure to visible and/or ultra-violet radiation;
- exposure to high or low temperatures or to changing temperatures;
- exposure to chemicals including humidity;
- exposure to biological agents such as bacteria, fungi, insects or other pests;
- exposure to mechanical action such as abrasion, flexing, pressure and strain;
- exposure to contaminants such as dirt, oil, splashes of molten metal etc.;
- exposure to wear and tear

3.2
cleaning
process by which a PPE is made again serviceable and/or hygienically wearable by removing any dirt or contamination.

NOTE A cleaning cycle is typically a washing plus drying or a dry cleaning treatment followed, if required, by ironing or other finishing

3.3
cleaning cycle
wash and a drying cycle or dry cleaning cycle

3.4
closure system
method of fastening the openings in the garment including combinations of more than one method of achieving a secure closure, for example a slide fastener covered by an overlap fastened down with a touch and close fastener

NOTE This term does not cover seams.

3.5
component assembly
combination of all materials of a multi-layer garment presented exactly as the finished garment construction

3.6
conditioning
keeping the samples under standard conditions of temperature and relative humidity for a minimum period of time

3.7
protective coverall
one piece garment that completely covers the wearer's torso, arms and legs.

Clothing which covers or replaces personal clothing and which is designed to provide protection for the firefighter's upper and lower torso, neck, arms and legs, but excluding the head, eyes, hands and feet

3.8
protective garment
individual item of protective clothing the wearing of which provides protection against specified hazards to the part of the body that it covers

EXAMPLE Coat or shirt, trouser, or coverall.

3.9
hardware
non-fabric items used in protective clothing including those made of metal or plastic

EXAMPLE Fasteners, rank marking, buttons etc.

3.10
innermost lining
lining of the innermost face of a component assembly closest to the wearer's skin

NOTE Where the innermost lining forms a part of a material combination, the material combination is to be regarded as the innermost lining.

3.11
interlining
layer between the outermost layer and the innermost lining in a multilayer garment

3.12
main seam
seam which is necessary to maintain the integrity of the garment

3.13
material combination
material produced from a series of separate layers, intimately combined prior to the garment manufacturing stage

EXAMPLE Quilted material.

3.14
outer material
outermost material of which the protective clothing is made

3.15
pre-treatment
standard way of preparing the samples before testing. This might include e.g. a number of cleaning cycles, submitting the sample to heat, mechanical action or any other relevant exposure and is finished by conditioning

3.16
seam
method of permanent fastening between two or more pieces of material

3.17
protective suit
upper and lower garment worn together that completely covers the wearer's torso, arms and legs and their neck, ankles and wrists

3.18
wildland fire fighting
suppression action involving a fire in vegetative fuels such as forest, crops, plantations, grass or farmland

4 Clothing design

4.1 General

Protective clothing for firefighters capable of satisfying the levels of performance specified in this European Standard shall protect the wearer's body, except the head, hands and feet. It may be comprised of:

— a coverall,

— a suit provided with an interface area, or

— a number of inner and/or outer garments designed to be worn together.

Clothing shall not restrict the wearer in any of the movements expected to be made during wildland firefighting.

Closure systems, label accessories, touch and close fasteners, retroreflective and/or fluorescent materials etc. attached to the protective clothing shall be designed to not adversely affect the clothing’s performance.

All closure systems shall be designed to prevent the entry of burning debris.

Conformity shall be checked by visual inspection and practical testing, such as to check sizing and correct fit by donning and doffing of the garment.

4.2 Collar

The collar shall be able to remain in the vertical position when it is set upright. All protective clothing which encircles the neck shall have a closure system at the level of the line of the collar.

Conformity shall be checked by visual inspection.

4.3 Coverall or suit

The coverall or suit shall not have turn–ups or cuffs.

The end of the coverall or trousers shall have a closure system, which will allow the end of the coverall or trousers to provide a satisfactory interface with shoes or boots that may be used for wildland firefighting.

A suit shall be provided with an interface overlap area of at least 15 cm overlap between the jacket and the trousers. This interface overlap area shall be maintained for example whilst stooping, reaching or while making a turning movement. Conformity shall be checked by visual inspection and practical testing, such as physical measurement of the overlap and checking sizing and correct fit by donning and doffing of the garment.

4.4 Pockets

All pockets with external openings shall be constructed entirely from the outer material and the external opening shall be provided with a closure system covered with a protective flap.

Protective flaps shall not be able to be tucked into the pocket and shall overlap the pocket by a minimum of 20 mm wider than the opening.

Conformity shall be checked by visual inspection and physical measurement.