



SLOVENSKI STANDARD

SIST EN 14058:2018

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Nadomešča:
SIST EN 14058:2004

Varovalna obleka - Oblečila za zaščito v hladnih okoljih

Protective clothing - Garments for protection against cool environments

Schutzkleidung - Kleidungsstücke zum Schutz gegen kühle Umgebungen

Vêtements de protection - Articles d'habillement de protection contre les environnements
frais

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ICS:

13.340.10	Varovalna obleka	Protective clothing
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14058

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ICS 13.340.10

Supersedes EN 14058:2004

English Version

Protective clothing - Garments for protection against cool environments

Habillement de protection - Vêtements de protection
contre les environnements frais

Schutzkleidung - Kleidungsstücke zum Schutz gegen
kühle Umgebungen

This European Standard was approved by CEN on 4 September 2017.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN 14058:2017 (E)**European foreword**

This document (EN 14058:2017) 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of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14058:2004.

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

For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are an integral part of this document.

Regarding the most significant changes that have been made in this new edition, see Annex A.

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

Introduction

In many cases single garments are placed on the market to protect against local body cooling (for ensembles see EN 342). These garments can be e.g. waistcoats, jackets, coats or trousers and/or separable thermal linings. They can provide a certain degree of protection to cool environment for a certain length of time, depending e.g. on the personal constitution and activity, the accompanying clothing and the environmental features (wind speed, temperature, humidity). In critical situations (e.g. combination of cold, moisture and wind, long exposure duration, no help nearby) it is important to assess the cold protection properties of the garment (see Annex C), especially if the user cannot safely identify the risk at moderate low temperatures above $-5\text{ }^{\circ}\text{C}$ in an appropriate time.

At moderate low temperatures above $-5\text{ }^{\circ}\text{C}$ garments against local body cooling are not only used for outdoor activities e.g. in construction industry but can be used for indoor activities e.g. in food processing industry. In these cases garments often do not need to be made of watertight or air impermeable materials. Therefore, in this European Standard, these requirements are applicable if the manufacturer claims in his instructions for use protection for hazards covered by these properties.

The resultant effective thermal insulation value I_{cler} can be used to assess temperature ranges according to Tables C.1 and C.2.

If exposure to wet conditions is expected, EN 343 applies.

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EN 14058:2017 (E)

1 Scope

This European Standard specifies requirements and test methods for the performance of garments for protection against the effects of cool environments above -5°C (see Annex C). These effects comprise not only low air temperatures, but also humidity and air velocity.

Cold protective ensembles are excluded from this standard.

The protective effects and requirements of footwear, gloves and separate head wear are excluded from the scope of this standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 342:2017, *Protective clothing — Ensembles and garments for protection against cold*

EN 20811:1992, *Textiles - Determination of resistance to water penetration - Hydrostatic pressure test*

EN ISO 4674-1:2016, *Rubber- or plastics-coated fabrics — Determination of tear resistance — Part 1: Constant rate of tear methods (ISO 4674-1:2016)*

EN ISO 9237:1995, *Textiles - Determination of permeability of fabrics to air (ISO 9237:1995)*

EN ISO 11092:2014, *Textiles - Physiological effects - Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded-hotplate test) (ISO 11092:2014)*

EN ISO 13688:2013, *Protective clothing - General requirements (ISO 13688:2013)*

EN ISO 13938-1:1999, *Textiles - Bursting properties of fabrics - Part 1: Hydraulic method for determination of bursting strength and bursting distension (ISO 13938-1:1999)*

EN ISO 13938-2:1999, *Textiles - Bursting properties of fabrics - Part 2: Pneumatic method for determination of bursting strength and bursting distension (ISO 13938-2:1999)*

EN ISO 15831:2004, *Clothing - Physiological effects - Measurement of thermal insulation by means of a thermal manikin (ISO 15831:2004)*

ISO 7000:2014, *Graphical symbols for use on equipment — Registered symbols*

3 Terms and definitions

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

3.1

cool environment

environment characterized by the combination of humidity and wind (wind cooling effect) at air temperatures above $-5\text{ }^{\circ}\text{C}$

3.2

garment

individual component of a clothing ensemble covering a part of the body, except separate garments for head, hands and feet and providing protection against hypothermia and / or local cooling

3.3

ensemble

clothing consisting of a two-piece suit or one-piece suit (coverall) or a number of garments covering the body, except separate garments for head, hands and feet and providing protection against hypothermia

3.4

thermal lining

non-watertight layer providing thermal insulation

3.5

thermal resistance insulation

R_{ct}

temperature difference between the two faces of a material divided by the resultant heat flux per unit area in the direction of the gradient

Note 1 to entry: It is a quantity specific to textile materials or composites which determine the dry heat flux across a given area in response to a steady applied temperature gradient. The dry heat flux can consist of one or more conductive, convective and radiant components.

Note 2 to entry: The thermal resistance is expressed in square metres kelvin per watt.

[SOURCE: EN ISO 11092:2014, 2.1]

3.6

water vapour resistance

R_{et}

water vapour pressure difference between the two faces of a material divided by the resultant evaporative heat flux per unit area in the direction of the gradient

Note 1 to entry: It is a quantity specific to textile materials or composites, which determines the “latent” evaporative heat flux across a given area in response to a steady applied water-vapour pressure gradient. The evaporative heat flux can consist of both diffusive and convective components.

Note 2 to entry: The water-vapour resistance is expressed in square metres pascal per watt.

[SOURCE: EN ISO 11092:2014, 2.2]

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EN 14058:2017 (E)**3.7
resultant effective thermal insulation** I_{cler}

thermal insulation from skin to outer clothing surface under defined conditions measured with a moving manikin determined in relation to the naked body surface area

Note 1 to entry: I_{cler} is expressed in square metres kelvin per watt.

**3.8
resistance to water penetration
WP**

hydrostatic pressure supported by a material as a measure of the opposition to the passage of water through material

Note 1 to entry: WP is expressed in pascal.

**3.9
air permeability
AP**

velocity of an air flow passing perpendicularly through a test specimen under specified conditions of test area, pressure drop and time

Note 1 to entry: AP is expressed in millimetre per second.

[SOURCE: EN ISO 9237:1995, 3.1]

**3.10
outer shell material**

outermost material of which the protective clothing is made

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4 Performance assessment and requirements**4.1 General requirements and innocuousness****4.1.1 General requirements**

When tested in accordance with 6.2.1 the following requirements shall be met:

- the garment shall not have rough, sharp or hard surfaces that may irritate or injure the user;
- the jacket/coat or coverall shall be closable up to the collar or neckband;
- the jacket/coat shall be long enough to cover the tops of the trousers;
- external pockets intended to be used in wet conditions (see 4.4) shall be closable;
- closures, such as slide fasteners, fasteners, buttons etc. shall not open inadvertently;
- slide fasteners shall lock when completely closed.

NOTE Waistcoats can be lengthened at the back to protect the kidney region against the effects of cool environment.

4.1.2 Innocuousness

When tested in accordance with 6.2.2 the requirements of EN ISO 13688:2013, 4.2, shall be met with regard to innocuousness.

4.2 Thermal Resistance, R_{ct}

When tested in accordance with 6.3 the thermal resistance, R_{ct} of all layers of the garment shall be classified in accordance with Table 1.

Table 1 — Classification of thermal resistance R_{ct}

R_{ct} m ² · K/W	Class
$0,06 \leq R_{ct} < 0,12$	1
$0,12 \leq R_{ct} < 0,18$	2
$0,18 \leq R_{ct} < 0,25$	3
$0,25 \leq R_{ct}$	4

NOTE The maximum level of protection is given when the thermal insulation is adapted to the ambient temperature and the activity level (examples are given in Annex C). In this case the wearer is in a thermally neutral state. A too high thermal insulation leads to excessive sweating and wetting the garments. As a consequence the effective thermal insulation of the garment is lowered.

Garments containing materials with a thermal resistance above 0,25 m² K/W shall comply with 4.6.

4.3 Air permeability, AP

If the information supplied by the manufacturer indicates that the garment may be used outdoors, the air permeability shall be classified in accordance with Table 2, when the material of the garment is tested in accordance with 6.4.

Table 2 — Classification of air permeability AP

AP mm/s	Class
$100 < AP$	1
$5 < AP \leq 100$	2
$AP \leq 5$	3

Class 1 material layers of a garment should be considered as appropriate for low air velocities of less than 1 m/s as e.g. in cool indoor environments.

Class 2 material layers should be appropriate for air velocities of less than 5 m/s.

NOTE Class 3 materials are appropriate for high air velocities ≥ 5 m/s e.g. common in outdoor activities.