

KAITSERÕIVAD. KAITSE VIHMA EEST

Protective clothing - Protection against rain

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 343:2019 sisaldab Euroopa standardi EN 343:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 343:2019 consists of the English text of the European standard EN 343:2019.
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English Version

Protective clothing - Protection against rain

Habillement de protection - Protection contre la pluie

Schutzkleidung - Schutz gegen Regen

This European Standard was approved by CEN on 5 November 2018.

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European foreword

This document (EN 343:2019) 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of an identical text or by endorsement, at the latest by September 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

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 343+A1:2007.

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 Regulation (EU) 2016/245.

For relationship with Regulation (EU) 2016/245, see informative Annex ZA, which is an integral part of this document.

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Introduction

In this document the measured properties of materials and seams of protective clothing and their subsequent classification are intended to ensure an adequate protection level. Water proofness and water vapour resistance are the essential properties tested and marked on the label.

Water proofness is the most important property and it is measured on material of the outer garment layer. Tests are made on pretreated fabric samples and on parts with seams.

A test method for an optional readymade garment test after cleaning is described (rain tower test). Some waterproof materials are impermeable to water vapour transmission. However other materials on the market combine water proofness with water vapour permeability. This property expressed by low water vapour resistance enhances sweat evaporation and significantly contribute to body cooling. This is valuable, because it contributes to better comfort and less physiological strain and prolongs the wearing time in certain climatic conditions (see Annex A).

1 Scope

This document specifies requirements and test methods for the performance of materials and ready-made garments for protection against the effects of precipitation (e.g. rain, snowflakes), fog and ground humidity. Garments for protection against other effects than precipitation (e.g. water splashes, waves) are excluded from this standard. The protective effects and requirements of footwear, gloves and separate headwear are excluded from the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 388:2016, *Protective gloves against mechanical risks*

EN 530:2010, *Abrasion resistance of protective clothing material - Test methods*

EN 14360:2004, *Protective clothing against rain - Test method for ready made garments - Impact from above with high energy droplets*

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

EN ISO 1421:2016, *Rubber- or plastics-coated fabrics - Determination of tensile strength and elongation at break (ISO 1421:2016)*

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 7854:1997, *Rubber- or plastics-coated fabrics - Determination of resistance to damage by flexing (ISO 7854:1995)*

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 12947-1:1998, *Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 1: Martindale abrasion testing apparatus (ISO 12947-1:1998)*

EN ISO 12947-2:2016, *Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 2: Determination of specimen breakdown (ISO 12947-2:2016)*

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

EN ISO 13934-1:2013, *Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1:2013)*

EN ISO 13935-2:2014, *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 13935-2:2014)*

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)*

ISO 1817:2015, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

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.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 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]

3.2 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.

3.3 outer shell material

outermost material of which the protective clothing is made

3.4 liner

insert with a waterproof property

3.5 thermal liner

layer with a waterproof property providing additional thermal insulation

3.6 lining

innermost material without waterproof property