

Protective clothing - Protection against rain - Test method for ready-made garments against high-energy droplets from above (ISO 24231:2024)

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>See Eesti standard EVS-EN ISO 24231:2024 sisaldab Euroopa standardi EN ISO 24231:2024 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.05.2024.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN ISO 24231:2024 consists of the English text of the European standard EN ISO 24231:2024.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 01.05.2024.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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ICS 13.340.10

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EUROPEAN STANDARD

EN ISO 24231

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 13.340.10

Supersedes EN 14360:2004

English Version

Protective clothing - Protection against rain - Test method  
for ready-made garments against high-energy droplets  
from above (ISO 24231:2024)

Habillement de protection - Protection contre la pluie -  
Méthode d'essai pour les vêtements prêts-à-porter  
contre les fortes précipitations (ISO 24231:2024)

Schutzkleidung - Schutz gegen Regen - Prüfverfahren  
für fertige Bekleidungsstücke gegen Tropfen von hoher  
Energie von oben (ISO 24231:2024)

This European Standard was approved by CEN on 26 April 2024.

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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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## European foreword

This document (EN ISO 24231:2024) has been prepared by Technical Committee ISO/TC 94 "Personal safety -- Personal protective 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 November 2024, and conflicting national standards shall be withdrawn at the latest by November 2024.

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 14360:2004.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## Endorsement notice

The text of ISO 24231:2024 has been approved by CEN as EN ISO 24231:2024 without any modification.

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 94, *Personal safety – Personal protective equipment*, Subcommittee SC 13, *Protective clothing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 162, *Protective clothing including hand and arm protection and lifejackets*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Protective clothing — Protection against rain — Test method for ready-made garments against high-energy droplets from above

## 1 Scope

This document specifies a test method for determining the liquid tightness of clothing for protection against rain, using a static manikin exposed to large amount of high energy droplets from above. It is applicable to the testing of jackets, trousers, coats and one- or two-piece suits.

This document is not applicable to the testing of garments for resistance to other weather conditions, e.g. snow, hail-, or strong winds.

NOTE For general background of the rain simulation, see [Annex A](#).

## 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.

ISO 11610, *Protective clothing — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11610 apply.

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

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

## 4 Principle

A manikin with the shape and size of an adult person wearing long underwear made of absorbent fabric is dressed in the protective garment to be tested and exposed to large amount of high energy droplets from above for a specific period. After the exposure the underwear and the inner side of the protective garment are visually inspected for wet areas. In addition, sensors on the manikin may be used in order to detect the timing of water ingress at individual sites.

## 5 Apparatus

**5.1 Tower device**, (as shown in [Figure 1](#)) comprising a circular tub at least 1 000 mm in diameter supported at least 5 000 mm above the floor and supplied with water from an inflow pipe. The base of the tub shall be fitted with approximately 682 nozzles with a hole diameter of 0,6 mm placed at 34 mm centres to deliver water droplets over a circular area with a diameter of 932 mm at a density of approximately 1 000 droplets/m<sup>2</sup>. The tub shall have an overflow pipe placed to maintain a water depth of (45 ± 5) mm in the tub. The tower device shall be shielded to eliminate the effect of wind on the water droplets.

NOTE The diameter of the water droplets corresponds to those described in ISO 9865, (~5 mm). The amount of water is (450 ± 50) l/(m<sup>2</sup>h) (see [Figure 1](#)).