

Protective clothing - Test methods for clothing providing protection against chemicals - Part 4: Determination of resistance to penetration by a spray of liquid (spray test) (ISO 17491-4:2024)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN ISO 17491-4:2024 sisaldab Euroopa standardi EN ISO 17491-4:2024 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.06.2024.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN ISO 17491-4:2024 consists of the English text of the European standard EN ISO 17491-4:2024.</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 12.06.2024.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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EUROPEAN STANDARD

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Protective clothing - Test methods for clothing providing protection against chemicals - Part 4: Determination of resistance to penetration by a spray of liquid (spray test) (ISO 17491-4:2024)

Habillement de protection - Méthodes d'essai pour les vêtements fournissant une protection contre les produits chimiques - Partie 4: Détermination de la résistance à la pénétration par pulvérisation de liquide (essai au brouillard) (ISO 17491-4:2024)

Schutzkleidung - Prüfverfahren für Chemikalienschutzkleidung - Teil 4: Bestimmung der Beständigkeit gegen das Durchdringen von Flüssigkeitsspray (Spray-Test) (ISO 17491-4:2024)

This European Standard was approved by CEN on 4 June 2024.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

European foreword

This document (EN ISO 17491-4:2024) 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 December 2024, and conflicting national standards shall be withdrawn at the latest by December 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 ISO 17491-4:2008, EN ISO 17491-4:2008/A1:2016.

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 17491-4:2024 has been approved by CEN as EN ISO 17491-4:2024 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).

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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).

This second edition cancels and replaces the first edition (ISO 17491-4:2008), which has been technically revised. It also incorporates the Amendment ISO 17491-4:2008/Amd.1:2016.

The main changes are as follows:

- specifications for test liquid have been revised/added;
- [Clause 6](#) has been revised to provide more specificity. Specification have been changed and/or revised for absorbent overall, calibrated stain, turntable, spray booth, spray boom, hydraulic nozzles in [Clause 6](#) and other applicable clauses;
- details for the selection of the right overall size have been added in [6.10](#) as well as in [Annex B](#);
- [8.3](#) has been revised and heading changed to “Distribution of the spray liquid and alignment of spray nozzles.”;
- figure and additional information have been added in [9.1](#) to provide more specificity;
- inclusion of [Annex A](#) on absorbent fabric for the detector suit and non-absorbent fabric for the calibration pattern;
- inclusion of [Annex B](#) on test subject size measurement and right overall size fitting;
- inclusion of [Annex C](#) on right donning and doffing, as well as stain area measurement;
- inclusion of [Annex D](#) with the ILT results.

A list of all parts in the ISO 17491 series can be found on the ISO website.

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.

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Introduction

This document describes a test method for determining the spray penetration resistance of chemical protective clothing Type 4 (with spray-tight connections between different parts of the clothing and, if applicable, between the clothing and other items of personal protective equipment) and Type 6 (limited performance protective clothing).

Such clothing comprises one or more items covering the full surface of the body and is intended to be worn under conditions where there is a risk of exposure to a spray of a liquid chemical. Other requirements with regard to this type of clothing and its constituent materials can be found in the respective product standards^[1].

Interlaboratory testing has shown that this test method is a repeatable pass/fail method.

A document on the selection, use and maintenance of chemical protective clothing is available^[2].

Protective clothing — Test methods for clothing providing protection against chemicals —

Part 4:

Determination of resistance to penetration by a spray of liquid (spray test)

CAUTION — Some of the procedures specified in this document involve the use of processes which could lead to hazardous situations and hence appropriate precautions should be taken.

1 Scope

This document specifies the test method for determining the resistance of chemical protective clothing to penetration by sprays of liquid chemicals at two different levels of intensity:

- a) Method A: low-level spray test. This is applicable to clothing that covers the full body surface and is intended to be worn when there is a potential risk of exposure to small quantities of spray or accidental low-volume splashes of a liquid chemical.
- b) Method B: high-level spray test. This is applicable to clothing with spray-tight connections between different parts of the clothing and, if applicable, between the clothing and other items of personal protective equipment, which covers the full body surface and which is intended to be worn when there is a risk of exposure to sprayed liquid chemical.

This document does not apply to chemical permeation resistance of the materials from which the chemical protective clothing is made.

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 and the following apply.

ISO and IEC maintain terminology 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/>

3.1

absorbent overall

overall made from an absorbent material, worn under the test suit and intended for collecting liquid penetration during spray and jet testing of chemical protective clothing