ISO/FDIS 17491-4:2024(E)

Date:2024-02-05 JSO-<u>/</u>TC-94/SC-18 Secretariat:-SNV

Date: 2024-xx

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

Part 4:

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

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Partie-4: Détermination de la résistance à la pénétration par vaporisationpulvérisation de liquide (essai au brouillard)

<u>SO/FDIS 17491-4</u>

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- inclusion of <u>Annex AAnnex A</u> on absorbent fabric for the detector suit and non-absorbent fabric for the calibration pattern;
- — inclusion of Annex BAnnex 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 <u>Annex D</u> Annex D with the ILT results.

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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 work 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].[2].

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1 Scope		
This document specifies the test method for determining the resistance of chemical protective clothing t penetration by sprays of liquid chemicals at two different levels of intensity:	D	
a) a)—Method A: low-level spray test. This is applicable to clothing that covers the full body surface and i intended to be worn when there is a potential risk of exposure to small quantities of spray or accidenta low-volume splashes of a liquid chemical.	s• l	Formatted: Numbered + Level: 1 + Numbering Style: a, b, c, + Start at: 1 + Alignment: Left + Aligned at: 0 cm + Indent at: 0 cm, Adjust space between Latin and
b) b)—Method B: high-level spray test. This is applicable to clothing with spray-tight connections betwee different parts of the clothing and, if applicable, between the clothing and other items of persona 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.		Asian text, Adjust space between Asian text and numbers, Tab stops: Not at 0.7 cm + 1.4 cm + 2.1 cm + 2.8 cm + 3.5 cm + 4.2 cm + 4.9 cm + 5.6 cm + 6.3 cm + 7 cm
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2 Normative references ISO/FDIS 17491-4		
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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

3.2

calibrated stain

visible stain, with a defined minimum area, generated by dropping a specified quantity of test liquid on to an *absorbent overall* (3.1)(3.1)

Note-1-to-entry:-.The calibrated stain is used to measure liquid penetration during spray and jet testing of chemical-protective clothing.

4 Principle of test method

An aqueous spray, containing a visible dye tracer, is directed under controlled conditions at the chemical protective clothing worn by a human test subject. Inspection of the inside surface of the clothing and the outside surface of the absorbent overall worn under the test garment allows any points of inward leakage to be identified.

An interlab was performed and the results and conclusion can be found in Annex D. Annex D.

5 Test liquid

To prepare the test chemical add methyl blue dye and dye stabilizer prior to adding the surfactant to water. The temperature of the test liquid shall be between 20 °C and 30 °C.

For methods A and B, the concentration of the methyl blue dye (CAS number 28983-56-4) shall be $(0,2 \pm 0,02)$ g/l. The dye stabilizer shall be analytical grade citric acid (CAS number 77-92-9) with a concentration of $(2,45 \pm 0,05)$ g/l.

The surfactant is then added to achieve the required surface tension. Mixtures such as dish washing detergent that include other ingredients are not considered surfactants and shall not be used.

<u>a)</u> \overline{a} For method A: a surface tension of (52,0 ± 7,5) × 10⁻³ N/m; SO/FDIS 1/491-4

b) b) For method B: a surface tension of $(30,0 \pm 5,0) \times 10^{-3}$ N/m.

NOTE 1 Surfactants: Genapol LRO liquid (1 sodium lauryl ether sulfate (CAS number [009004-82-4]))]) that can be used to achieve the required surface tension at the concentration of 0,03 ml/l for method A and 0,5 ml/l for method B. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the products named. Equivalent products can be used if they can be shown to lead to the same results.

NOTE 2 To measure the surface tension within the stated tolerance, any suitable method can be used, $e.g_{\tau_2}$ a wright torsion balance using a standard 12 mm diameter platinum ring.

It shall be ensured that the surface tension and temperature of the test liquid are stable throughout the test, i.e., the surface tension of the liquid leaving the nozzle as well as the tension of the liquid in the tank shall meet the requirements. This shall be verified before and after each day of test and shall meet all the above requirement in this clause according to either Method A or Method B.

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