SLOVENSKI STANDARD
oSIST prEN 14972-2:2024

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Vgrajeni gasilni sistemi - Sistemi s pršečo vodo - 2. del: Protokol preskušanja sistemov s samodejnimi šobami za nakupovalne prostore

Fixed firefighting systems - Water mist systems - Part 2: Test protocol for shopping areas for automatic nozzle systems

Ortsfeste Brandbekämpfungsanlagen - Wassernebelsysteme - Teil 2: Prüfprotokoll für Einkaufsbereiche für automatische Düsensysteme

Installations fixes de lutte contre l'incendie - Systèmes à brouillard d'eau - Partie 2 : Protocole d'essai des systèmes à buses automatiques pour zones commerciales

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13.220.10	Gašenje požara	Fire-fighting

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Fixed firefighting systems - Water mist systems - Part 2: Test protocol for shopping areas for automatic nozzle systems

Ortsfeste Brandbekämpfungsanlagen - Wassernebelsysteme - Teil 2: Prüfprotokoll für Einkaufsbereiche für automatische Düsensysteme

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 191.

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

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European foreword

This document (prEN 14972-2:2024) has been prepared by Technical Committee CEN/TC 191 “Fixed firefighting systems”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

EN 14972, *Fixed firefighting systems — Water mist systems*, consists of the following parts:

— *Part 1: Design, installation, inspection and maintenance;*

— *Part 2: Test protocol for shopping areas for automatic nozzle systems;*

— *Part 3: Test protocol for office, school class rooms and hotel for automatic nozzle systems;*

— *Part 4: Test protocol for non-storage occupancies for automatic nozzle systems;*

— *Part 5: Test protocol for car garages for automatic nozzle systems;*

— *Part 6: Test protocol for false floors and false ceilings for automatic nozzle systems;*

— *Part 7: Test protocol for commercial low hazard occupancies for automatic nozzle systems;*

— *Part 8: Test protocol for machinery in enclosures exceeding 260 m³ for open nozzle systems;*

— *Part 9: Test protocol for machinery in enclosures not exceeding 260 m³ for open nozzle systems;*

— *Part 10: Test protocol for atrium protection with sidewall nozzles for open nozzle systems;*

— *Part 11: Test protocol for cable tunnels for open nozzle systems;*

— *Part 12: Test protocol for commercial deep fat cooking fryers for open nozzle systems;*

— *Part 13: Test protocol for wet benches and other similar processing equipment for open nozzle systems;*

— *Part 14: Test protocol for combustion turbines in enclosures exceeding 260 m³ for open nozzle systems;*

— *Part 15: Test protocol for combustion turbines in enclosures not exceeding 260 m³ for open nozzle systems;*

— *Part 16: Test protocol for industrial oil cookers for open nozzle systems.*

— *Part 17: Test protocol for residential occupancies for automatic nozzle systems.*

1 Scope

This document specifies the evaluation of the fire performance of water mist systems for shopping areas, adjacent storage areas, and similar areas. This document is only applicable for horizontal, solid, flat ceilings with heights of 2,6 m and above.

This document does not cover storage with movable racks or shelves.

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 12845, *Fixed firefighting systems — Automatic sprinkler systems — Design, installation and maintenance*

EN 14972-1:2020, *Fixed firefighting systems — Water mist systems — Part 1: Design, installation, inspection and maintenance*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14972-1 and EN 12845 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/

4 General requirements

4.1 General

The following areas are considered to be covered by the fuel package described in this document:

— sales areas;

— storage areas adjacent to sales areas;

— archives;

— libraries;

— mechanical floors;

— as well as further comparable risks.

4.2 Requirements

4.2.1 Up to a maximum of 5 nozzles used in the fire tests shall be kept for later verification.

4.2.2 The water mist system, operating without manual intervention, shall successfully complete all described performance fire tests.

4.2.3 The fire load shall be taken from the conditioning area according to 5.1 and arranged into the test area just before conducting the test.

4.2.4 The water flow shall be shut-off 10 min after the activation of the first automatic nozzle in the fire test. Any remaining fire shall be manually extinguished and the fire damage shall be recorded.

4.2.5 Prior to the testing, a layout of the water mist system to be tested shall be submitted for test preparation purposes. This layout shall include any components required for the testing as well as the full dimensioning (e.g. length of pipes, distances of automatic nozzles).

4.2.6 System components, component locations, operating conditions and test enclosure details shall remain unaltered throughout all of the fire tests for a given application.

4.2.7 All fire tests shall be conducted using the manufacturer instructions in regard to automatic nozzle placement, spray flux, and operating pressure. Sprays shall not be intermittent.

4.2.8 The test protocol is only applicable to ceiling mounted automatic nozzles.

4.2.9 The water supply shall be capable of supplying a flow rate and pressure at the minimum operating pressure and flow rate of the automatic nozzle as specified by the manufacturer. These parameters shall be met based on the actual layout of the pipework installation as used in the test scenario.

4.2.10 The tests with the water mist system shall be conducted at maximum ceiling height, maximum spacing and minimum discharge conditions regarding water flow and pressure as specified by the manufacturer for this application. The system shall be installed to achieve the maximum allowed time delay of water pressure build up of the system.

4.2.11 The tests shall be carried out in accordance with EN ISO/IEC 17025.

5 Fuel packages

5.1 General

The reference testing with a prescribed sprinkler system serves to indicate the baseline performance at each different test facility and set-up. Within one test series, all fuel packages shall be identical.

The test assembly to be provided for the tests shall comply with the following specifications and figures.

The fire loads provided for the tests shall have humidity content as obtained by storage indoors at (20 ± 5) °C for 2 weeks.

In case of storing fire loads in conditioned environment at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 5) % conditioning time may be reduced to minimum of 48 h.

The storing conditions shall be the same for all fire loads used during all tests.

Prior to the tests, the weight of the boxes and their contents will be checked (randomly 5 boxes per test).

5.2 Cardboard boxes and plastic cups

The cardboard boxes to be used shall meet the following requirements:

a) Cardboard box:

   1) Material: simple corrugated cardboard;

   2) Dimensions:

— Small boxes: (600 × 400 × 300) mm (length × width × height);

— Large boxes: (600 × 400 × 500) mm (length × width × height);

3) Total weight including cups:

— Small boxes: ~3,5 kg;

— Large boxes: ~4,5 kg;

4) Underliners (corrugated cardboard) divided into 5 levels:

— 18 cups per level, cups secured against shifting by dividers and underliners made of corrugated cardboard;

— Boxes are sealed with adhesive type and marked in the direction of the stacks;

b) Plastic cups:

1) Type: European standard cups;

2) Material: Unexpanded polystyrene, transparent;

3) Unit weight: 28,2 g;

4) Number per Box:

— Small boxes: 90 items, total weight of cups approximately 2,5 kg;

— Large boxes: 54 items, total weight of cups approximately 1,5 kg;

5) Storage with cup bottom turned up (see Figure 1a).

Packing of the cups is shown in Figure 1. Figure 2 shows the cardboard box.

a) Side view **b) Top view**

Key

1 cardboard box (large)
2 underliner
3 plastic cup

NOTE 18 cups per level. 54 cups per box (small). 90 cups per box (large).

Figure 1 — Storage of cups in cardboard box

a) Closed cardboard box

b) Open cardboard box with a few cups

Figure 2 — Photos of cardboard box with contents

5.3 Storage configuration ST5/ST6 (rack storage)

5.3.1 General

The test scenario simulates classic rack storage including the appropriate fire loads.

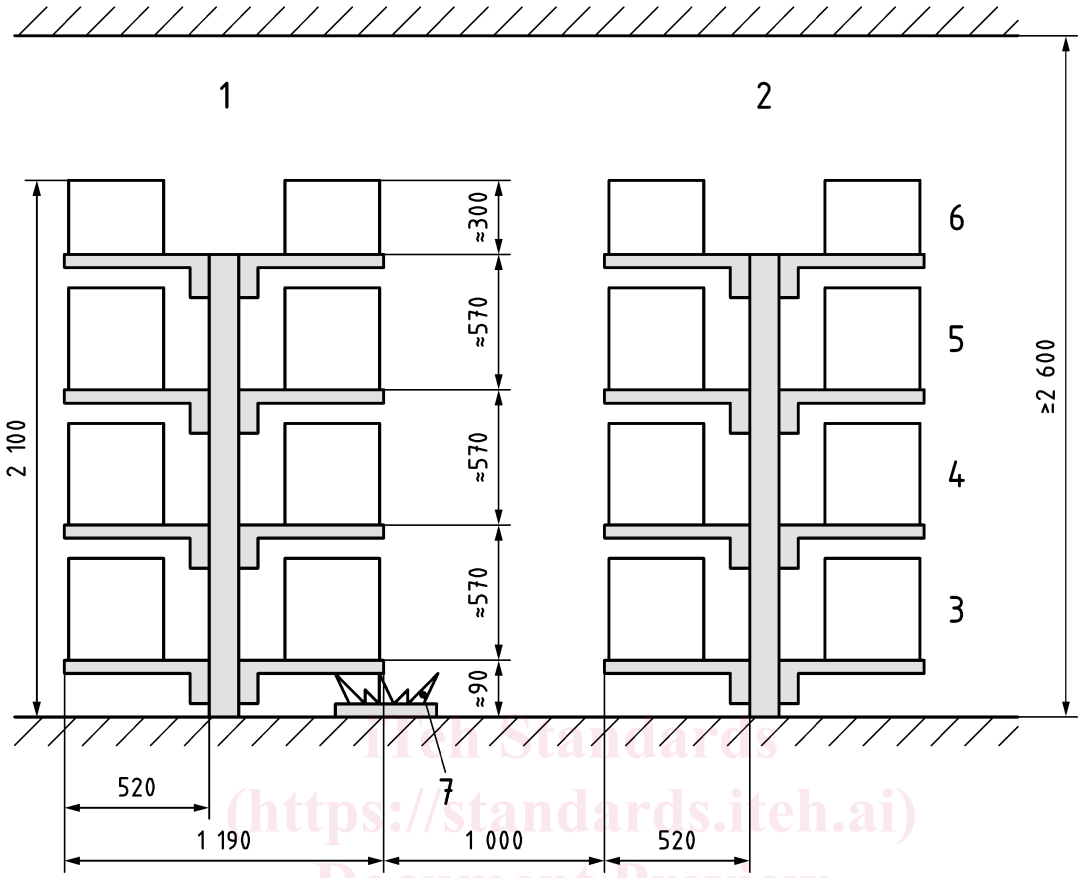
The test assembly shall include the following elements:

a) cardboard boxes with plastic cups;

b) racks.

Figure 3 and Figure 4 show the test assembly.

Dimensions in millimetres



Key

1	Rack 1	5	Level 3
2	Rack 2	6	Level 4
3	Level 1	7	fire tray
4	Level 2		

Figure 3 — ST5/ST6 layout of fire loads and position of ignition source (side view)