SLOVENSKI STANDARD
oSIST prEN 14972-13:2024

01-september-2024

Vgrajeni gasilni sistemi - Sistemi s pršečo vodo - 13. del: Protokol preskušanja za mokre mize in drugo podobno obdelovalno opremo za sistem z odprtimi šobami

Fixed firefighting systems - Water mist systems - Part 13: Test protocol for wet benches and other similar processing equipment for open nozzle systems

Ortsfeste Brandbekämpfungsanlagen - Wassernebelsysteme - Teil 13: Prüfprotokoll für Nassbänke und andere ähnliche Verarbeitungsanlagen für offene Düsensysteme

Installations fixes de lutte contre l'incendie - Systèmes à brouillard d'eau - Partie 13 : Protocole d'essai des systèmes à buses ouvertes pour bancs humides et autres équipements de traitement similaires

Ta slovenski standard je istoveten z: **prEN 14972-13**

ICS:

13.220.10	Gašenje požara	Fire-fighting

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Fixed firefighting systems — Water mist systems — Part 13: Test protocol for wet benches and other similar processing equipment for open nozzle systems

Ortsfeste Brandbekämpfungsanlagen — Wassernebelsysteme — Teil 13: Prüfprotokoll für Nassbänke und andere ähnliche Verarbeitungsanlagen für offene Düsensysteme

Élément introductif — Élément central — Élément complémentaire

CCMC will prepare and attach the official title page.

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European foreword

This document (prEN 14972-13:2024) 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.

The EN 14972 series, published under the general title *Fixed firefighting systems — Water mist systems*, consists of the following parts. This list includes standards that are in preparation, and other standards can be added. For the current status of published standards, refer to www.cencenelec.eu.

— *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 classrooms 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 wet benches and other similar processing equipment.

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14972-1 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 Up to a maximum of 5 nozzles used in the fire tests shall be kept for later verification.

4.2 The water mist system, operating without manual intervention, shall successfully complete all described performance fire tests for their specific applications.

4.3 The fire tests shall be conducted until the fire is extinguished, as required by the fire test.

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

4.5 All fire tests shall be conducted using the manufacturer instructions in regard to nozzle placement, spray flux, operating pressure, and spray duration. Sprays can be continuous or intermittent in time. In case of intermittent, or cycled, sprays, the time period during which the system is not discharging shall not be greater than 50 % of one complete on/off cycle. The system off period shall not exceed 1 min.

4.6 In conjunction with the performance fire tests, all twin fluid water mist systems shall be subjected to a straight discharge test with no fire to evaluate the resulting discharge and oxygen concentration. This evaluation shall be conducted using the maximum extinguishing agent flow and pressure. The discharge duration for the test shall be the maximum required for the system and occupancy to be protected. Oxygen measurements shall be recorded at a location(s) within the test enclosure. This information shall be used to evaluate personnel safety and shall be accounted for in the manufacturer's DIOM manual.

4.7 The minimum operating nozzle pressure (as specified by the manufacturer) shall be used for all tests. System operating pressures shall be repeatable to within ± 5 %. If the system pressures cannot be controlled within the specified tolerance, fire tests shall be conducted at the minimum and maximum pressure by using external means to control the system pressure.

4.8 The maximum nozzle ceiling height and spacing (as specified by the manufacturer) shall be used for all tests. This includes utilizing the maximum ceiling spacing of the nozzles from the walls.

4.9 The ceiling nozzle arrangement shall have uniform spacing. The ceiling nozzle spacing from the wall shall be uniform, preferably one half of the main spacing.

5 Test hall requirements

5.1 The fire test hall shall be of adequate size with natural or minimal ventilation so as not to interfere with the fire testing within the enclosure or about the wet bench mock-up in the hall.

5.2 The size of the test laboratory shall not impact extinguishment of any test fires (i.e. depletion of oxygen due to an inadequately sized test laboratory).

5.3 For all fire tests, the ceiling, floor, and walls shall be as dry as possible, with only ambient moisture content allowed. The relative humidity in the test enclosure shall not significantly differ from that of the ambient relative humidity. Maximum room relative humidity shall not be more than 70 % prior to the test.

5.4 The fire test hall shall be at an ambient temperature of (20 ± 10) °C prior to the start of the test.

6 Test enclosure requirements

6.1 Simulated clean room facility

6.1.1 Structure

The simulated clean room facility shall be constructed in a large open test hall. The enclosure shall be 3,7 m wide by 5,5 m long by 3,7 m in height. The enclosure shall be constructed of wood or metal frame with an inner lining of minimum 13 mm gypsum or 0,7 mm galvanized steel. A 0,8 m by 2,0 m high personnel door shall be installed with a locking mechanism in one of the walls. A 1,2 m by 2,4 m high removable panel shall also be installed for test enclosure access (the personnel door may be constructed within this panel).

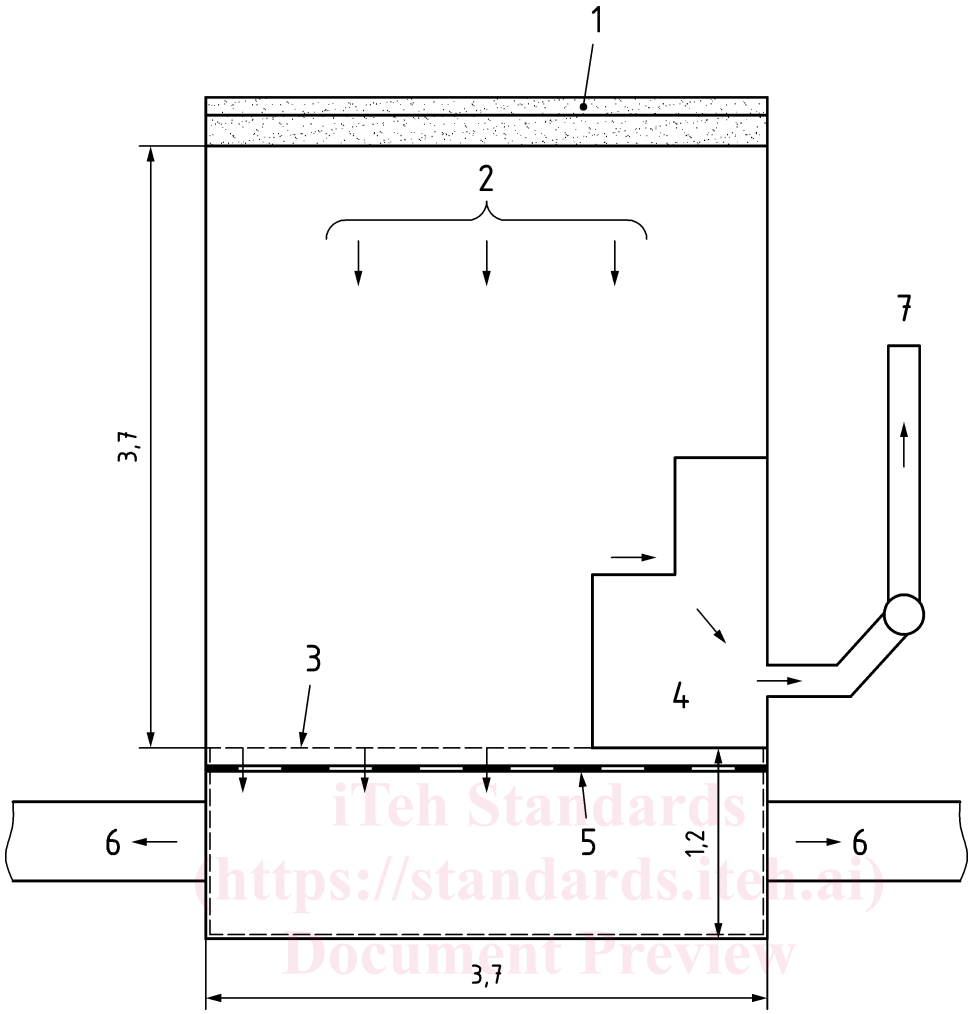
The ceiling of the enclosure shall be constructed of a porous plate to allow inflow of air from the open test hall at the ceiling level. The plate shall include 6,3 mm diameter perforations at 25 mm spacing. This will result in an open area of approximately 6 %.

The floor of the enclosure shall be raised. The floor shall be constructed with closed mesh ca. 2,65 mm steel grating (bearing bar size of 25 mm) tall by 3,2 mm thick. The mesh opening shall be 8 mm by 100 mm. A porous steel plate shall be placed below the steel grating. The plate shall include 6,5 mm diameter perforations at 25 mm spacing. This will result in an open area of approximately 6 %.

A sub-floor shall be constructed underneath the primary enclosure, to allow airflow through the test enclosure floor openings, creating a realistic flow environment surrounding the wet bench mock-up. The sub-floor shall be 3,7 m wide by 5,5 m long by 1,2 m deep and shall be constructed of wood or metal frame with an inner lining of minimum 13 mm gypsum or 0,7 mm galvanized steel.

The front and back 5,5 m walls of the sub-floor shall include 2,3 m wide by 0,7 m high openings. The openings shall be horizontally and vertically centred in each wall of the sub-floor. Each opening shall be ducted to the open test hall (see Figures 1 to 3) and shall include blowers to generate a downward flow in the upper test enclosure. The ductwork and blowers serve as the primary wet bench air flow.

Dimensions in metres

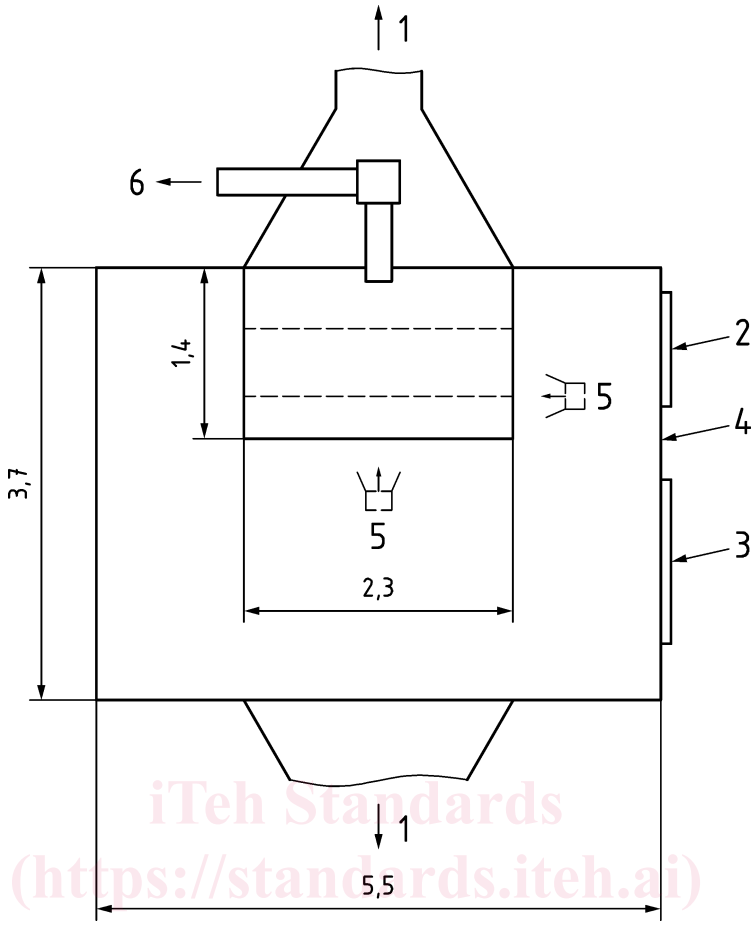


Key

1	Porous Plate	5	Metal plate with holes
2	Uniform flow of at least 14 m^3/min per linear metre of wet bench	6	Primary blower
3	Raised floor	7	Secondary blower
4	Wet bench		

Figure 1 — Clean room simulation facility – Side view

Dimensions in metres

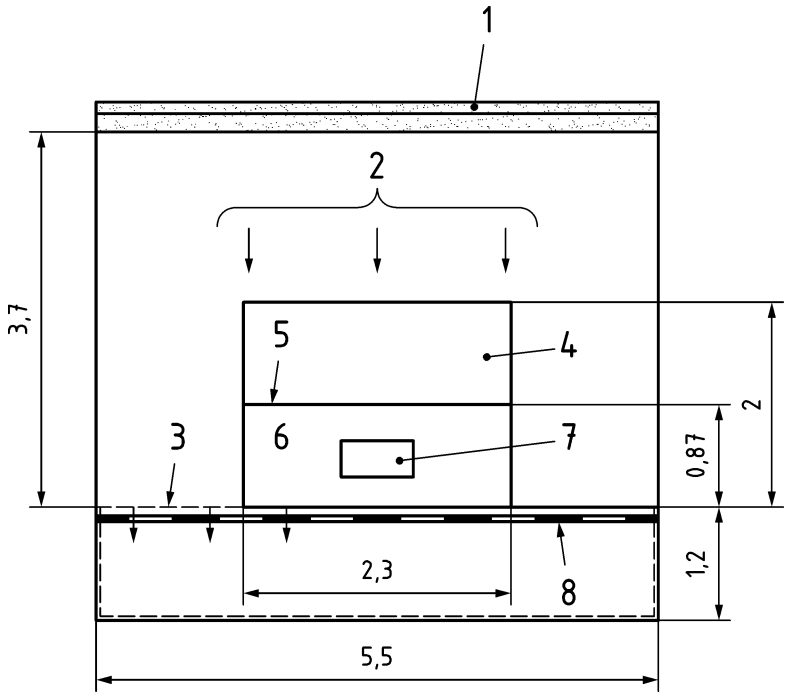


Key

1	Primary flow	4	Window
2	Door	5	Camera
3	Removable opening	6	Secondary flow

Figure 2 — Clean room simulation facility – Top view

Dimensions in metres



Key

1	Porous plate	5	Surface area
2	Uniform flow of at least 14 m^3/min per linear metre of wet bench	6	Plenum
3	Raised floor	7	Secondary blower intake
4	Wet bench	8	Metal plate with holes

Figure 3 — Clean room simulation facility – Front view

6.1.2 Test conditions

The air flow in the test enclosure shall be the maximum air flow specified by the manufacturer. An average downward velocity in a typical cleanroom facility is approximately (0,30 to 0,46) m/s. The minimum permitted air flow shall be 840 m^3/h per linear meter of wet bench. Higher flow rates shall be in 270 m^3/h per linear meter increments. The primary blowers shall be set so that 91 % of the required airflow is evenly distributed between the two blowers.

The test enclosure shall initially be at an ambient temperature of (20 ± 10) °C for all tests. The room shall be at as uniform an ambient temperature as reasonably possible. Localized hot or cold spots are not permitted. All non-fire induced or test specified drafts shall be eliminated.

6.2 Wet bench mock-up

The wet bench mock-up shall be centred in the back 5,5 m wall of the simulated clean room facility. The overall unit shall measure 1,4 m wide by 2,3 m long by 2 m tall. The bottom 0,27 m of the mock-up shall incorporate a raised area to separate the mock-up from the floor (see Figures 4 to 9).

The wet bench shall include an overhead compartment located above a working surface. The working surface shall be 0,87 m above the floor and extend the entire length of the wet bench and back 0,8 m. The bottom of the overhead compartment shall be located at the maximum distance above the working surface specified by the manufacturer. The front edge of the overhead compartment shall be set back 0,27 m from the front edge of the working surface and extend back 0,5 m. The vertical wall behind the