



SLOVENSKI STANDARD
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Vgrajeni gasilni sistemi - Sistemi s pršečo vodo - 11. del: Protokol preskušanja sistemov z odprtimi šobami za kabelske hodnike

Fixed firefighting systems - Water mist systems - Part 11: Test protocol for cable tunnels for open nozzle systems

Ortsfeste Brandbekämpfungsanlagen - Wassernebelsysteme - Teil 11: Prüfprotokoll für Kabeltunnel für offene Düsensysteme

Installations fixes de lutte contre l'incendie - Systèmes à brouillard d'eau - Partie 11 : Protocole d'essai des systèmes à buses ouvertes pour galeries de câbles

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13.220.10 Gašenje požara Fire-fighting

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Fixed firefighting systems - Water mist systems - Part 11: Test protocol for cable tunnels for open nozzle systems

Installations fixes de lutte contre l'incendie - Systèmes
à brouillard d'eau - Partie 11 : Protocole d'essai des
systèmes à buses ouvertes pour galeries de câbles

Ortsfeste Brandbekämpfungsanlagen -
Wassernebelsysteme - Teil 11: Prüfprotokoll für
Kabeltunnel für offene Düsensysteme

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

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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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 14972-11:2022) 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.*

NOTE This list includes standards that are in preparation and other standards may be added. For current status of published standards refer to www.cencenelec.eu.

prEN 14972-11:2022 (E)**1 Scope**

This document specifies fire testing requirements for water mist systems used for fire protection of cable tunnels. The test protocol covers deluge water mist systems with open nozzles which are either activated with an automatic release system, e.g. fire detection system, or manually released.

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 13501-1:2018, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 14972-1:2020, *Fixed firefighting systems - Water mist systems - Part 1: 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 terminological databases for use in standardization at the following addresses:

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

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.

4.3 The fire load shall be taken from the conditioning area and arranged into the test area just before conducting the test.

4.4 The water flow shall be shut-off 15 min after the activation. After turning off the system, no visible flame and no smouldering are allowed and the fire damages shall be recorded.

NOTE Small localized flamelets are allowed on a single tray.

4.5 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 nozzles, etc.).

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

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

4.8 The water supply shall be capable of supplying a flow rate and pressure at the minimum operating pressure and flow rate of the open 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.

4.9 The tests with the water mist system shall be conducted at 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.

5 Fuel packages

5.1 General

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

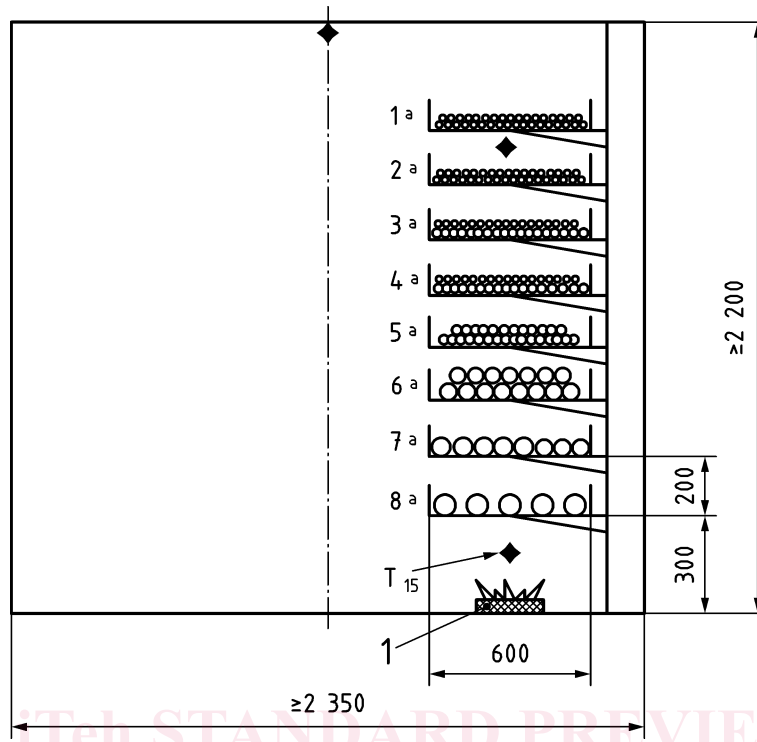
The test scenario is based on a typical tunnel layout comprising the appropriate fire load in terms of cabling.

The test assembly shall include the following elements:

- a) test tunnel enclosure;
- b) cable trays;
- c) cables fire load;
- d) ignition source;
- e) ventilation.

Figure 1 shows an example of the test assembly in accordance with the requirements specified in this clause.

Dimensions in millimetres

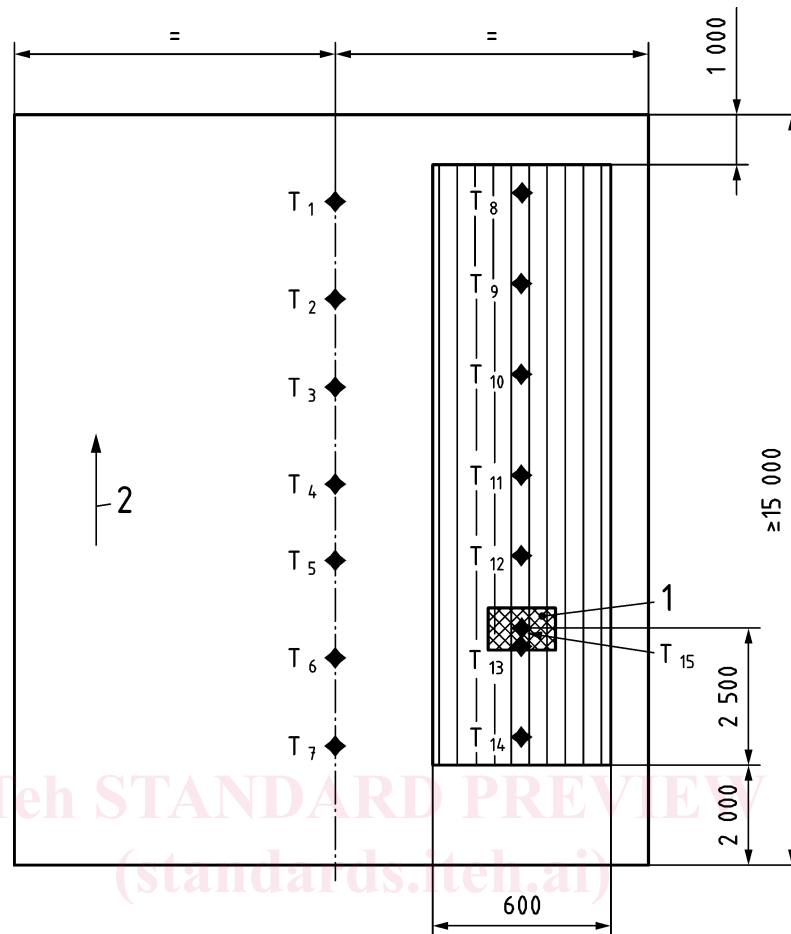


a) side view

ITeH STANDARD PREVIEW
(standards.iteh.ai)

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<https://standards.iteh.ai/catalog/standards/sist/44ab9a80-8637-4a5f-a2d1-48ace744e1e7/osist-pren-14972-11-2022>

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b) top view**Key**

- 1 propane gas burner
 2 air flow: 1 m/s
 a tray
- ◆ thermocouple
 ○ cable

Figure 1 — Minimum dimensions of fire test enclosure with arrangement of cable trays and water mist nozzles

5.2 Tunnel enclosure

The maximum cable tunnel enclosure width and height (as specified by the manufacturer) shall be tested meeting the minimum requirements described below.

The enclosure shall be constructed of non-combustible material (class A1 in accordance with EN 13501-1:2018).

The minimum size of the enclosure shall be as follows:

- Height: Minimum 200 mm above the top tray, but at least 2 200 mm
- Width: Minimum 2 350 mm
- Length: Minimum tunnel length 18 000 mm. Given by the minimum length of cable trays required to be able to detect at least 500 mm of undamaged cables at both ends (minimum 15 000 mm) plus 2 000 mm at the side of air entrance and 1 000 mm at the side of air outlet.

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All machinery needed to establish the ventilation shall be placed outside of the above described minimum length.

5.3 Cable tray arrangement

The cable trays shall be of non-combustible material (class A1 according to EN 13501-1:2018).

The cable trays shall be of open ladder type or of similar construction. The cable trays shall not have a solid base.

The position of the tray nearest to the floor shall be at least 300 mm above floor.

The cable trays shall have a width of at least 600 mm. The use of cable trays with a greater width is up to the manufacturer.

The vertical distance between two cable trays shall be 200 mm.

The horizontal distance between the cable trays and the wall of the enclosure shall be 200 mm.

The test can be carried out either with one stack of cable trays on one side of the cable tunnel enclosure or with two stacks of cable trays on both sides of the enclosure.

Arrangements of more cable trays above each other are up to the manufacturer.

5.4 Cable fire load

The fire load shall consist of cables with different dimensions.

For greater fire loads, the distribution percentage of different cable sizes shall be retained. Cables with larger diameters shall preferably be positioned in the lower cable trays.

The cables given in Table 1 shall be used for the tests.

Table 1 — Cable fire load

Tray	Cable type	Diameter mm	CU number	Number of cables	Total length m
Tray 1	NYY-O 2×1.5	12	29	35	525
Tray 2	NYY-O 2×1.5	12	29	30	450
	J-Y(St)Y 12×2×0.8	14	123	10	150
Tray 3	J-Y(St)Y 12×2×0.8	14	123	20	300
	NYY-J 4×10	20	384	20	300
Tray 4	J-Y(St)Y 12×2×.8	14	123	20	300
	NYY-J 4×10	20	384	10	150
Tray 5	NYY-J 4×10	20	384	30	450
Tray 6	NYY-J 3×50/25	31	1680	15	225
Tray 7	NYY-J 3×50/25	31	1680	3	45
	NYY-J 4×120	42	4608	5	75
Tray 8	NYY-J 4×120	42	4608	5	75

Cable length can be reduced if the fire does not extend to the cable ends during the tests.