prEN 14972-1/A1:2024 has been published
Clarity for Application Definition is now given

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18. & 19. September 2024

Agenda:
Water Mist Protection in accordance with EN14972

1) EN14972-1

2) Fire Test Protocols: EN14972-2…17

3) prEN14972-1/A1:2024

4) Status Overview (09/2024)

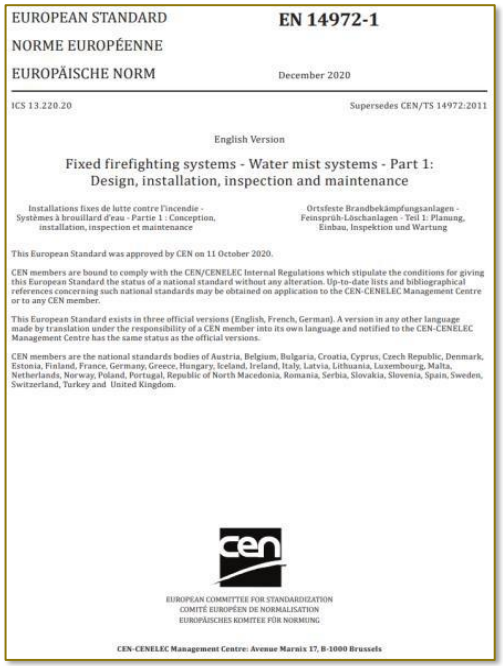
- Published standards EN 14972 and EN17450
- Work Item Overview EN14972 and EN17450

EN14972 part 1

- The standard specifies requirements and gives recommendations for the design, installation, inspection and maintenance of all types of fixed land-based water mist systems.

Published 03-2021

➔ **Implemented at National Level**
➔ **Effective since June 30th of 2021**



EUROPEAN STANDARD **EN 14972-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM December 2020

ICS 13.220.20 Supersedes CEN/TS 14972:2011

English Version

Fixed firefighting systems - Water mist systems - Part 1: Design, installation, inspection and maintenance

Installations fixes de lutte contre l'incendie - Systèmes à brouillard d'eau - Partie 1 : Conception, installation, inspection et maintenance

Ortsfeste Brandbekämpfungsanlagen - Feinsprüh-Löschanlagen - Teil 1: Planung, Einbau, Inspektion und Wartung

This European Standard was approved by CEN on 11 October 2020.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN14972 parts 2-17

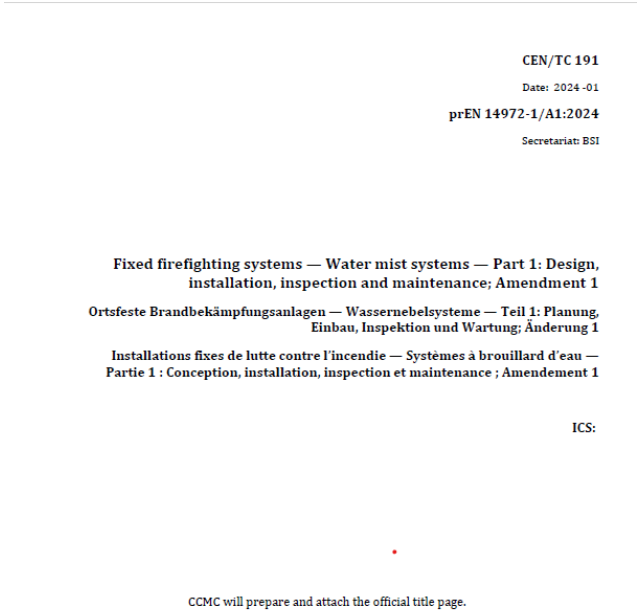
- The standard EN14972-1 requires that water mist systems shall be performance-based fire tested for specific hazards or occupancies covered by **EN 14972 series (parts 2-17)** fire test protocols.
  The “result” of those fire tests set the system’s design limitations which are concluded in the manufacturers DIOM (Design, Installation, Operation, Maintenance Manual).
- **EN 14972 parts 2-17** cover water mist fire test procedures for **multiple kinds of risks/hazards**
- Most parts are published
- **General borders/limitations** of the test procedures are not mentioned in the test procedures EN14972 parts 2-17, their focus is the fire test procedure and application.

  > This “gap” is filled now with the **prEN14972-1/A1:2024**.

prEN14972-1/A1:2024 (Amendment 1)

- ✓ prEN14972-1/Amendment 1 has been developed/drafted by TC191 WG10 and been sent for Public Enquiry on 30th of May 2024

  (**pr**EN14972-1/A1:2024)



CEN/TC 191

Date: 2024-01

prEN 14972-1/A1:2024

Secretariat: BSI

Fixed firefighting systems — Water mist systems — Part 1: Design, installation, inspection and maintenance; Amendment 1

Ortsfeste Brandbekämpfungsanlagen — Wassernebelsysteme — Teil 1: Planung, Einbau, Inspektion und Wartung; Änderung 1

Installations fixes de lutte contre l'incendie — Systèmes à brouillard d'eau — Partie 1 : Conception, installation, inspection et maintenance ; Amendement 1

ICS:

CCMC will prepare and attach the official title page.

prEN14972-1/A1:2024

- WG10 already received comments
- Those are on the agenda for next WG 10 meeting in October 2024

- A1 includes modifications/clarification for the EN14972-1

Contents Page

prEN14972-1/A1:2024

- ✓ Several “wording” changes have been made to provide more clarity

EN 14972-1/prA1:2024 (E)

1 Modification to term 3.1.6

Replace the term 3.1.6 with the following:

"

3.1.6

automatic water mist nozzle

component with one or more orifices, which is designed to produce and discharge water mist automatically, where the nozzles operate independently of other nozzles by means of a detection/activation device built into the nozzle

"

2 Modifications to Clause 4

2.1 Modification to 4.1.1

Add the following paragraph at the end of 4.1.1:

"If no other tolerance is specified, the general tolerances in Annex S shall be applied."

2.2 Modification to 4.1.3.1

Replace the paragraph in 4.1.3.1 with the following:

"The safe use of a water mist system is limited to applications it has been tested for. Water mist systems shall be tested in accordance with the fire test protocols of the EN 14972 series[1].

Annex A gives guidelines on how to develop new fire test protocols to be added under the EN 14972 series.

The applicability of the fire test protocols are described in Annex C to Annex R. For the given application the relevant annex shall be applied."

2.3 Modification in 4.2.2

In 4.2.2, replace item c) with the following:

"c) description of hazards and storage".

prEN14972-1/A1:2024

- ✓ Table1 of EN14972-1 (chapter 4.9.4.3) shall be replaced by a new one providing detailed clarity of the minimum design areas and detailed occupancy description for each application and the referenced test protocol

2.4 Modification in 4.9.4.3

In 4.9.4.3, replace Table 1 with the following:

"

Table 1 — Design criteria

Occupancy [c]	Minimum design area [a]	Minimum nozzle quantity [a]	Fire test protocol [d]
Sales areas, storage areas adjacent to sales areas, archives, libraries, technical areas/mechanical floors or similar.	216 m²	—	EN 14972-2
Cellular offices and open plan offices, areas with counters, restaurants and kitchens, public areas in buildings with low fire load, escape routes or other corridors, churches, museums, hotel rooms, rooms in hospitals, nursing homes, senior citizens residences, flats, training classrooms, recreation areas. As well as further comparable risks.	72 m²	6	EN 14972-3
Apartments, churches, concealed spaces (greater 800 mm in height), gymnasiums, hospitals and hospital laboratories, hotel rooms, libraries, museums, offices, meeting rooms, restaurant seating areas, kitchens, schools and university class rooms, unused attics, institutions.	140 m²	9	EN 14972-4
Non-stacking garages, fully enclosed garages and underground garages for horizontal, solid, flat ceilings with heights of 2 m and above.	144 m² (wet system) 180 m² (dry system)	—	EN 14972-5
Horizontal false ceilings and false floors between 300 mm and 800 mm.	72 m²	6	EN 14972-6
Apartments, churches, concealed spaces, gymnasiums, hospitals, hotel rooms, libraries, museums, offices, restaurant seating areas, schools and university class rooms and unused attics.	72 m²	6	EN 14972-7

prEN14972-1/A1:2024

- ✓ The residential occupancy is now crisp and clearly described in detail

EN 14972-1/prA1:2024 (E)

Occupancy [c]	Minimum design area [a]	Minimum nozzle quantity [a]	Fire test protocol [d]
Dwelling house, flat, maisonette, transportable home, house of multiple occupation, bed and breakfast accommodation, boarding houses and blocks of flats of 18 m or less in height and with a maximum total floor area of 2 400 m².	For rooms greater than 64 m²: 64 m²	All nozzles in the largest compartment up to maximum 4.	EN 14972-17
Blocks of flats greater than 18 m up to 45 m in height, sheltered and extra care housing, residential care premises, residential rehabilitation accommodation, dormitories and hostels up to 45 m in height [b].	For rooms greater than 64 m²: 64 m²	4	EN 14972-17

[a] Values applicable for wet pipe water mist systems unless indicated.

[b] Some countries may have national annex with guidance on the maximum height and any additional requirements for apartment buildings higher than 18 m.

[c] The overlap in occupancies described in the table is due to more than one fire test protocol in EN 14972 series[1], covering the same occupancy. Refer to Annex C to Annex R, and the DIOM manual, for the minimum design criteria for the respective fire test protocol for the water mist system.

[d] The occupancies are intended to be covered by the fire test protocols (see European foreword). Where available are listed in column and otherwise are in preparation.

"

prEN14972-1/A1:2024

- ✓ Table 3 of EN14972-1 (chapter 4.13.5) is replaced by a new one providing the more detailed description & discharge operation time in line with the relevant fire test

2.5 Modification in 4.13.5

In 4.13.5, replace Table 3 with the following:

"

Table 3 — Minimum discharge operating time

Fire extinguishing systems	Discharge operating time
Wet benches	Twice the extinguishment time. Minimum operation time is 2 min. Time delay limited to 30 s, unless otherwise proven in the tests.
Commercial deep fat cooking fryers	Twice the total time it takes to extinguish the fire and to cool the oil below the auto-ignition temperature in accordance with the fire test protocol. Minimum operation time is 10 min.
Industrial oil cookers	Twice the total time it takes to extinguish the fire and to cool the oil below the flash point in accordance with the fire test protocol.

Fire extinguishing systems	Discharge operating time
	Minimum operation time is 10 min.
Other fire extinguishing systems	Whichever is greater: — twice the longest extinguishment time in the relevant fire tests; — the time to shut down the process equipment; or — 10 min.

prEN14972-1/A1:2024

- ✓ Detailed Scope/Design Limitations of all Fire Test Protocols (Parts 2-17)

prEN14972-1/A1:2024
Example 1 (Annex C – for EN14972-2)

Limits of applicability for water mist systems tested in accordance to EN 14972-2

C.1 General

Systems tested according to EN 14972-2 are limited to the maximum ceiling height tested with a minimum ceiling height of 2,6 m.

The minimum distance between the storage height and the ceiling shall be 0,5 m.

If the glass bulb temperature used in the fire test is less than 68 °C, the fire test protocol is only applicable to that glass bulb temperature.

C.2 Regarding the scope of the water mist system

A water mist system successfully tested according to the test protocol EN 14972-2 is applicable to the following areas:

— Sales areas;
— Storage areas adjacent to sales areas (excluding flammable liquids, gases and other highly flammable areas);
— Archives;
— Libraries;
— Technical areas;
— or similar.

- ✓ C1 provides application boundaries
- ✓ C2 provides detailed application description

prEN14972-1/A1:2024
Example 1 (Annex C – for EN14972-2)

Limits of applicability for water mist systems tested in accordance to EN 14972-2

Typical examples of storage types are shown in Figure C.1. Limitations are given in Table C.1. The maximum total protected area for combined storage areas is 500 m².

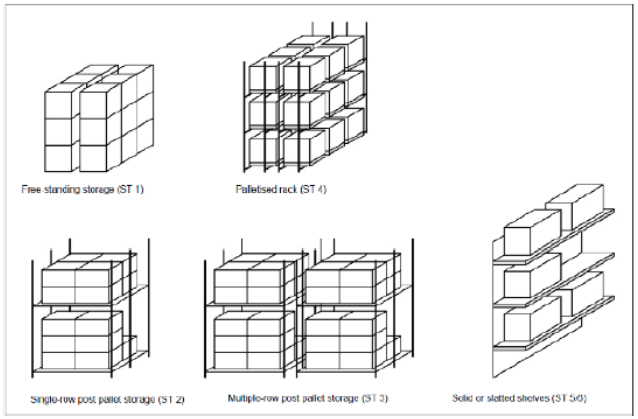


Figure C.1 – Storage types

Table C.1 – Limitations and additional requirements for different storage types

Storage type	Limitations
ST1	Storage shall be subdivided by aisles of at least 2,4 m into blocks of no more than 150 m².
ST2	Aisles between rows are at least 2,4 m wide.
ST3	Protection is only possible, when the system has been specifically fire tested for this configuration.
ST4	Aisles between rows are at least 1,2 m wide.
ST5	Aisles between rows are at least 1,2 m wide.
ST6	Protection is only possible, when the system has been specifically fire tested for this configuration.

The storage area shall be contained inside non-combustible or fire resistant walls.

Storage in movable racks and the storage of furniture or materials with expanded plastics are not covered.

- ✓ **Figure C1 provides in detail storage types: ST1-ST6**
- ✓ **Table C1 provides in detail additional requirements for the different storage types ST1-ST6**

prEN14972-1/A1:2024
Example 1 (Annex C – for EN14972-2)

Limits of applicability for water mist systems tested in accordance to EN 14972-2

C.3 Storage requirements

The maximum storage height for stored goods follows Table C.2.

Table C.2 — Maximum storage height for stored goods

Stored goods	Maximum storage height	
	Free-standing or block storage (ST1)	All other cases
Non-combustible packaging with non-combustible storage materials. Wooden pallets as a storage aid and combustible edge protection not larger than 10 % of the surface are permissible.	3,2 m	3,0 m
Storage materials of low or standard combustibility such as wood, paper, cardboard, each in solid or compact form. Packaging made of wood, paper, cardboard or corrugated board with edge protection not exceeding 10 % of the surface area. Wooden pallets are permitted as storage aids.	2,8 m	2,6 m
Highly combustible storage materials. A plastic mass proportion of up to 20 % is permissible. Packaging made of wood, paper, cardboard or corrugated board with edge protection not exceeding 10 % of the surface are. Wooden pallets are permitted as storage aids.	1,7 m	1,7 m
Other storage materials, provided that the plastic mass proportion does not exceed 40 %. Storage materials that contain a high proportion of air, such as tissue paper or pallets. Packaging made of wood, paper, cardboard or corrugated board with edge protection not exceeding 20 % of the surface area. Wooden pallets are permitted as storage aids.	1,2 m	1,2 m

✓ **C3/Table C2 provides maximum storage heights per storage type and stored good**

prEN14972-1/A1:2024
Example 2 (Annex O – for EN14972-14)

Limits of applicability for water mist systems tested in accordance to EN 14972-14

O.1 General

Systems tested according to EN 14972-14 are limited to the maximum ceiling height and maximum volume tested.

O.2 Regarding the scope of the water mist system

Water mist systems tested in accordance to EN 14972-14 also apply to steam turbines in enclosures and accessories like oil pumps, oil tanks, fuel filters, generators and hydraulic aggregates.

There shall be no forced ventilation and any openings shall be closed upon system actuation; doorway screening spray heads may not be used in lieu of automatic closing devices.

Only water mist systems that have passed the saturated mat test can be applied for thermally insulated turbine protection.

O.3 Additional design and installation parameters

Full protection of the enclosure is required.

"

- ✓ O1 provides application boundaries
- ✓ O2 provides detailed application description
- ✓ O3 provides additional design and installation parameters

prEN14972-1/A1:2024
Example 2 (Annex O – for EN14972-14)

Annex O
(normative)
Limits of applicability for water mist systems tested in accordance to EN 14972-14

O.1 General

Systems tested according to EN 14972-14 are limited to the maximum ceiling height and maximum volume tested.

O.2 Regarding the scope of the water mist system

Water mist systems tested in accordance to EN 14972-14 also apply to steam turbines in enclosures and accessories like oil pumps, oil tanks, fuel filters, generators and hydraulic aggregates.

There shall be no forced ventilation and any openings shall be closed upon system actuation; doorway screening spray heads may not be used in lieu of automatic closing devices.

Only water mist systems that have passed the saturated mat test can be applied for thermally insulated turbine protection.

- ✓ C1 provides application boundaries
- ✓ C2 provides detailed application description

prEN14972-1/A1:2024
Tolerances - Annex S

3.17 New Annex S for general tolerances

Add a new Annex S:

"

Annex S
(normative)

General tolerances

Unless otherwise stated, the following tolerances in Table S.1 apply.

Table S.1 — General tolerances

Variable	Tolerance
Angle	±2°
Frequency (Hz)	±5 %
Length	±5 %
Volume	±5 %
Rotation	±1 min^{-1}
Pressure	±5 %
Temperature	±5 %
Time	$^{+5}_{0}$s
	$^{+0,1}_{0}$min
	$^{+0,1}_{0}$h
	$^{+0,25}_{0}$d

✓ **Annex S provides for all measured values general tolarances applied for the EN14972 series unless otherwise stated**

prEN14972-1/A1:2024
Summary

- ✓ **prEN 14972-1/A1 provides a more detailed, better occupancy description**
- ✓ **prEN14972-1/A1 provides per application/occupancy (fire test) the correctly „connected“ area of operation (m²)**
- ✓ **prEN14972-1/A1 provides detailed discharge duration time per application**
- ✓ **prEN14972-1/A1 provides application boundaries**
- ✓ **prEN14972-1/A1 provides more detailed application descriptions**
- ✓ **prEN14972-1/A1 provides general tolerances**

Status Overview: Published Standards EN14972 & EN17450

Standard	Name	Published
EN 14972-1	Design, installation, inspection and maintenance	2020-12-23
EN 14972-3	Office, school classrooms and hotel	2021-08-04
EN 14972-4	Non storage occupancies	2024-04-10
EN 14972-6	False floors and false ceilings	2023-05-24
EN 14972-7	Commercial low hazard occupancies	2023-07-26
EN 14972-8	Machinery in enclosures exceeding 260 m^3	2020-01-22
EN 14972-9	Machinery in enclosures not exceeding 260 m^3	2020-01-22
EN 14972-10	Atrium protection with sidewall nozzles	2022-04-06
EN 14972-11	Cable tunnels	2023-05-24
EN 14972-12	Deep fat cooking fryers	2024-07-24
EN 14972-14	Combustion turbines in enclosures exceeding 260 m^3	2021-09-15
EN 14972-15	Combustion turbines in enclosures not exceeding 260 m^3	2021-09-15
EN 14972-16	Industrial oil cookers	2019-08-28
EN 17450-1	Strainer and filter components	2021-02-24

Status Overview: Work Items EN14972 & EN17450

Work items	Title	Public Enquiry	Formal Vote	Publication
EN 14972-1/A1	Design, installation, inspection and maintenance; Amendment A1	2024-05-30	2025-11-27*	2026-05-28*
EN 14972-2	Shopping areas	2024-09-26	2026-02-16*	2026-08-17*
EN 14972-5	Car garages	2023-05-18	2024-06-06	2024-10-09**
EN 14972-13	Wet benches and similar processing equipment	2024-06-13	2026-02-06*	2026-05-29*
EN 14972-17	Residential occupancies	2024-08-08	2026-03-03*	2026-05-29*
EN 17450-2	Nozzles	2023-04-20	2024-05-02	2025-04-16**
EN 17450-3	Check valves	2024-06-27	2026-02-06*	2026-05-29*
EN 17450-4	Control deluge valves and actuators	WG task will start in October 24	-	-
EN 17450-5	Pressure switches	-	-	-

* Date via CEN Projex estimate based on flexible process. Realistically much sooner.

** Date via CEN-Projex estimate

Thanks for your attention !

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