BS EN 14972-6:2023

BSI Standards Publication

Fixed firefighting systems — Water mist systems

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

bsi.

National foreword

This British Standard is the UK implementation of EN 14972-6:2023.

The UK participation in its preparation was entrusted to Technical Committee FSH/18/5, Watermist systems.

A list of organizations represented on this committee can be obtained on request to its committee manager.

BSI, as a member of CEN, is obliged to publish EN 14972-6:2023 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee advised against its approval.

It is the view of the UK committee that some of the requirements in EN 14972-6:2023 are suboptimal to the recommendations in the BS 8489 series and to the protocols that have been in use in the UK to date.

The UK committee also has a concern to the degree of reliance on the design, installation, operation and maintenance (DIOM) manual to constrain critical parameters with regard to the whole EN 14972 series of documents.

The UK committee also has concerns about a number of other aspects of EN 14972-6:2023. The UK committee believes that the standard does not sufficiently cover certain technical and safety matters. These have been addressed to some extent in the national annexes to BS EN 14972-6:2023, which are appended at the back of this document.

The limits of application of the fire test protocols and other constraints have not, at the time of writing, been published. The intended scope and clear limits of the fire test protocols to the application of this standard are fundamental to its safe implementation. National Annexes NA and NB contain the UK committee recommendations (i.e. mechanisms to declare and constrain limits of application).

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

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EN 14972-6

May 2023

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English Version

Fixed firefighting systems - Water mist systems - Part 6: Test protocol for falsefloors and false ceilings for automatic nozzle systems

Installations fixes de lutte contre l'incendie - Systèmes à brouillard d'eau - Partie 6 : Protocole d'essai des systèmes à buses automatiques pour faux-planchers et faux-plafonds

Ortsfeste Brandbekämpfungsanlagen - Wassernebelsysteme - Teil 6: Brandversuchsprotokoll für Zwischenböden und Zwischendecken für automatische Düsensysteme

This European Standard was approved by CEN on 17 April 2023.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

European foreword

This document (EN 14972-6:2023) has been prepared by Technical Committee CEN/TC 191 "Fixed firefighting systems", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2023, and conflicting national standards shall be withdrawn at the latest by November 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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 m^3 for open nozzle systems*;

— *Part 9: Test protocol for machinery in enclosures not exceeding 260 m^3 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 m^3 for open nozzle systems*;

— *Part 15: Test protocol for combustion turbines in enclosures not exceeding 260 m^3 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*.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document specifies the evaluation of the firefighting performance of water mist systems for false ceilings and false floors with heights between 300 mm and 800 mm.

This fire test protocol is applicable to pendent or upright automatic nozzles to be used in unlimited volume.

This document is applicable for horizontal, solid, flat ceilings.

It is not possible to apply these tests to other applications than the ones specified within this fire test protocol.

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 12259-1, *Fixed firefighting systems - Components for sprinkler and water spray systems - Part 1: Sprinklers*

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

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 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.

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 10 min after the activation of the first sprinkler/automatic nozzle. Any remaining fire shall be manually extinguished and the fire damage shall be recorded.

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 automatic nozzles/sprinklers, etc.).

4.6 System components, component locations, operating conditions and test mock-up 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 automatic nozzle placement, spray flux, and operating pressure. Sprays shall not be intermittent.

4.8 The test protocol is only applicable to pendent or upright mounted automatic nozzles.

4.9 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 utilised in the test scenario.

4.10 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 false ceiling layout comprising the appropriate fire load in terms of cabling.

The test assembly shall include the following elements:

a) housing;

b) cable trays;

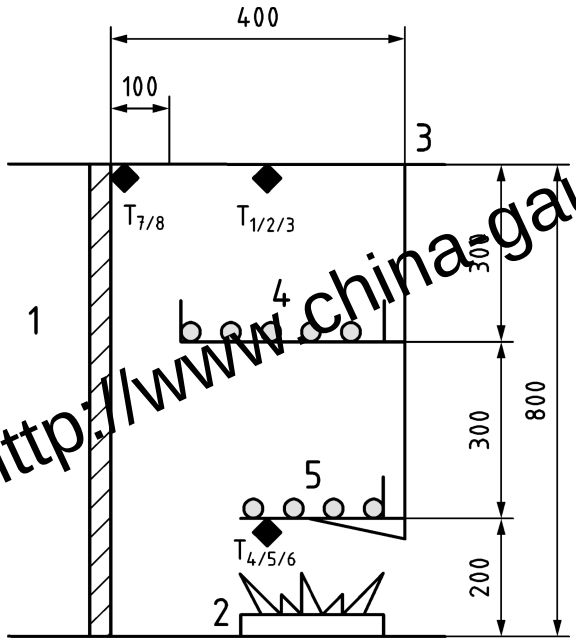
c) cables as fire load;

d) heptane pan (200 mm × 200 mm × 20 mm) as ignition source.

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

The tolerance of all dimensions is ± 5 %.

Dimensions in millimetres

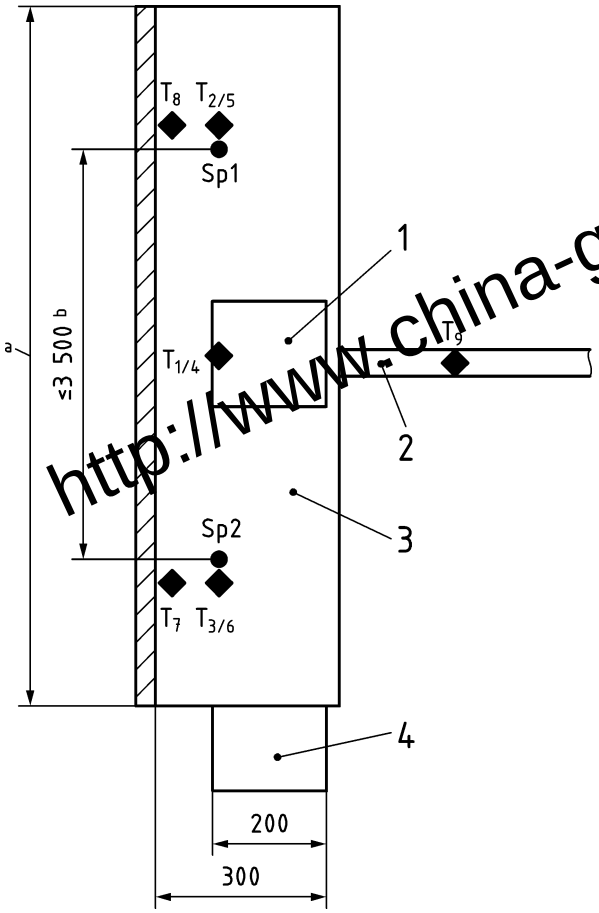


Key

1	wall combustible (plywood ~5 mm)	5	lower cable tray
2	heptane pan	○	cables
3	ceiling	◆	thermocouple (T)
4	upper cable tray		

Figure 1 — Assembly of fire loads and position of ignition source (side view)

Dimensions in millimetres



Key

1 ignition source: heptane pan 200 mm × 200 mm × 20 mm

2 4 cables without tray, loosely hanging on the false ceiling; length: 3 000 mm; combustible loading: 3,5 kWh/m^2

3 upper cable tray

4 lower cable tray

◆ thermocouple (T)

[a] length = 3 × automatic nozzle. Total length of cables may be reduced if, during the tests, fire does not extend to the cable ends. The area by which the cable length has been reduced shall be covered by metal plates.

[b] The maximum 3,5 m spacing applies to the reference sprinklers only.

Figure 2 — Assembly of ignition source below the cable trays (plan view)

5.2 False ceiling / false floor mock-up requirements

A false ceiling/false floor is simulated by a standardized false ceiling mock-up. The mock-up shall be constructed as follows:

— Dimensions:

  — height: 800 mm;

  — width: 400 mm (open to one side);

  — length: threefold distance of automatic nozzles to be tested.

— Materials:

  — ceiling: non-combustible, e.g. steel plate;

  — side wall (opposite of cable trays): untreated plywood board, thickness 5 mm;

  — floor plate: non-combustible material, proportion of holes at least 15 %, optionally via a gap throughout the entire length of the test assembly.

5.3 Cable trays

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 cable trays used in the tests shall fulfil the following requirements:

Position according to Figure 1 and Figure 2.

Lower Cable Tray:

— Width: 200 mm;

— Material: non-combustible, appropriate for the heat impact to be expected.

Upper Cable Tray:

— Width: 300 mm;

— Material: non-combustible, appropriate for the heat impact to be expected.

5.4 Cables

Preferred cabling:

Lower Cable Tray:

— NYY 3x1.5; number 15, fire load per cable approx. 0,75 kWh/m.

Upper Cable Tray:

— NYY 3x1.5; number 30, fire load per cable approx. 0,75 kWh/m.

5.5 Conditioning of the fuel load

The fuel package elements shall have a normal humidity content prior to the test, as obtained by storage indoor at (20 ± 5) °C for two weeks. Storage conditions shall be confirmed prior to testing.

5.6 Ignition source

The ignition source is a pan of heptane complying with the following requirements:

— Dimensions: 200 mm × 200 mm × 20 mm (height);

— Material: steel;

— Filling: 120 ml heptane;

— Position in accordance with Figure 1 and Figure 2 below the lower cable tray, centrally between the two sprinklers/automatic nozzles.

6 Test arrangement

6.1 Reference sprinkler requirements

6.1.1 General

The sprinkler system used in the reference tests shall be characterized as follows:

a) classification: Ordinary Hazard 1;

b) water discharge density[1]: 5,75 l/min/m^2;

c) protected area per sprinkler: 12 m^2;

d) sprinkler arrangement: 2 sprinklers (maximum 3,5 m spacing);

e) sprinkler:

1) type: pendent or upright spray sprinkler in accordance with EN 12259-1, surface mounted on the ceiling with a flat escutcheon in case of pendent orientation;

It shall be noted, if the orientation of the automatic nozzles of the water mist system is upright also upright sprinklers shall be used. In case of pendent orientation of the automatic water mist nozzles, the sprinkler orientation shall also be pendent.

2) installation of the sprinkler according to EN 12845;

3) thermal sensitivity: at least special response as specified in EN 12259-1;

4) nominal *K* factor: 80;

5) temperature rating: 68 °C.

The water supply shall be capable of supplying a flow rate and pressure according to the specific requirements, which are based on the actual layout of the pipework installation.

[1] This value includes a safety factor of 15 %.

6.1.2 Reference sprinkler tests

The sprinkler system shall be pressurized to be capable of the minimum required pressure immediately after operation of the first sprinkler. Upon activation of the first sprinkler, the flowing water pressure shall be maintained at a system operating pressure depending on actual demand.

6.2 Water mist system requirements

For all tests, the system shall either be:

— pressurized to the minimum operating pressure specified by the manufacturer. Upon activation of the first automatic nozzle, the flowing water pressure shall be maintained at the minimum system operating pressure; or

— pressurized to the minimum standby pressure specified by the manufacturer. Upon activation of the first automatic nozzle, the flowing water pressure shall be gradually increased to the minimum system operating pressure specified by the manufacturer. The delay time until the minimum system operating pressure is reached shall be at least 15 s. The delay time recorded during the tests shall be documented and included in the approval of the system.

The orientation relative to the weakest/strongest discharge density of the automatic water mist nozzles shall be identical for each fire test. A designated orientation of the automatic water mist nozzles will be fixed prior to the test series taking into account the leading discharge characteristics (e.g. the number and distribution of the individual water spray trajectories in the overall spray pattern) of the automatic water mist nozzles.

7 Test equipment requirements

7.1 The fire test hall shall be of an adequate size with natural or minimal forced ventilation so there is no interference with the fire testing within the test area or about the mock-up or test fuel package.

7.2 The fire tests shall be conducted in a large open test hall of sufficient area, and with a minimum ceiling height of 5,0 m, to avoid impacting the results of the tests.

7.3 The size of the test hall shall not impact firefighting capabilities of any test fires (i.e. depletion of oxygen due to an inadequately sized test laboratory).

7.4 There shall be sufficient ventilation or space, to guarantee sufficient O_2 concentration over the entire test period.

7.5 Oxygen concentration shall not decrease below 20 % as an average value inside the test hall.

7.6 For all fire tests, the ceiling, floor, and walls shall be as dry as possible, with only the permissibly moisture content of the environment. The relative humidity in the test area shall not significantly differ from that of the ambient relative humidity of the environment.

7.7 The test area or fire test hall shall be at an ambient temperature of (20 ± 10) °C prior to the start of the test. The test area or hall shall be at as uniform ambient temperature as reasonably possible. Localized hot or cold spots are not permitted. All non-fire induced drafts shall be eliminated.

7.8 The minimum operating nozzle pressure (as specified by the manufacturer) shall be used for all tests, unless otherwise noted. System operating pressures shall be repeatable with a tolerance of ± 5 %.

7.9 The maximum spacing as specified by the manufacturer shall be used for all tests.

7.10 Maximum allowed time delay of water pressure build-up of the system shall be specified by the manufacturer and shall be used for all tests.

8 Instrumentation requirements

8.1 General

The following measurements shall be recorded with a tolerance of a ± 5 % at intervals not exceeding 1 s by using a computerized data acquisition system. Measurements shall begin and end at least 1 min prior to ignition and after termination of the tests.

All measured values shall be recorded over the entire test period. The tests shall also be recorded per video. Any damage of the test assembly shall be photographed and specified in the test report after each test.

8.2 Temperature

T [°C]: For measuring the temperature, exposed 0,5 mm thermocouples of type K shall be positioned 75 mm underneath the ceiling surface.

The positions of the thermocouples shall be in accordance to Figure 1 and Figure 2.

— T_1 [°C] – at ceiling of housing above ignition source;

— T_2 [°C] – centrally at ceiling of housing, 3 m lateral distance to ignition source;

— T_3 [°C] – centrally at ceiling of housing, 3 m lateral distance to ignition source in the opposite direction than T_2;

— T_4 [°C] – above ignition source;

— T_5 [°C] – below lower cable tray, 3 m lateral distance to ignition source;

— T_6 [°C] – below lower cable tray, 3 m lateral distance to ignition source in the opposite direction than T_5;

— T_7 [°C] – at ceiling immediately at combustible side wall, laterally to T_3;

— T_8 [°C] – at ceiling immediately at combustible side wall, laterally to T_2;

— T_9 [°C] – centrally at ceiling, above 4 loose cables coming from side of housing.

The temperature values measured during the test shall be averaged over 30 s (maximum time between measurements 1 s), and the peak temperatures shall be determined from the averaged curves.

Direct impingement on the thermocouples shall be avoided by means of appropriate protection hoods.

The applicant is entitled to install further thermocouples in the test assembly (e.g. at each automatic nozzle). However, any additional thermocouples shall also have the a. m. characteristics.

8.3 Pressure

p [bar]: The pressure shall be measured at ceiling height at the hydraulically most remote position of the pipe network.

8.4 Time

t [mm:ss]: Time measurement over the entire test period, with the following times being recorded:

— start of data recording;

— ignition;

— activation of sprinkler/automatic nozzle;

— extinguishment of flames (if applicable);

— shut off of sprinkler/water mist systems;

— end of extinguishing process;

— end of data recording.

9 Test criteria

9.1 General

The performance of the tested water mist system shall be evaluated in relation to the performance of the reference sprinkler system. The evaluation shall reflect the overall performance of both systems.

A total damage of the sprinkler test shall be determined by calculation. A total damage of the water mist tests shall be determined by calculating the average of the damage of the water mist tests.

The average ceiling gas temperature shall be determined as the average of the three peak temperatures after activation of the system. The averaged ceiling gas temperature of the sprinkler test series shall be compared with the averaged ceiling gas temperature of the water mist test series.

Critical judgement shall be exercised when evaluating the damage and the ceiling gas temperatures. The evaluation shall be carried out using the same procedure in each test.

In case of a negative result with the water mist system, the water mist test series may be repeated only with modified parameters of the system to be tested (e.g. higher design density, lower ceiling height, smaller nozzle spacing).

9.2 Fire tests

As specified, a reference test with a sprinkler system shall be carried out in order to verify the extinguishing effectiveness of the water mist system to be tested. Prior to the tests with the reference sprinkler system and the water mist system to be tested, a free-burn test shall be carried out to prove if the fire development is developing properly and continuously.

The tests shall be designated as specified in Table 1 for traceability reasons.

Table 1 — Designation of the test series

Test	System
Free-burn test	N.A.
Spr1	Reference sprinkler system
WM1	Water mist system
WM2	Water mist system

9.3 Evaluation of test results

The fire loss at the test assembly shall be evaluated in terms of quantity aspects. The evaluation shall consider at least the following items and shall be in accordance to Table 2:

a) Determination of fire damage:

   1) the extent (by length) of burned cables on both cable trays (50 %);

   2) the extent (by area) of charred surfaces at the sidewall of the cable trays (50 %);

   The percentages given in the brackets describe the extent to which the criterion goes into the pass/fail evaluation.

b) Determination of peak temperatures:

   1) This evaluation refers to the temperatures reached after operation of the first sprinkler/first automatic nozzle.

The temperature curves measured during the test are averaged over a period of 30 s (maximum interval between measurements 1 s), and from the averaged curves the peak temperatures shall be determined.

The average gas temperature at the ceiling is the average of the three peak temperatures.

The tests have been passed when the following applies:

— the total averaged damage of the water mist test series is less than or equal to the total averaged damage of the sprinkler test series;

— the total averaged ceiling gas temperature of the water mist test series is less than or equal to the total averaged ceiling gas temperature of the sprinkler test series.

Table 2 — Evaluation of fire tests

Test	$T_{peak,ave}$ = the highest peak value of all 30 s averaged curves	$T_{peak,ave,total}$	D_{walls} = percentage of charred or burnt wall area	D_{cables} = percentage of damaged cables [a]	D_{total}	$D_{ave,total}$
Spr1	T_{Sp1}	$T_{Sp} = T_{Sp1}$	D_{wSp1}	D_{cSp1}	$D_{Sp1} = (D_{wSp1}+D_{cSp1})/2$	$D_{Sp} = D_{Sp1}$
WM1	T_{WM1}	$T_{WM} = (T_{WM1}+T_{WM2})/2$	D_{wWM1}	D_{cWM1}	$D_{WM1} = (D_{wWM1}+D_{cWM1})/2$	$D_{WM} = (D_{WM1} + D_{WM2})/2$
WM2	T_{WM2}		D_{wWM2}	D_{cWM2}	$D_{WM2} = (D_{wWM2}+D_{cWM2})/2$	
[a] Each cable is evaluated separately.						

Acceptance criteria: $T_{WM} \leq T_{Sp}$ and $D_{WM} \leq D_{Sp}$

10 Test report

The results of the tests shall be documented in a test report prepared in accordance with EN 14972-1:2020, A.8.

Bibliography

[1] EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

[2] ISO 5660-1, *Reaction-to-fire tests — Heat release, smoke production and mass loss rate — Part 1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement)*

National Annex NA
(Informative)

Further recommendations and guidance on the application of BS EN 14972-6

NA.1 General

This National Annex contains further recommendations that the UK committee believes would be beneficial in the application of all water mist systems alongside the requirements of BS EN 14972-1.

NA.2 Hazard evaluation

Users are encouraged carry out a hazard evaluation on any proposed application of BS EN 14972-6 to ensure that the fire test protocol and performance objectives match the occupancy and protection requirements at all times.

Guidance on the methodology for the hazard evaluation can be found in BS EN 14972-1:2020, 4.1.3.2 and 4.7.3 and BS 5306-0:2020, Clause 4.

NA.3 Limits of application

FM5560 refers to FM Global Data Sheets that define the limits of application which is not currently defined in BS EN 14972-1. Users are encouraged to adhere to any applicable FM Global Property Loss Prevention Data Sheet.

NA.4 Ventilation conditions

It is encouraged that ventilation conditions in the application be within the limits of the ventilation as simulated in the fire test protocol. Thus, where ventilation effects do not feature in the test protocol, application should be unventilated.

Occupancies with forced or natural air flow might require additional fire testing to achieve the same performance criteria or alternatively a means, where permissible, to shut down the ventilation.

NA.5 Obstructions

Fire tests are undertaken with limited obstructions. Example of types of obstruction that are not included in the fire test:

- cable trays;
- light fittings;
- ducts;
- architectural features;
- beams; and
- columns.

Further testing is recommended to derive installation obstruction rule sets.

It would be beneficial for the designer to consider (and mitigate) the presence of obstructions (e.g. with additional testing and/or additional nozzles).

NOTE Obstructions impede the distribution of water mist and could prevent the system from achieving the fire suppression objectives as defined in the fire test protocol.

NA.6 Test report

It would benefit the user to document the results of the tests in a test report prepared in accordance with BS EN ISO/IEC 17025:2017, 7.8 and BS EN 14972-1. Such a test report might contain at least the following information:

a) a title;

b) the name and address of the laboratory;

c) the location where the tests were carried out, if different from the address of the laboratory;

d) unique identification of the test report (such as the serial number), and on each page an identification in order to ensure that the page is recognized as a part of the test report, and a clear identification of the end of the test report;

e) the name and address of the client;

f) a description of the method used, including details of the test apparatus and a reference to the standard against which the system was tested (e.g. BS EN 14972-10);

g) a description of, the condition of, and unambiguous identification of the item(s) tested;

h) the date of receipt of the test item(s) where this is critical to the validity and application of the results, and the date(s) of performance of the test;

i) the test results, with units of measurement where appropriate, together with the times and parameters recorded during each test;

j) a statement of compliance/non-compliance with the recommendations given in all applicable assessment criteria clauses;

k) confirmation of system design parameters relevant to the specific application, including, but not limited to, the following:

   1) the discharge duration;

   2) nozzle designation;

   3) room dimensions and nozzle positions (this should be in written form and also shown on a plan view drawing);

   4) test room height;

   5) operating flow rate to the nozzle(s);

   6) distance between the ceiling and nozzle orifice;

   7) pressure over the duration of the test;

   8) type of detection/actuation method;

   9) additives, propellants and atomizing media used;

   10) details of the test hall geometry;

   11) ventilation conditions during the test, supported by engineering calculations pertinent to the actual application and the effect of the fire plume on ventilation; and

   12) environmental conditions during the test;

l) the name(s), function(s) and signature(s) or equivalent identification of person(s) authorizing the test report; and

m) where relevant, a statement to the effect that the results relate only to the items tested.

NATIONAL ANNEX NB
(Informative)

WATER MIST COMPONENT
MANUFACTURER'S DECLARATION OF CONFORMITY (MDOC) For manufacturer supplied nozzles and fire testing results

Address of manufacturer

……

……

Component: (including description, model, unique identifier)

Nozzle tested: ……

Other component (integral to test): ……

Declaration of Conformity

I/we* hereby declare that the water mist nozzles and components detailed above conform, to the best of my/our* knowledge and belief, to the appropriate recommendations given in BS EN 14972-6:2023, BS EN 14972-1:2020, and BS 8663-1, except as stated below/overleaf.

* Delete as appropriate

Signed, on behalf of manufacturer (as appropriate)

……

Name (print):…… Company name: ……

Job title/qualification…… Date……

Deviations from standards

Declaration	**BS EN 14972-6; BS EN 14972-1; or BS 8663-1 clause number**	**Details of deviation**

This document is only valid when accompanied by current documents:

Type	**Title, issue, date**	**For official use**	
		Received	**Notes**
Manufacturer's component data sheet			
Manufacturer's component data drawings (on request)			
Manufacturer's system design manual and installation manual			
Manufacturer's MDOC Table 1			
Manufacturer's MDOC Table 2			

Table NB.1 – MDOC Table 1 – Declaration of nozzle details and system design parameters

Parameter	Nozzle specification and limits	Details to be completed by manufacturer	For official use Notes
Nozzle	Manufacturer		
	Nozzle designation (model, unique identifier)		
	Datasheet (name, issue, date)		
	Type (upright/pendent/concealed/sidewall)		
	K-factor (lpm/bar ½)		
	Nozzle orifice diameter (s)		
	Form of construction: • Nozzle body material • Pipework fitting requirements • Valve type		
	Strainer and filter requirements and minimum strainer area(s)		
	Water quality requirements (e.g. statement that potable water may be used, or specific limits in terms of total dissolved solids and/or ppm of dissolved substances, and levels of hardness, sulphates and chlorine and bacteria		
	Additives dependency, requirements to ensure enhance fire protection requirements (e.g. concentration and rates of application), if required		
	Product approval, certificate number and date (confirmation of compliance to BS 8663-1 or LPCB LPS 1283 scheme of requirements) Note: Compliance with these requirements includes: • Tests for nozzle function at min standby pressure • Tests for nozzle aging (heat exposure tested at 121°C for 90 days at max standby pressure), • Test for sulfur dioxide exposure of dynamic 'o' rings		
Flow	Supply type (pump or cylinder) Note: If the system relies upon propellant gas cylinder(s), full details shall be provided.		
	Minimum operating pressure (bar) and flow rate (l/min)		
	Maximum operating pressure (bar) and flow rate (l/min)		
	Standby pressure, minimum (bar)		
	Standby pressure, maximum (bar)		
	Operating pressure, min (bar) and flowrate min (l/min)		
	Operating pressure, max (bar) and flowrate max (l/min)		
Installation	Maximum nozzle spacing (m)		
	Minimum nozzle spacing (m)		
	Maximum depth below ceiling (mm)		

	Maximum room area (m^2)		
	Maximum ceiling height (m)		
	Minimum ceiling height (m)		
Dimensioning of water supply	Minimum design area (m^2)		
	Minimum number of nozzles		
	Minimum design duration (min)		
	Flat ceilings and limited slopes		
	Deviations from standard/extensions to scope	**Details and additional supporting information**	
	Obstructions		
	Other		

Table NB.2 – MDOC Table 2 – Declaration of conformance to BS EN 14972-6 fire test protocol for the nozzle in MDOC Table 1

Information required	Details to be completed by manufacturer	For official use
Fire Test Report (report number, number of pages, date, issue number)		
Name and address of test laboratory (independent third-party with appropriately skills and accreditation)		
Nozzle arrangement (model, material, unique identifier), type, orientation, k-factor, temperature rating, spacing, operating pressure		
Details of any additives used in the test programme		
Details of the water supply method used in the test programme (pump/cylinder specification as well as pressure/flow and duration)		
Fire test series arrangements completed (as defined in BS EN 14972-6:2023)		
Any other supporting data		
Questions	**Answer (yes/no)** **If no, detail non-compliances and provide supporting data**	
Is the test report by an independent third-party, UKAS accredited test laboratory or equivalent?		
Is the nozzle in MDOC Table 1 identical to that used for all fire tests?		
Is the nozzle arrangement (e.g. spacing, pressure, flow, height depth) in MDOC Table 1 identical to that used for all fire tests?		
Is the maximum atrium area in MDOC Table 1 confirmed by successful completion of all tests and against all clauses of BS EN 14972-6:2023 and National Annexes?		
Is the maximum atrium height in MDOC Table 1 confirmed by successful completion of all tests and against all clauses of BS EN 14972-6:2023 and National Annexes?		
Does the water mist system and test report show full compliance with all of the clauses of BS EN 14972-6:2023 and National Annexes?		

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