

DOCUMENTATION

RISEFR 040-0206

With reference to Requirement Specifications in EN 14972-1:2020 Annex A Guidelines for developing representative fire test protocols for water mist systems and EN 14972-3:2021 Test protocol for office, school classrooms and hotel for automatic nozzle systems, RISE Fire Research AS declare, based on test reports, evaluations and installation instructions, that this product meets the requirements of EN 14972-1 and EN 14972-3.

Equipment: SEM-SAFE® High Pressure Water Mist System

Product responsible: Danfoss Fire Safety A/S
Middelfartvej 9, DK-5000, Odense C, DENMARK

The documentation is conditional that the product is in accordance with the specifications given in the appendix and that the product is applied and used in accordance with regulations and all important details in this process follow precisely what is described in a Design Installation Operation and Maintenance (DIOM) manual, which is checked by RISE Fire Research AS. Both the DIOM manual and the RISE Documentation shall follow the product or be available for the purchaser, user, inspector and the local authority.

The product shall be labeled with **RISEFR 040-0206**, trade name, product responsible and/or the manufacturers traceability label. Alternatively, this documentation and the DIOM manual shall be attached. The labelling shall have good visibility.

Detailed product design and principle design of installation details are described in "Standard construction details for SEM-SAFE® High Pressure Water Mist System (SEM-SAFE® HPWM), belonging to Documentation RISEFR 040-0206". The version of the construction details filed at RISE Fire Research at any time is a formal part of the approval.

The product must have at least one annual, external inspection related to the internal system for control of quality. The inspection is adjusted to the type of product and other existing inspection arrangements. Details are specified in a written agreement with RISE Fire Research.

This documentation was first issued **2022-04-01**. A renewal may be issued based on a written application. Termination by the applicant shall be asked for in writing and with 6 months notice. RISE Fire Research may withdraw this documentation when irregularities or misuse happens, and written instructions are not respected.

Issued: 2022-04-01

Valid until: 2027-04-01



Asbjørn Østnor
Discipline Manager Documentation



Per Arne Hansen
Project Manager Documentation

Appendix 1 to Documentation RISEFR 040-0206 of 2022-04-01

1. Owner of the Documentation

Danfoss Fire Safety A/S
Middelfartvej 9,
DK-5000, Odense C,
DENMARK
www.semsafe.danfoss.com.

2. Manufacturer

Danfoss Fire Safety A/S.

3. Product Description

SEM-SAFE® HPWM will consist of a number of high-pressure nozzles connected by stainless steel piping to a High-Pressure pump unit. SEM-SAFE® HPWM automatic nozzles use industry standard fast response frangible glass bulbs with a response time index (RTI) of less than 24 ms and with the following glass bulb temperature rating:

Table 1: Bulb temperature rating.

Maximum ambient temperature	Bulb activation temperature	Bulb colour
27°C	57°C	Orange

4. Fields of Application

SEM-SAFE® HPWM for protection of Ordinary Hazard Group 1 (OH1) Office, Ordinary Hazard Group 1 (OH1) Public space and Archives.

5. Properties

SEM-SAFE® has the following specifications:

- *System type and identification:* SEM-SAFE® High Pressure Water Mist System (HPWM) Application OH1 Office, OH1 Public space and Archives with nozzle I.D.: AE.
- *Occupancies with any restrictions:* Sales, storage and technology areas.

- *Description of hazards and storage:* Office application: Cellular offices and open plan offices, areas with counters, restaurant and kitchens, public areas in buildings with low fire load, escape routes or other corridors, training classrooms, churches, museums as well as further comparable risks.

Public space application: Open public spaces, hotel rooms, rooms in hospitals, nursing homes, senior citizens residences, flats, recreation areas as well as further comparable risks.

Solid open shelves archives.

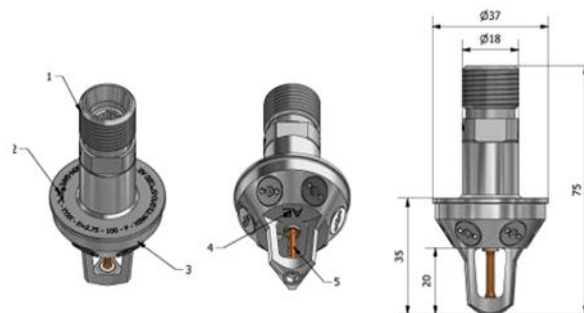


Figure 1: SEM-SAFE® HPWM Nozzle NO-020100-AE-P-2.75_057-000000.

- *All design parameters:*
 - *Nozzle type and unique identification:* AE (see Figure 1).
 - *Design area of operation:*
 - Office 72 m²
 - Public spaces 72 m²
 - Archives 84 m²
 - *Number of operating nozzles or area of operation:* Use the spacing parameters, determine the number of nozzles required to cover the risk.
 - *Nozzle design pressure:* 100 bar.
 - *Minimum discharge time:* 60 min.
 - *K-Factor:* 2.74
 - *Flow at design pressure:* 27.4 l/min.

- Office areas:
 - Maximum nozzle spacing: 5.5 m¹.
 - Maximum ceiling height: 3 m¹.
- Public space areas:
 - Maximum nozzle spacing: 4.7 m.
 - Maximum ceiling height: 6 m.
- Archives areas:
 - Maximum nozzle spacing: 4 m.
 - Maximum ceiling height: 6 m.
 - Minimum free height above shelves: 2 m.
- Maximum distance from wall: Half spacing.
- Requirements concerning obstructions: See DIOM Manual Section 5.3 Nozzle obstructions.

6. Special Conditions for Use and Installation

SEM-SAFE® shall be installed according to installation details shown in "Standard Construction Details for the product belonging to documentation RISEFR 040 0206".

The manufacturer shall prepare a relevant detailed manual to provide a specification of the system as listed in paragraph 5 if applicable. This manual shall in addition include at least the following:

- Any system constraints crucial to the operation.
- Full functional system description.
- Full installation and commissioning instructions.
- Full operation instructions.
- The maintenance information shall include at least a full maintenance schedule and instructions.
- *Labeling*: For traceability, the product shall be labeled with "AE" as well as the documentation RISEFR 040-0206, and the DIOM Manual shall follow the product.

¹ Tolerance of +10 % is acceptable

7. Basis for the Documentation

This documentation is based on the properties documented in the following reports and drawings:

- Test report RE 04199A dated 2004-12-31 validated 2016-11-15 by DBI.
- Supplement to test report RE 04199B dated 2016-11-24.
- Test report RE 04199C dated 2007-03-07 validated 2016-11-08 by SP Fire Research AS.
- Supplement to test report RE 04199C dated 2016-11-24.
- Memo 20311/0405 Evaluation of tolerances of physical dimensions in fire tests dated 2017-03-02 by SP Fire Research AS.
- Design, Installation, Operation and Maintenance Manual (DIOM), SEM-SAFE® Water Mist Fire Fighting Systems for the protection of Office areas Ordinary Hazard Group 1 (OH1), 2021-11-21.
- EN 14972-1:2020 Fixed fire fighting systems – Water mist systems – Part 1: Design, installation, inspection and maintenance.
- EN 14972-3:2021 Fixed firefighting systems – Water mist systems – Part 3: Test protocol for office, school classrooms and hotel for automatic nozzle systems.
- Danfoss Fire Safety A/S, Drawing no. 109999 Nozzle NO-020100-AE-P-2.75_057-000000.

8. Validity

The validity of this appendix is uniquely linked to the first page of the document with the requirements, conditions and expiration date expressed.

9. Technical Management

Project Manager is Per Arne Hansen and Discipline Manager Documentation is Asbjørn Østnor, RISE Fire Research AS, Trondheim.

Verification

Transaction 09222115557466351208

Document

RISEFR 040-0206

Main document

3 pages

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