

DOCUMENTATION

RISEFR 040-0202

With reference to Requirement Specification RISEFR P-002 – Water mist systems – Hazard Category 1 of 2019-02-25 that refers to the requirement specifications in FM 5560 Approval Standard for Water Mist Systems, Appendix G. RISE Fire Research AS document, based on test reports, evaluations and installation instructions, that this product meets the requirements of EN 14972-1:2020, including Appendix A.

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. 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 040-0202**, 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 040-0202”. The version of the construction details filed at RISE 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 specified in a written agreement with RISE.

First issued: **2019-02-26**. 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 may withdraw this documentation when irregularities or misuse happens, and written instructions are not respected.

Issued: 2024-03-12
Valid until: 2029-04-01



Asbjørn Østnor
Discipline Manager Documentation



Per Arne Hansen
Project Manager Documentation

Appendix 1 to Documentation RISEFR 040-0202 of 2024-03-12

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 ratings:

Table 1: Bulb temperature ratings

Maximum ambient temperature (°C)	Bulb activation temperature (°C)	Bulb colour
27	57	Orange
38	68	Red

4. Fields of Application

SEM-SAFE® HPWM for water mist protection of non-storage occupancies, Hazard Category 1 (HC-1).

5. Properties

SEM-SAFE® has the following specifications:

- *System type and identification:* SEM-SAFE® High Pressure Water Mist System (HPWM) System HC-1 with nozzle I.D.: CR.
- *Occupancies with any restrictions:* Non-storage occupancies and similar fire risks, Hazard Category 1 (HC1).
- *Description of hazards and storage:* Non-storage occupancies, Hazard Category 1 (HC-1).
- *All design parameters:*
 - *Nozzle type and unique identification:* CR (see Figure 1).
 - *Design area of operation:* 72 m².
 - *Number of operating nozzles or area of operation:* Use the spacing parameters determine the number of nozzles required to cover the risk.

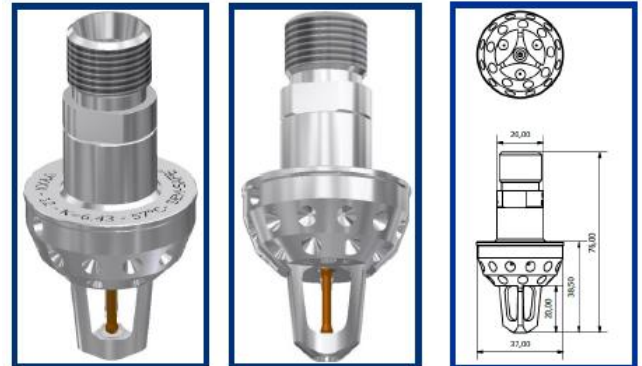


Figure 1: SEM-SAFE® HPWS Nozzle HNDP-0-12-4.79-57 (CR) Light Hazard.

- *Nozzle design pressure:* 60 bar.
- *Minimum discharge time:* 60 min.
- *Flow at design pressure:* 37.1 l/min.
- *Maximum nozzle spacing:* 4.25 m.
- *Maximum ceiling height:*
 - Open space: 5 m
 - Large and small cabin: 2.4 m
- *Maximum distance from wall:* 2.125 m
- *Requirements concerning obstructions:* See DIOM Manual Section 5.5 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 RISE documentation RISEFR 040 0202”.

The manufacturer shall prepare a relevant detailed manual to provide a specification of the system as listed in Item 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 "CR" as well as the documentation RISEFR 040-0202 and the DIOM Manual shall follow the product.

7. Basis for the Documentation

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

- Test of SEM-SAFE® High Pressure Water Mist System FM 5560 Appendix G – Hazard category 1, RISE Fire Research AS report no. RISE report F20372:01, dated 2018-08-30.
- Design, Installation, Operation and Maintenance Manual (DIOM) SEM-SAFE® Water Mist Fire Fighting Systems, Protection of Non-storage hazard category 1 (HC-1) Areas, 2019-07-25 - Rev. no. 2.
- FM 5560 Approval Standard for Water Mist Systems, April 2016 edition. FM Approvals, Apr-2016.

- EN 14972-1:2020 – Fixed Fire Fighting Systems – Water Mist Systems – Part 1: Design, installation, inspection and maintenance.
- Danfoss Semco A/S: Tegning Hazard Drawing no. 117557 SEM-SAFE® HPWS Nozzle HNDP-0-12-4.79-57 (CR) Light Hazard, dated 2012-12-18.

8. Validity

The validity of the appendix is uniquely linked to the first page of the document with the requirements, conditions and time stamps that are presented there.

9. Technical Management

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

Verification

Transaction 09222115557512659976

Document

RISEFR 040-0202-ENG_Rev3

Main document

3 pages

Initiated on 2024-03-12 08:17:27 CET (+0100) by Per Arne Hansen (PAH)

Finalised on 2024-03-19 08:36:16 CET (+0100)

Signatories

Per Arne Hansen (PAH)

per.arne.hansen@risefr.no



Signed 2024-03-12 08:17:58 CET (+0100)

Asbjørn Østnor (AØ)

asbjorn.ostnor@risefr.no



Signed 2024-03-19 08:36:16 CET (+0100)

This verification was issued by Scrive. Information in italics has been safely verified by Scrive. For more information/evidence about this document see the concealed attachments. Use a PDF-reader such as Adobe Reader that can show concealed attachments to view the attachments. Please observe that if the document is printed, the integrity of such printed copy cannot be verified as per the below and that a basic print-out lacks the contents of the concealed attachments. The digital signature (electronic seal) ensures that the integrity of this document, including the concealed attachments, can be proven mathematically and independently of Scrive. For your convenience Scrive also provides a service that enables you to automatically verify the document's integrity at: <https://scrive.com/verify>

