Certificate no.:
TAF00001ZA

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Sprinkler and spray heads

with type designation(s)
MVN-D

issued to
Fireproducts AS
Kristiansand S, **Norway**

is found to comply with
DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021
DNV rules for classification – Ships
DNV offshore standards

Application:

Approved for use as spray heads in conventional fixed pressure water spraying systems.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2025-01-31**
This Certificate is valid until **2030-01-30**.
DNV local unit: **West Norway CMC**

for **DNV**

Approval Engineer: **Helge Bjørnarå**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

"MVN-D",
are nozzles for a deluge type fire-extinguishing system. The system consists of nozzles and section valves in addition to pump unit(s), steel piping, control system as associated equipment.

Nozzles come in k-factors: 17 to 81.
Nozzles come with spray angles: 60° to 160°.

Only the nozzles are type approved by this certificate. Pumps, pipes, couplings, valves and other systems components are subject to case-by-case approval.

Application/Limitation

Approved for use as nozzles in conventional fixed pressure water spraying systems.

The number and arrangement of nozzles shall be to the satisfactory of the class/administration and shall be such as to ensure an effective average distribution at required application rate for the system in question.

Nozzle information:

System type	Nozzle type	k-factor [lpm/bar$^{1/2}$]	Flow [lpm]	Operating pressure at nozzle [bar]	Cover area*, radius [m] (60° / 125° / 160°)	Drawing
Deluge	MVN-D	17.3	20.5 – 35.0	1.4 – 4.1	1.5 / 1.5 / 1.7	MVN-D-0020
Deluge	MVN-D	41.8	49.5 – 84.6	1.4 – 4.1	1.6 / 2.3 / 2.8	MVN-D-0020
Deluge	MVN-D	80.6	95.4 – 163.2	1.4 – 4.1	2.2 / 3.0 / 3.0	MVN-D-0020
* At installation height of 3 meter.						
Nozzles are made of titanium gr2 (TI), stainless steel (SS136), duplex steel (DU), super duplex steel (SDU), bronze (LG2), nickel aluminium bronze (NiAlBr) and brass (BR). Nozzles are to be installed in a pendant (downward) position.						

For all applications:

A. The pumps shall be delivered with product certificate, whereas other system components are to be inspected in accordance with Class Rules (or equivalent standard as specified by the Flag Administration).
B. Redundant pump arrangement is to be approved on a case-by-case basis.
C. Pipes, couplings and other components are regarded as "Class III" piping.
D. The pump unit and section valves shall be installed in a room having ambient temperature between 4 °C and 45 °C.

The following items are to be submitted for approval for each project:

a. System arrangement plans showing routing of pipes, location of nozzles, sections valves, release stations and pump unit.
b. Documentation of power supply and control system.
c. Specification of pipes, section valves, pumps, including drivers and associated components.
d. Pressure drop calculations and water mist spray capacity calculations.
e. Design, installation, operation and maintenance manual.

Installation testing:

- The system is to be cleaned in accordance with routines outlined in maker's system description manual.
- At least 2 sections should be tested with full flow through the nozzles. Manual release of all section valves (without water accepted) shall be carried out.
- Manual start of pumps shall be carried out.
- Alarms at the manned control stations shall be tested.
- Other tests as required by Class Rules (pressure testing of piping, etc.) or a similar standard acceptable to the Flag Administration and according to maker's manual shall be carried out.

Periodical testing:

- The periodical testing shall comply with instructions from flag administration, statutory interpretations and maker's maintenance manual.

Type Approval documentation

Certification in accordance with Class Programme DNV-CP-0338, September 2021.

Testing procedure for the characterization of MVN, HVN, and ADN dated 24 November 2023 from manufacturer.

Component test reports:
Test report No. FP-TA-EN12259-1-SECT_3, Rev. 01, dated 29 January 2024 from manufacturer.

Test report No. FP-TA-EN12259-1-SECT_4 dated 14 April 2023 from manufacturer.
Test report No. FP-TA-EN12259-1-SECT_5.1.1 dated 14 April 2023 from manufacturer.
Test report No. FP-TA-EN12259-1-SECT_5.1.2 dated 14 April 2023 from manufacturer.
Test report No. CCD202400120 dated 16 August 2024 from CRM, Liege, Belgum.
Test report No. REP041301, Rev. A, dated 13 September 2024 from Nemko, Lysaker, Norway.

Drawing No. MVN-D-0020, Rev. 01 dated 14 April 2023 from manufacturer.

Tests carried out
Component testing according to EN 12259-1:1999 + A1:2001 + A2:2004 + A3:2006 as relevant for open nozzles.

Marking of product
The nozzle shall be marked with manufacturer's name or trademark, model number, designation or equivalent marking, k-factor, spray angle, material and year of manufacture.

Periodical assessment
DNV's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNV-CP-0338, Section 4.

Manufactured by:
Fireproducts AS, Kristiansand S, Norway.