Certificate no.:
TAF00001YH

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Foam Fire Extinguishing Liquid

with type designation(s)
vaPUREx AR MARINE 3/3 F-5 #8343

issued to
Fabrik chemischer Präparate von Dr. Richard Sthamer GmbH & Co. KG
Hamburg, **Germany**

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 a low expansion foam forming liquid in approved fixed and mobile fire extinguishing systems.

Approved for use as Type A foam concentrate.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2025-01-24**
This Certificate is valid until **2030-01-23**.
DNV local unit: **Hamburg – CMC North/East**

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
"vaPUREx AR MARINE 3/3 F-5 #8343"
is a synthetic, not fluorinated, alcohol resistant foam concentrate (S-AR).

Application/Limitation
Approved for use as a low expansion, multi-purpose foam forming liquid (Type A) for fixed and mobile fire-fighting systems.

Description	vaPUREx AR MARINE 3/3 F-5 #8343
Nominal mixing ratio with seawater	3 % (hydrocarbon fires and alcohol fires)
Kinematic viscosity (20 °C)	N/A, it is a non-Newtonian liquid
pH value (20 °C)	7.3
Expansion ratio	8.3
Drainage time (25%)	25:30 (min:s)
Volumetric mass/density (20 °C)	1.03 ± 0.02 g/ml
Temperature, storage and usage	-5 °C to 50 °C (23 °F to 122 °F)
Onboard tank / storage material	PE totes, drums or pails.[1)]
Foam use, filling, maintenance, storage, transport, etc. are to be in accordance with the manufacturer's instructions.	

The validity of the certificate is dependent on the compliance of each manufactured product with the prototype which underwent the type approval tests and such compliance shall be stated by the manufacturer.

The storage facilities and piping arrangement onboard the vessel are to be designed and constructed with regard to seawater exposure (where applicable), and the minimum allowed temperature for the foam liquid.

Non-Newtonian, pseudo plastic foam concentrate. This concentrate can require special proportioning equipment.

This approval does not address the foam generating equipment, only the foam concentrate.

The foam concentrate does not contain PFOS.

Each product is to be supplied with its manual for installation, use and maintenance. This shall include requirements for transport and storage, material of foam tank, coating (if applicable) and cleaning procedures.

Periodical controls of foam concentrates stored on board (to be done in accordance with IMO MSC.1/Circ.1312):
- The foam liquid is to be delivered with a declaration of conformity and a declaration of the main characteristics (sedimentation, pH-value, expansion ratio, drainage time and volumetric mass). The declaration will be the basis for the annual condition test (each year after 3 years).

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

Test report No. 20220546/Sth 323 dated 19 October 2022 from MPA Dresden, Freiberg, Germany.

Product data sheet No. PD-8343, Version 05 dated 8 March 2024 from manufacturer.
Material declaration No. MD-8343, Version 01 dated 5 July 2023 from manufacturer.
Safety data sheet No. SD-8343, Version 01 dated 7 July 2023 from manufacturer.

Tests carried out
Tested according to IMO MSC.1/Circ.1312.

Marking of product
The packing is to be marked according to IMO MSC.1/Circ.1312, 3.13 including among other things name and address of manufacturer, type designation, storage/use temperature, production date, expiry date and SHE information.

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.