



Marine & Offshore

Certificate number: 21017/D0 BV

File number: ACI 1702/016/001

Product code: 5503I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Fire Eater A/S

Hillerød - DENMARK

for the type of product

FIXED GAS FIRE EXTINGUISHING SYSTEMS

INERGEN Fire Extinguishing system

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships Part C, Chapter 4
IMO MSC/Circ.848 as amended by IMO MSC/Circ.1267

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 02 May 2028

For Bureau Veritas Marine & Offshore,

At BV FREDERICIA, on 02 May 2023,

Jesper JENSEN

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Fixed gas fire extinguishing system for machinery spaces and cargo pump-rooms - Type "INERGEN".

The system consists in:

- Non-halogenated inert gas, type IG541:

- Trade name: INERGEN
- Composition: 52 % Nitrogen, 40 % Argon, 8 % Carbon Dioxide
- Design Concentration: 46.2 %
- LOAEL: 52 %
- NOAEL: 43 %
- Vapour density at 25°C and 1 atm 1.4 kg/m³

- Seamless steel pressure cylinders with standard sizes :

. 2 l to 140 l pressurized to 20 MPa (200 Bar) or 30 MPa (300 bar) at 15°C

OR

. 2 l, 5 l, 10 l, 20 l, 30 l, 50 l, 80 l and 140 l pressurized to 20 MPa (200 bar) at 15°C or 30 l, 50 l, 80 l and 140 l pressurized at 30 MPa (300 bar) at 15 °C

- Nozzles.

Only the nozzles and the gas concentration to be used for extinction are covered by this certificate.

2. DOCUMENTS AND DRAWINGS :

2.1 - As per the Manufacturer's Manual n° 801371 dated 25.08.2008

2.2 - Ci Manual 2016 FM-UL dated 29.12.2015

3. TEST REPORTS :

Test report E-98097-01, the Supplementary note dated August 5, 1999 and Supplementary note II dated December 9, 1999 as per IMO MSC/Circ.848 issued by DIFT Laboratories, Denmark.

4. APPLICATION / LIMITATION :

4.1 - Only the nozzles, their arrangement and the gas concentration are covered by this certificate.

4.2 - Materials compatibility: piping metallic materials and elastomers shall be suitable for use with INERGEN (as per Manufacturer's recommendation).

4.3 - The following documentation must be submitted for review for review for each separate application: system design and operation principles; capacity calculations; wiring diagram and cable specifications showing cable layout, alarm circuitry and location of the cylinders and of the release station; material specification and dimensions; control arrangement for closure of openings and stop fans; isometric drawings together with pressure loss & emission time calculation; inspection and maintenance procedures; approval documentation of flexible hoses, pressure vessels and components as per applicable regulations.

4.4 - Operating temperature range: from -20°C to +65°C.

4.5 - Installation:

Maximum height of the nozzle above the deck (and between two layers of nozzles)	5 m
Maximum nozzles spacing	8 m

4.6 - In accordance with IMO MSC/Circ.848 Appendix item 3.4.2.3.2 as amended by MSC.1/Circ.1267, the quantity of extinguishing agent should be calculated at the minimum expected ambient temperature using the design concentration based on the net volume of the protected space.

- 4.7 - 85% of the design concentration is to be discharged in 120s or less.
- 4.8 - Minimum extinguishing hold time of 15 min.
- 4.9 - Mechanical ventilation shall be stopped before the system is operating.
- 4.10 - The system is to be designed as per the annex of IMO MSC/Circ.848 and MSC.1/Circ.1267.

On board installation & Maintenance requirements:

- 4.11- The pressure rating of the safety burst disc is to be less than 1.5 x the design pressure.
- 4.12- Suitable warning of the possible products of agent decomposition is to be displayed at the release station and on the access doors to the protected space, the minimum agent hold time as well.
- 4.13- The discharge nozzles are to be so positioned that a uniform distribution of agent is obtained.
- 4.14- On completion of the installation final acceptance of the system is dependant of satisfactory survey.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The "INERGEN" are to be supplied by **Fire Eater A/S** in compliance with the type and the requirements described in this certificate.
- 5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
- 5.3 - BV product certificate is required.
- 5.4 - For information, **Fire Eater A/S** has declared to Bureau Veritas the following production site(s):

Vølundsej 17
3400 Hillerød
DENMARK

- 5.5 - The pressure cylinders are to be covered by a valid type approval certificate issued by the Society.

6. MARKING OF PRODUCT :

The product or packing is to be marked with the manufacturer name, type, designation ,fire-technical rating and Bureau Veritas' Marks

7. OTHERS :

- 7.1- It is **Fire Eater A/S**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
- 7.2- This certificate supersedes the Type Approval Certificate N°21017/C0 BV issued on 20/11/2017 by Bureau Veritas.

*** END OF CERTIFICATE ***