EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00007R4

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

This is to certify:

That the Devices to prevent the passage of flame into the cargo tanks in tankers: detonation flame arresters

with type designation(s)
DFA-2/IIB3, DFA-2.5/IIB3, DFA-3/IIB3, DFA-4/IIB3, UDFA-6/IIB3, UDFA-8/IIB3, UDFA-10/IIB3, UDFA-12/IIB3, EDFA-14/IIB3, EDFA-16/IIB3, EDFA-18/IIB3, EDFA-20/IIB3, EDFA-24/IIB3

Issued to
Prosave Co.,Ltd.
Gimhae-si, Gyeongsangnam-do, Republic of Korea

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2021/1158,**
item No. MED/3.12c. SOLAS 74 as amended, Regulation II-2/4 & II-2/16, IMO Res. MSC.98 (73)-(FSS Code) 15, IMO MSC/Circ.677

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2026-10-13**.

Issued at **Høvik** on **2021-10-14**

DNV local station:
Gimhae Station

Approval Engineer:
Maheshraja Venkatesan

Notified Body
No.: **0575**

for **DNV AS**

Sverre Olav Bergli
Head of Notified Body

NORWEGIAN ACCREDITATION PROD 019

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

Product description

In-line Detonation Flame Arrester (Static) of measurable type with flanged connections according to ASME B16.5 Cl.150, made from materials listed below:

Description	Material
Body	ASTM A216-WCB / A351-CF8 / A351-CF8M / A351-CF3M / A890-4A
Element Housing	ASTM A240-304 / A240-316 / A240-316L
Element	A240-316L
Mesh	ASTM A240-316 / A240-316L
Gasket	PTFE
Element gasket	ASTM A240-304 / A240-316L
O-ring	Viton

Designed according to:
1- **IMO MSC/Circ. 677** (as amended by MSC.1/Circ. 1009 and MSC.1/Circ. 1324) – Revised standards for design, testing and locating of devices to prevent the passage of flame into cargo tanks
2- **ISO 16852:2016** - Flame arresters, Performance requirements, test methods and limits for use

Application/Limitation

The products covered by this certificate may be used as flame arresting in-line-device on tanks carrying apparatus group IIB3 with Maximum Experimental Safety Gap (MESG) equal or greater than 0.65.

Flame arresters covered by this certificate are only to be installed on cargo tanks fitted with inert gas system in accordance with SOLAS Regulation II-2/62.

Flame arresters covered by this certificate are limited to a maximum operational temperature of 60°C.

Model no.	Detonation Type	Connection Size DN (mm)		Max operational pressure, p_0 (bara)	Burn time, t_{BT}
DFA-2/IIB3	2	50		1.1	3
DFA-2.5/IIB3	2	65		1.1	3
DFA-3/IIB3	2	80		1.1	3
DFA-4/IIB3	2	100		1.1	3
UDFA-6/IIB3	2	150		1.1	1
UDFA-8/IIB3	2	200		1.1	1
UDFA-10/IIB3	2	250		1.1	1
UDFA-12/IIB3	2	300		1.1	1
EDFA-14/IIB3	4	350		1.1	10
EDFA-16/IIB3	4	400		1.1	10
EDFA-18/IIB3	4	450		1.1	10
EDFA-20/IIB3	4	500		1.1	10
EDFA-24/IIB3	4	600		1.1	10

Materials and material protection chosen for the specific system shall provide necessary corrosion resistance for the intended medium and environmental conditions.

A copy of the instruction manual shall be kept on board which shall include:
- installation instructions;
- operating instructions;
- maintenance requirements, including cleaning;
- copy of the laboratory report;
- flow test data, including flow rates under both positive and negative pressures, operating sensitivity, flow resistance and velocity, should be provided.

Type Examination documentation

Tests carried out

Short time burning test, Leakage & pressure test, Flow test, Detonation

Marking of product

For traceability to this Type Examination each device is to be marked with:

- Manufacturer's name or trademark
- Name and address of the manufacturer
- Type designation
- Size of the outlet
- Serial number and the year of construction
- Explosion group