



TYPE APPROVAL CERTIFICATE
No. FPE328923CS/001

This is to certify that the product identified below satisfies the requirements of the standard quoted under "Reference standard"

<i>Description</i>	FIXED CLEAN AGENT FIRE EXTINGUISHING SYSTEM FOR MACHINERY SPACES
<i>Type</i>	FIXED CLEAN AGENT FK 5-1-12 FIRE EXTINGUISHING SYSTEM SERIES "MARE-FK" and "MARE-FK EASY"
<i>Applicant</i>	EMME ANTINCENDIO S.R.L. VIA DEL MOLINO 40 - LOC. CORSALONE 52010 Chiusi Della Verna (AR) ITALY
<i>Manufacturer</i>	EMME ANTINCENDIO S.R.L.
<i>Place of manufacture</i>	VIA DEL MOLINO 40 - LOC. CORSALONE 52010 Chiusi Della Verna (AR) ITALY
<i>Reference standards</i>	ISO 9094:2015
<i>Reference documents</i>	Rules for the Type Approval of Fixed Clean Agent Fire-Extinghishing Systems in Machinery Spaces

Issued in **Genoa** on **November 17, 2023**. *This Certificate is valid until* **November 16, 2028**

Davide Campora

RINA Services S.p.A.

This certificate consists of this page and 1 enclosure

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FIXED CLEAN AGENT FK 5-1-12 FIRE EXTINGUISHING SYSTEM SERIES "MARE-FK" and "MARE-FK EASY"

Product description

Fixed clean agent fire-extinguishing system for machinery space with the following main characteristics:

System characteristics			
Components	Trade name	MARE-FK	MARE-FK EASY
	Clean agent container.	One cylinder stored into the protected space upside.	One cylinder stored into the protected space upside down.
	Discharge devices and distribution.	Discharge valve assembled on the cylinder connected by alloy pipes with two discharge nozzles.	Discharge sprinkler valve on the cylinder connected.
System activation		Manual activation with steel wire or remote control/Automatic (68-93 °C).	Manual activation with steel wire or remote control/Automatic (68-93 °C).
Extinguishing agent		Non ozone-depleting fire suppressant Dodecafluoro-2-methylpentan-3-one FK 5-1-12.	
Installation requirements			
FK 5-1-12 quantity (kg)	Max gross volume of the protected space (m ³)	Maximum length pipes (MARE-FK only)	Nozzles (MARE-FK only)
0.80	1.5	2	2
1.60	3.0	2	2
2.70	5.0	2	2
4.00	7.5	2	2
4.50	8.5	3	2
5.30	10	3	2
6.60	12.5	3	2
7.90	15	4	2
9.50	18	5	2
10.50	20	6	2

*pipes made of copper (10x1mm).

1. The system has to be installed, used and maintained in accordance with the manual(s) for installation, use and maintenance listed in the Reference documents.

Field of application

A and B Class fires in unmanned machinery spaces of pleasure vessels having a length not exceeding 24 m and machinery spaces with a gross volume not exceeding 20 m³, to which Directive 2014/90/EU as amended is not applicable.
Temperature range: from -20 °C to +93 °C.

Reference documents

- Technical Manual Plant MT1 02 Rev 2 issued on 20/10/2023 by Emme Antincendio Srl and filed by RINA with n° CSST-21880;
- Layout installation diagram system issued by Emme Antincendio Srl and filed by RINA with n° CSST-21782;
- Nozzle for fixed fire extinguishing system MARE-FK, drawing n° 2163_rev1, issued by Emme Antincendio Srl and approved by RINA with n° CSST-21779;
- Valve for fixed fire extinguishing system MARE-FK, drawing n° EP_1906_D1, issued by Emme Antincendio Srl and approved by RINA with n° CSST-21785;
- Sprinkler Valve for fixed fire extinguishing system MARE-FK EASY, drawing n° 2133-1, issued by Emme Antincendio Srl and approved by RINA with n° CSST-21786.

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FIXED CLEAN AGENT FK-5-1-12 FIRE EXTINGUISHING SYSTEM SERIES "MARE-FK" and "MARE-FK Easy"

Tests carried out

Fire tests n°2023CS013289/001-002-003-004 witnessed and filed by RINA with n° CSST-21783.

Remarks

For vessels classed by RINA :

1. the release device shall be readily accessible and operable;
2. a visual indication of discharge shall be provided;
3. a pre-alarm system shall sound before the system is released (external supply to the system);
4. automatic release of the system, in machinery spaces, where personnel is expected to work, having a gross volume above 15 m³ is not accepted;
5. aentilation openings serving the protected space shall be provided with means of closure operable from outside the protected space.

For vessels certified in accordance with Directive 2013/53/EU in lieu of what in the above items 1) to 5) the systems shall be installed in compliance with the requirements contained in ISO 9094:2015.

Manual release device shall be readily accessible and operable using a maximum force of 100 N. A label showing how to discharge the system shall be provided immediately adjacent to the release device, with the protected space(s) identified. A means of preventing accidental discharge shall be provided.

Maximum agent concentration per net volume is not to exceed the NOAEL (% volume) 10.0;

Maximum agent concentration per net volume is not to exceed the LOAEL (% volume) > 10.0.

Mass produced articles of the aforesaid material are to be marked or labelled with the trade name and the data of the Company to whom this Certificate is addressed. The validity of this 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. Moreover, the Company is fully responsible for ensuring compliance by performing all the necessary checks also in respect of its sub-suppliers. Notwithstanding the above, RINA reserves the right to make any checks it

deems appropriate during production. The validity of this Certificate ceases in the case of amendments to the rules on the basis of which the Certificate was issued.

Genoa 11/17/2023