

TYPE APPROVAL CERTIFICATE
No. FPE027009CS

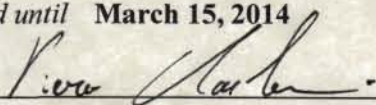


This is to certify that the product identified below satisfies the requirements of the standard quoted under "Reference standard"

| | |
|-----------------------------|--|
| <i>Description</i> | FIXED CLEAN AGENT FIRE EXTINGUISHING SYSTEM FOR MACHINERY SPACES |
| <i>Type</i> | Fireboy-Xintex FES Engineered FM200 Suppression System |
| <i>Applicant</i> | FIREBOY-XINTEX LTD. 10 HOLTON ROAD, HOLTON HEATH BH16 6LT POOLE UNITED KINGDOM |
| <i>Manufacturer</i> | FIREBOY-XINTEX LTD. |
| <i>Place of manufacture</i> | 10 HOLTON ROAD, HOLTON HEATH BH16 6LT POOLE UNITED KINGDOM |
| <i>Reference standards</i> | IMO MSC/Circ.848 and IMO MSC.1/Circ.1267 |
| <i>Reference documents</i> | Rules for the Type Approval of Fixed Clean Agent Fire-Extinghishing Systems in Machinery Spaces |

Issued in **Genoa** on **March 16, 2009**. This Certificate is valid until **March 15, 2014**





RINA
Piero Moncheroni

This certificate consists of this page and 1 enclosure

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Production description

| | |
|----------------------------|--|
| Extinguishing agent | FM 200 |
| Chemical denomination | 1,1,1,2,3,3,3 - heptafluoropropane |
| Chemical formula | CF ₃ CHF ₂ CF ₃ |
| Cylinder capacity: | 8, 16, 32, 52, 106, 147, 180, 343 liters |
| Storage pressure | 25 bars at 21° C (360 PSIG at 70° F) |
| Operating temperature | 0° to 54° C (32° to 130° F) |
| Minimum design concentrate | 8.9 % |
| NOAEL | 9.0 % |
| LOAEL | 10.5 % |
| Assembly cylinder position | Vertical only |

Field of application

Fixed gas fire-extinguishing systems for use in machinery spaces of category A and cargo pump-rooms equivalent to fire-extinguishing systems required by SOLAS Ch II-2, Reg 7.

Reference documents

"Fireboy-Xintex Marine HFC-227ea System, Design & Installation Manual, dated January 30, 2006 and filed by RINA with n° CSST 2459.

Tests carried out

U.S.C.G Research and Development Center, report n°CG-D-02-99, filed by RINA with n° CSST 2462
Underwriters Laboratories Inc. Report n° Ex5104 dated August 17, 2001 and filed by RINA with CSST 2461

Remarks

1. Prior to fitting the relevant system on board, the following details shall be submitted to RINA Head Office for approval for each installation:
 1. schematic arrangement of the system including sizes and material of piping and method of pipe jointing, nozzle types and temperature rating for each location;
 2. capacity calculations;
 3. wiring diagrams and cable specifications;
 4. isometric drawings and pressure loss calculations;
 5. testing/approval documentation of system components.
2. The approval of the system is subjected to the acceptance of the extinguishing agent by the flag Administration



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Mass produced articles (Containers of 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.

Duplicate power release lines shall be arranged to release all bottles simultaneously.

The arrangement of containers and the electrical circuits and piping essential for the release of any system should be such that in the event of damage to any power release line or container valve through mechanical damage, fire or explosion in a protected space, at least the amount of agent needed to achieve the minimum extinguishing concentration can still be discharged having regard to the requirement for uniform distribution of medium throughout the space.

System using only one bottle located inside the protected space, can not be accepted. Such systems shall be designed with the bottle located outside the protected space.

Genoa 16/03/2009

