



CERTIFICATE NUMBER 20-2049545-1-PDA
EFFECTIVE DATE 18-Mar-2021
EXPIRY DATE 29-Oct-2025
ABS TECHNICAL OFFICE Houston ESD - Piping

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

KIDDE-FENWAL INC.

located at

400 MAIN STREET, ASHLAND, MA, United States, 01721

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Fire Extinguishing System

Model: Kidde Fire Systems ECS Advanced Delivery Fire Suppression System Marine Series with HFC-227ea Agent: DIOM - 06-236595-001 October 2014

Endorsements:

Tier: 3 - Type Approved, unit certification not required

This Product Design Assessment (PDA) Certificate remains valid until 29/Oct/2025 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Yongjin Lee

Yongjin Lee, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

KIDDE-FENWAL INC.

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Product: Fire Extinguishing System**Model:** Kidde Fire Systems ECS Advanced Delivery Fire Suppression System Marine Series with HFC-227ea Agent: DIOM - 06-236595-001 October 2014**Endorsements:****Intended Service:**

Marine & Offshore Applications - Machinery Space and Cargo Pump Rooms.

Description:

Total Flooding Clean Agent HFC-227ea Engineered Fire Suppression System.

Rating:

Ratings to be in accordance with Manual P/N 06-236595-001.

Service Restriction:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

The Type Approval only covers the individual control, activation, distribution, and alarm components as listed in document 06-236595-001 October 2014; Complete details for each HFC-227ea (FM-200) Fire Suppression System installation must be submitted to an ABS Technical Office for review and approval and are to include the following:

- a) When calculating the net volume of a protected space, the net volume should include the bilge volume, the volume of the casing and the volume of the free air contained within the air receivers that may in the event of a fire be released into the protected space.
- b) 95% of the extinguishing agent is to be discharged in 10 seconds.
- c) System schematic and arrangement drawings indicating compliance with 4-7-3/3, 4-7-3/3.11 of the Marine Vessels Rules; 5-2-3/3, 5-2-3/8 of the MOU Rules. SOLAS Ch. II-2/Reg.10.4 and IMO MSC/Circ. 848 as amended by MSC.1/Circ. 1267; Control arrangement and location of release boxes as per 4-7-3/3.11.4 (c) of the Marine Vessels Rules;
- d) Capacity calculations in accordance with Rules requirements (Minimum concentration shall not be less than 8.7% for USCG approved applications protecting machinery spaces, and otherwise in accordance with Table 3-1 of document 06-236595-001 of October 2014.
- e) Complete Bill of materials (including shipyard pipework) as per 4-7-3/3.11.3 of the Marine Vessels Rules.
- f) Storage arrangements for the agent cylinders indicating compliance with MVR 4-7-3/3.11.4 (a) and SOLAS Ch. II-2/Reg.10.4.3; The temperature of the cylinder storage area is to be between 32°F and 130°F. Further the storage room is to be in accordance with 4-7-3/3.1.9 of the Marine Vessels Rules;
- g) Control arrangements for closing all openings and stopping of ventilation fans;
- h) An audible and visual pre-discharge alarm is to be provided in accordance with MVR 4-7-3/3.1.5 and paragraph 6 of IMO MSC/Circ.848 as amended by MSC/Circ.1267 as per 4-7-3/3.11.4 (b) of the Marine Vessels Rules.
- i) All piping, electrical and mechanical components part numbers are to be listed in the "Kidde Fire Systems ECS Advanced Delivery Fire Suppression System Marine Series with FM200 Agent - Design, Installation, Operation and Maintenance for Marine" 06-236595-001 of October 2014;
- j) All components part numbers are to be as listed in the Design, Installation, Operation and Maintenance Manual.
- k) ABS Certification is to be provided for each cylinder, except for cylinders, means pilot cylinders and other agent cylinders which are constructed, tested and certified as per Marine Vessels Rules 4-4-1/1.11.4. It means, other certificate such as TPED or DOT, traceable to the cylinder's serial number, is accepted.
- l) Acceptance of the agent by the appropriate Flag Administration
- m) For installations not governed by SOLAS, acceptance by the Flag Administration of the SOLAS compliant storage of extinguishing medium within the protected space, if applicable.

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Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. The scope of Type Approval is to comply with MSC.1221 dated 11 December 2006.
3. The arrangement of the controls is to be in accordance with 4-7-3/3.11.4 (c) of the Marine Vessels Rules. When this system is installed for automatic release, the conditions are in accordance with 4-7-3/3.11.4(c) of Marine Vessels Rules are to be met and verified by the attending surveyor.
4. For US Flag Vessels: Systems must have releasing stations consisting of one control to operate the stop valve to the protected space and a second control to release at least the required amount of agent. These two controls must be located in a box or other enclosure clearly identified for the particular space. In addition to the above, automatic discharge arrangements may be used for spaces having a gross volume less than 6,000 cubic feet. However, automatic discharge is required for spaces having a gross volume less than 6,000 cubic feet where the agent is stored in the protected space.
5. USCG does not allow Electrically Triggered Detection & Control System. USCG requirements for Storage inside small Spaces (6000 cu.ft. and smaller) include Mechanical Rate of Rise Detection, Automatic Activation, additional Mechanical Activation requiring 2 Actions, and readily Accessible Horizontal Means of Escape.

Notes/Drawing/Documentation:

Drawing No. P/N 06-236595-001, dated October 2014, Kidde Fire systems ECS advanced delivery fire suppression system Marine Series with FM-200 Agent Design, Installation, Operation and Maintenance Manual,
Drawing No. Kidde Fire Systems ECS Suppression System Marine Series with FM-200 Agent Design, Installation, Operation and Maintenance manual;
Drawing No. UL Report File EX4674, dated 3 Mar. 2005, Special Service; Investigation of HFC-227ea ADS Clean Agent Extinguishing System Units, Marine;
Drawing No. UL Report File EX4674, dated 8 Mar 2005 Report on Clean Agent Extinguishing System Units, Marine (GOYW);
Drawing No. UL Report File EX4674, dated 5 Aug. 2002. Revised 27 June 2012 - Report on Clean Agent Extinguishing System Units;
Drawing No. P/N 90-FM200M-130, dated February 2004, ADS Series Engineered Fire Suppression Systems, Software Manual Version 3.02. Kidde Fire Systems.
Drawing No. 06-237577-001, dated May 2018, Addendum to Design, Installation, Operation, and Maintenance Manuals Covering Modifications to Control Head.
Drawing No. 06-236595-001_screen;
Drawing No. 06-237707-501, Addendum - Nitrogen Driver Supervisory Pressure Switch, Marine, dated August 2020, Rev AA, Pages: 10
Drawing No. 06-237784-001, 2" and 3" Valve Burst Disc Harmonization Addendum, dated August 2020, Rev AA, Pages: 12
Drawing No. 06-236595-003, Addendum, KFS, LLI, FM-200, ADS, Marine, dated June 2020, Rev AA, Pages: 16
Drawing No. 06-236595-004, Addendum – 450 lb Cylinder, ADS, HFC-227ea, Marine, dated August 2020, Rev AA, Pages: 22
Drawing No. 06-237798-001, Addendum, KFS, Marine, 2" EI-Check Valve, dated October 2020, Revision: AA, Pages: 8
Drawing No. 06-237738-001, ADS Discharge Nozzle Addendum, dated January 2020, Rev AA, Pages: 12
Drawing No. 06-237761-001, 3" Valve Addendum, dated January 2020, Rev AA, Pages: 6
Drawing No. 06-237766-001, 1 1/2" and 2" Flexible Discharge Hose Addendum, dated January 2020, Rev AA, Pages: 8
Drawing No. 06-237775-001, Manifold Y Fitting Addendum, dated May 220, Rev AA, Pages: 8
(Note: As per Kidde-Fenwal Inc's request, the revision numbers have been taken from the last page of the documents.)

Terms of Validity:

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STANDARDS

ABS Rules:

The Rules for Conditions of Classification, 2020 Marine Vessel Rules:1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

2020 Rules for Building and Classing Marine Vessels 4-7-3/3.11, 4-7-3/3.1.5, 3-7-3/3.1.9, 4-7-3/Table 2

The Rules for Conditions of Classification - Offshore Units and Structures, 2020 Mobile Offshore Units Rules: 1-1-4/9.7, 1-1-A2, 1-1-A3 which covers the following:

2020 Rules for Building and Classing Mobile Offshore Units 5-2-3/8

National:

NA

International:

SOLAS Reg. II-2/10.4 (2020 Consolidated Edition);

FSS Code Chapter 5 (2015 Edition);

IMO MSC/Circ.848 as amended by MSC.1/Circ.1267 dated 4 June 2008;

Government:

US Coast Guard Approval No: 162.161/7/0, Issued: 10 August 2017 Expires: 10 August 2022

EUMED:

NA

OTHERS:

NA