



CERTIFICATE NUMBER	24-2510408-PDA
EFFECTIVE DATE	19-Mar-2024
EXPIRY DATE	18-Mar-2029
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 Suppression System
Model: ECS Advanced Delivery Fire Suppression System with 3M Novec 1230 and Fluoro-K
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 18/Mar/2029 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


John Vincent Bog-Acon Ulep, Senior Principal Engineer

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)

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Tier: 2 - PDA Issued

Product: Fire Suppression System**Model:** ECS Advanced Delivery Fire Suppression System with 3M Novec 1230 and Fluoro-K**Endorsements:****Intended Service:**

Marine and Offshore Applications - Machinery Space and Cargo Pump rooms.

Description:

ECS Advanced Delivery Fire Suppression System with 3M Novec 1230 and Fluoro-K
Equipment comprising High Pressure Cylinders, Valve Assembly, System Actuation Units, Nozzles & associated
Equipment.

Rating:

Ratings are in accordance with Kidde Fire Systems ECS Advanced Delivery Fire Suppression System Marine Series
with Fluoroketones Part No. 06-237257-001 issued Dec 2022, Rev. AC.

- 1) The Minimum Design Concentration: Class A, 4.5%; Class B, 5.85%; Class C, 4.73%.
- 2) Maximum Fill Density of Agent Storage: 70 lb/ft³ (1121 kg/m³).
- 3) Cylinder Pressure at 70°F (21°C): 360 psi (27.92 bar).
- 4) Maximum Coverage Radius: 47.5 ft (14.48 m) for 180° nozzles and 30 ft (9.14 m) for 360° nozzles.
- 5) Maximum Nozzle Height for a Single Row of Nozzles: 18.5 ft (5.64 m).
- 6) Minimum Ceiling Height: 12 in (305 mm).
- 7) Kidde Flow Calculation Software is the only method to be used for Flow Calculations.
- 8) System Operating Temperature: 32°F to 130°F (0°C to 54°C).

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.

1. This Type Approval only covers the individual control, activation, distribution, and alarm components as listed in document 06-237257-001, Dec 2022, Rev. AC. Complete details for each 3M Novec 1230 and Fluoro-K Fire Suppression System installation must be submitted to an ABS Technical Office for review and approval and are to include the following:

- a) System schematic and arrangement drawings indicating compliance with 4-7-3/3, 4-7-3/3.11 of the Marine Vessel Rules; 5-2-3/8 of the Mobile Offshore Unit Rules; SOLAS Ch. II-2/Reg.10.4 and IMO MSC/Circ. 848 amended by IMO MSC.1/Circular 1267.
- b) Control arrangement and location of release boxes as per 4-7-3/3.11.4(c) of the Marine Vessel Rules.
- c) Capacity calculations in accordance with approved 3M Novec 1230 and Fluoro-K (manual) requirements.
- d) Complete Bill of materials (including shipyard pipe work) as per 4-7-3/3.11.3 of the Marine Vessel Rules.
- e) Storage arrangements for the agent cylinders indicating compliance with 4-7-3/3.11.4(a) of the Marine Vessel Rules 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 Vessel Rules.
- f) Control arrangements for closing all openings and stopping of ventilation fans;
- g) An audible and visual pre-discharge alarm is to be provided in accordance with 4-7-3/3.1.5 of the Marine Vessel Rules 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 Vessel Rules.
- h) 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 Fluoroketones Fire Protection Fluid - Design, Installation, Operation and Maintenance Manual" P/N 06-237257-001 Dec 2022, Rev. AC..
- i) All components part numbers are to be as listed in the design, installation, operation and maintenance manual.
- j) It should be noted that Novec 1230 or Fluoro-K is not for the protection of ships cargo holds.

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2. Documentation verifying design, fabrication and inspection in accordance with DOT Spec. 4BW-500 of each 3M Novec 1230 and Fluoro-K agent cylinder, is to be made available to the Surveyor attending installation; Refer to 4-4-1/1-11.4 of the ABS Marine Vessel Rules & USCG Certificate No. 162.161/14/0.
3. Acceptance of the agent by the appropriate Flag Administration.
4. 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.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. The arrangement of the controls is to be in accordance with 4-7-3/3.11.4 (c) of the Marine Vessel Rules. When this system is installed for automatic actuation, it is not permitted when the protected space is normally accessed by personnel. If the protected space is permanently unmanned, except for repairs or maintenance, automatic actuation may be allowed in addition to manual actuation provided the conditions listed on 4-7-3/3.11.4(c) of the Marine Vessel Rules are to be complied with.
3. For US Flag Vessels: Systems are to 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 are to 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 subject to conditions in 46 CFR 95.16.
4. Attached Addendum "Addendum to Design, Installation, Operation, and Maintenance Manuals Covering Mods to Control Head" shall be referenced which advises on the corresponding replacement control heads for those listed in "Kidde Fire Systems ECS Advanced Delivery Fire Suppression System Marine Series with 3M Novec 1230 and Fluoro-K Fire Protection Fluid - Design, Installation, Operation and Maintenance Manual" P/N 06-237257-001 of Dec 2022, Rev. AC

Notes/Drawing/Documentation:

- Drawing No. 06-237256-004, Kidde Fire Systems ADS Fire Suppression System Flow Calculation Software User's Guide, Revision: AB, Pages: 1
- Drawing No. 06-237257-001, Kidde Fire Systems ADS Fire Suppression System Marine Series for use with Fluoroketone Fire Suppress, Revision: AC, Pages: 1
- Drawing No. 06-237914-001, Orifice Fitting Addendum for Kidde Fire Systems ADS™ Fire Suppression Systems Marine Series, Revision: AB, Pages: 1

Terms of Validity:

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STANDARDS**ABS Rules:**

2024 Rules for Conditions of Classification, 1A-1-4/7.7, 1A-1-A3,1A-1-A4, which covers the following:
2024 Rules for Building and Classing Marine Vessels: 4-7-3/3.11, 4-7-3/3.1.5, 4-7-3/3.1.9, 4-7-3/Table 2

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2024 Rules for Conditions of Classification, Offshore Units and Structures, 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:

2024 Rules for Building and Classing Mobile Offshore Units: 5-2-3/8

National:

NFPA 2001 (2018 Ed.), UL 2166 (2017)

International:

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

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

FSS Code Chapter 5 (2015 Edition)

Government:

USCG Approval No. 162.161/14/0 dated 17 July 2023, Expiry date 17 July 2028.

EUMED:

NA

OTHERS:

NA