Certificate No: LR21304102SF
Issue Date: 15/06/2021
Expiry Date: 14/06/2026

Certificate Of Fire Approval

This is to certify that the product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	**Kidde-Fenwal**
Address	400 Main Street, Ashland, MA, 01721, United States
Type	Fixed Extinguishing System For Protection Of Deep Fat Cooking Equipment
Description	Fixed Fire Extinguishing System – Type: Kidde Fire Systems “WHDR-125” and “WHDR-260” Wet Chemical System for the Protection of Galley Deep-Fat Cooking Equipment
Trade Name	Kidde “WHDR-125” and “WHDR-260” Wet Chemical based Deep Fat Fryer Fixed Fire Extinguishing Systems
Specified Standard	ISO 15371: 2015 SOLAS, Chapter II-2, Regulation 10.6.4.1

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document and its supplementary Type Approval Terms and Conditions form part of this Certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Saji Abraham

Surveyor to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Certificate No: LR21304102SF
Issue Date: 15/06/2021
Expiry Date: 14/06/2026
Reference: UKITSO/FIRE/TA/ WP43528362/ PRJ11100322926

DESIGN APPRAISAL DOCUMENT

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21304102SF

This Design Appraisal Document forms part of the Certificate.

This Certificate is a Renewal of Certificate Number SAS F160176/M2

EXAMINED DOCUMENTATION
TEST REPORTS

Danish Institute of Fire and Security Techjnology, Jernholmen 12, DK-2650 Hvidovre, Denmark, Fire Test Report No: PEO10011A dated 15 October 2015 and Validation Letter PEO10011A dated 29 March 2016.

Report dated 11 October 2017, for Nozzle Foil Seal Burst Test carried out under the witness of a Lloyd's Register surveyor on 10 November 2017.

Underwriters Laboratory (UL) test report no: EX3559 dated 12th October 1995 and renewed on 30th April 2020 (Pages T21-1&2) for a 500 Cycle Test for an alternative valve stem and O-ring configuration for the Pre-engineered valve assembly.

CONDITIONS OF CERTIFICATON

1. The system must be designed for compliance with SOLAS 2009, Chapter II-2, Regulation 10.6.4.1. and ISO 15371:2015
2. For use on deep fat fryers with a single vat of maximum cooking area 495mm wide x 641mm long = 0. 32m^2. The capacity and arrangement of the spray nozzles is to be verified against the specifications of the deep fat cooking installation and shall be located as denoted in GENERAL NOTES
3. All nozzles must be fitted with a means of preventing the ingress of grease vapours
4. Arrangement drawings and calculations are to be submitted for acceptance in each case where it is proposed to install this system. All principal components of the system are to be identified, with their location in relation to the deep fat cooking installations being indicated
5. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype

GENERAL NOTES

1. This type approval is restricted to the arrangement of the nozzles only; approval of ancillary components is to be carried out at the design stage and suitable evidence of their approval such as Type Approval certificates are to be provided to the attending surveyor.
2. The nozzles are to be made of brass or stainless steel and are to be fitted with protective foil seal caps.
3. Maximum surface area of deep fat fryer tested: 495mm wide x 641mm long = 0. 317m^2. [Total appliance area (including drip board): 495mm wide x 641mm long = 0. 317m$^{2.}$
4. Maximum fry tank capacity: 31 litres.

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21304102SF

5. Nozzle part no: "87-120012-001", marking "F" with Flow rate 110 ml/s. Minimum and Maximum height of the nozzle above the fryer is 762mm and 1270mm respectively. A single nozzle is to be provided for each vat, located at the centre over the cooking area. The nozzles are to be installed in accordance with Manufacturer's system manual.

6. System operating pressure range (determined based on system pressures used during fire extinguishing tests and splash tests): 1.03Mpa or 150psig (corresponding to minimum operating temperature -17.8 °C or 0 °F) up to 1.33 MPa or 193 psig (corresponding to maximum operation temperature 48.8 °C or 120 °F)

7. The system is actuated by a Nitrogen gas cartridge, p/n 87-120043-001, with a working temperature between -17.8 °C and 48.8°C. The agent storage container is pressurised at 21°C = 12.1 bar (175 psig).

8. WHDR-125 system is charged with 5.033 litres of wet chemical agent; WHDR-260 system is charged with 10.068 litres of wet chemical agent. For both systems, the wet chemical agent used is "APC Wet Agent" manufactured by Kidde-Fenwal, USA.

9. Piping shall be made of stainless steel having a minimum grade of 304L, pipe size of ½" NPT or schedule 40 black steel pipe, with a minimum and maximum pipe length of 4 m and 7.87 m for WHDR-125 system and minimum and maximum pipe length of 4.7 m and 18.4 m for WHDR-260 system.

10. When fitted in a pressure piping system that is essential for the safety of the vessel, valves and other piping system components having working pressures exceeding 7 bar and all pumps and any independent power units are to be constructed under survey. Additionally, the system pipe work, including flexible hoses are to be LR approved, in accordance with Lloyd's Register Rules, Part 5.

11. The storage system containers and associated pressure components are to be designed and tested to codes of practice recognised by Lloyd's Register, indicating that they can withstand the pressure expected in service, giving regard to their installed location.

12. For cylinder head valves or actuators or other components of marine safety critical systems, which use retainer screws or similar arrangements for torque setting or other critical applications that are likely to change from its set position due to vibration, thus adversely affecting system functionality:
    a) Screwed fastenings that are subject to vibration require a locking device to prevent them working loose.
    b) If stroke length is determined by external stroke end stops, means shall be provided for locking the adjustable end stops.
    c) For critical operations, positive locking arrangements are to be utilised.

13. The deep-fat cooking equipment must be fitted with a primary and back-up thermostat with an alarm to alert the operator in the event of failure of either thermostat.

14. Activation of the system must:
    - Shut off power to the Deep-Fat Cooking Equipment being protected by such system.
    - Initiate an audible alarm within the space containing the Deep-Fat Cooking Equipment being protected.
    - Initiate an audible and visual alarm at the continuously manned control station when fitted as part of the automatic sprinkler, fire detection and fire alarm system.

15. The system may be activated either manually or be automatic; heat detectors using glass bulb or fusible link type activation devices manufactured to a suitable standard may be accepted. Any other types of heat detection devices must be separately approved by Lloyd's Register.

DESIGN APPRAISAL DOCUMENT

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21304102SF

16. The controls for manual operation of the fire extinguishing system must be clearly labelled for ready use by the crew.
17. Construction details and constituent components of the system are to be as given in Installation, Operation and Maintenance Manual P/N 87-122000-001 dated April 2009, which shall be provided with each extinguishing system unit or made available upon request, in accordance with ISO 15371:2015. (Note: The Design Installation Manual is for reference only; system installation to be in accordance with the conditions of certification and general notes and to the satisfaction of the design plan approval authority and the attending surveyor. Additionally, where differences exist between the Manual and the Certificate, the information in the Certificate must be considered correct and applied).
18. On completion of the installation final acceptance of the system is dependent on satisfactory survey and testing in accordance with the manufacturer's design manual.
19. The certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products, whether manufactured by themselves or their licensee manufacturers, if agreed by Lloyd's Register, are fully compliant with the relevant statutory regulations and Lloyd's Register Class rules as applicable and designed, manufactured and installed to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties.

PLACE OF PRODUCTION

Kidde-Fenwal, Inc.
400 Main St.
Ashland, MA 01721
United States of America

Saji Abraham
Senior Specialist
Statutory Fire & Safety
Southampton Technical Support Office, Marine & Offshore
Lloyd's Register EMEA

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).