



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 21/DEC/2014. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 15/JUL/2019 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Water Mist, Fire Fighting System
Model Name(s): FlexiFOG micro

Presented to:
AUTRONICA FIRE AND SECURITY AS
STALSBERGVEIEN 9
NOTTEROY
Norway

Intended Service: Fire suppression system for Accommodation, Public Space and Service Areas

Description: FlexiFOG water mist fire extinguishing system is an automatic system capable of immediate operation at all times. The system is a low-pressure system of the wet pipe type, with a nominal working pressure of 9 - 16 bar. The nominal stand-by pressure in the system is 8 bar and the jockey pump will start automatically if the pressure drops below 8 bar and build up more pressure on the system. Each protected area could be divided into several sections, and each section is covered with FlexiFOG nozzles complete with a heat sensitive element with fast response character at a nominal release temperature of 57#C.

Tier: 3

Ratings: Cabin: Nozzle type: CA01 Nozzle Part number: 116-900800.XX (.XX indicates temperature rating, .57 = 57#C, .93 = 93#C, .141 = 141#C) Coverage: 20 m² Distance to bulkhead: Centre in cabin Nominal temperature rating: 57#C (Nominal temperature may be increased by not more than 30#C where high ambient temperatures might be expected such as drying rooms, galleys etc.) Nozzle Kv: 14.14 Ceiling height: 2.50 m Operating pressure: 9 bar to 16 bar +/- 5% Corridor: Nozzle type: CO01 Nozzle Part number: 116-900810.XX (.XX indicates temperature rating, .57 = 57#C, .93 = 93#C, .141 = 141#C) Coverage: c/c 3.5 m Distance to bulkhead: Centre in corridor. Max width 1.5 m Nominal temperature rating: 57 deg C (Nominal temperature may be increased by not more than 30#C

where high ambient temperatures might be expected such as drying rooms, galleys etc.) Nozzle Kv: 10.44 Ceiling height: 2.50 m Operating pressure: 9 bar to 16 bar +/- 5% Public area, ceiling height 2.5 m: Nozzle type: PS01 Nozzle Part number: 116-900820.XX (.XX indicates temperature rating, .57 = 57#C, .93 = 93#C, .141 = 141#C) Coverage: 4.00 m x 4.00 m Distance to bulkhead: 1.5 m to bulkhead Nominal temperature rating: 57#C (Nominal temperature may be increased by not more than 30#C where high ambient temperatures might be expected such as drying rooms, galleys etc.) Nozzle Kv: 11.00 Ceiling height: 2.50 m Operating pressure: 9 bar to 16 bar +/- 5% Public area, ceiling height 5.0 m: Nozzle type: PS02 Nozzle Part number: 116-900830.XX (.XX indicates temperature rating, .57 = 57#C, .93 = 93#C, .141 = 141#C) Coverage: 4.00 m x 4.00 m Distance to bulkhead: 1.5 m to bulkhead Nominal temperature rating: 57#C (Nominal temperature may be increased by not more than 30#C where high ambient temperatures might be expected such as drying rooms, galleys etc.) Nozzle Kv: 11.50 Ceiling height: 5.00 m Operating pressure: 9 bar to 16 bar +/- 5% Storage: Nozzle type: ST01 Nozzle Part number: 116-900840.XX (.XX indicates temperature rating, .57 = 57#C, .93 = 93#C, .141 = 141#C) Coverage: 4.00 m x 4.00 m Distance to bulkhead: 2.00 m to bulkhead Nominal temperature rating: 57#C (Nominal temperature may be increased by not more than 30#C where high ambient temperatures might be expected such as drying rooms, galleys etc.) Nozzle Kv: 21.67 Ceiling height: 2.50 m Operating pressure: 9 bar to 16 bar +/- 5%

Service Restrictions:

1) Each shipboard installation is to be in full compliance with the approved FlexiFOG Water Mist Fire Extinguishing System- Accommodation, Wet Pipe System Design, Operation and Maintenance Manual according to MSC Res. 265(84). 2) 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.

Comments:

1) For each shipboard installation, copies of the following documentation are to be submitted to the appropriate ABS Plan Review Office for review for compliance with the applicable requirements of ABS Rules, SOLAS, IMO Resolutions and the design and installation aspects of the system. a) Manual, containing Operations Manual- Mechanical and Electrical, Service/Parts Manual and Installation Manual. b) General Arrangement Plan of the ship, indicating the location of the pumping unit, locations of the section valves, FlexiFOG nozzle quantities and types, distribution piping layout and piping sizes, materials and thickness. c) Electrical control system logic diagram. d) Details regarding the proposed fresh water, sea water connections to the Flexi-FOG system. e) Documentation verifying that the pressure vessels (CO2 cylinders, N2 cylinders and fresh water tank) comply with section 4-4-1 of ABS Rules. f) Calculations indicating that the pumps and distribution piping are appropriately sized, and that the required pressure and flow will be available at all FlexiFOG nozzles. 2) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes / Documentation:

1) FlexiFOG Water Mist Fire Extinguishing System- Accommodation, Wet Pipe System Design, Operation and Maintenance Manual according to MSC Res. 265(84). 2) FlexiFOG Water mist nozzle datasheet 9008XX-PDS-B. 3) Danish Fire Laboratories, Fire Test Report No: 071004-15, for cabin and corridor. 4) Danish Fire Laboratories, Fire Test Report No: 081106-24, for public space. 5) Danish Fire Laboratories, Fire Test Report No: 080912-22, for shopping and storage. 6) Danish Fire Laboratories, Component Test report No: 081013-01. 7) SP Test Report reference F714873. 8) This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

Term of Validity:

This Product Design Assessment (PDA) Certificate 09-LD412450/2-PDA, dated 16/Jul/2014 remains valid until 15/Jul/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be

to an agreement between the manufacturer and intended client.

ABS Rules:

The Rules applicable to this assessment are: ABS 2014 Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-7-2/3.1.2, 4-7-2/3.3.2, 4-7-3/9, 2014 Offshore Units and Structures Rules 1-1-A2, 1-1-A3.

National Standards:

International Standards:

IMO Resolution A. 800(19) as amended by Resolution MSC. 265(84); SOLAS Regulations II-2/7.5.3.2, II-2/7.5.5.2, II-2/10.6.1, II-2/10.6.2

Government Authority:

EUMED:

Others:

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	09-LD412450/2-PDA	16/JUL/2014	15/JUL/2019



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.