

Certificate

EC TYPE-EXAMINATION (MODULE B) CERTIFICATE No. BSI/A.1/3.46/560436

This is to certify that BSI did undertake the relevant type approval procedures for the equipment identified below which was found to be in compliance with the Fire protection requirements of Marine Equipment Directive (MED) 96/98/EC, as amended, last amended by Directive 2009/26/EC, subject to any conditions in the schedule attached hereto.

| | |
|-----------------------------|---|
| Applicant Address | FirePro Systems Limited 6 Koumandarias & Spyrou Araouzou Street Tonia Court No2, 6th Floor Limassol 3036 Cyprus |
| Manufacturer Address | FirePro Systems Limited Ayios Athansios 4 Falea Street Limassol District Cyprus |
| Annex A1 Item | A.1/3.46 - Equivalent fixed gas fire extinguishing systems for machinery spaces (aerosol systems) |
| Product Type | Aerosol Fire Extinguishing System Units with dry condensed extinguishing agent, Fire Class A & B |
| Product Description | FP20S, FP40S, FP80S, FP100S, FP200S, FP500S, FP1200, FP2000, FP3000 & FP5700. |
| Specified Standard | IMO MSC/Circ.1007, MSC/Circ 1270 |

The attached schedule of approval forms part of this certificate.

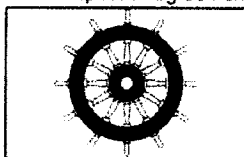
| | | |
|----------------|----------------|---|
| First Issued: | 20 August 2010 | For and on behalf of the BSI, a Notified Body for the above Directive |
| Date of issue: | 23 March 2012 | Notified Body Number 0086. |
| Expiry date: | 19 August 2015 | |



Gary Fenton, Global Assurance Director

Notes:

- (i): This BSI/A.1/3.46/560436 issue 2 certificate will not be valid if the manufacturer makes any changes or modifications to the approved equipment, which have not been notified to, and agreed with the notified body named on this certificate.
- (ii): Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply.
- (iii): "The Mark of Conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase module (D) of ANNEX B of the Directive is fully complied with and controlled by a written inspection agreement with a notified body."



0086/vv

- iv) "Wheelmark" Format yy Last two digits of year mark affixed.
0086 Notified Body number undertaking surveillance module

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Certificate

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Date: 23 March 2012

SCHEDULE OF APPROVAL

Product Specification

- FP20S : Aerosol generating fire extinguishing system unit with 20g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, Fire Class A & B
- FP40S : Aerosol generating fire extinguishing system unit with 40g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP80S : Aerosol generating fire extinguishing system unit with 80g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP100S : Aerosol generating fire extinguishing system unit with 100g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP200S : :Aerosol generating fire extinguishing system unit with 200g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP500S : :Aerosol generating fire extinguishing system unit with 500g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP1200 : :Aerosol generating fire extinguishing system unit with 1200g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP2000 : :Aerosol generating fire extinguishing system unit with 2000g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP3000 : :Aerosol generating fire extinguishing system unit with 3000g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B
- FP5700 : :Aerosol generating fire extinguishing system unit with 5700g dry condensed extinguishing agent, thermal activation by thermocord at 172 °C, electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec), heating element with 2.3 ohm resistance , Fire Class A & B

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SCHEDULE OF APPROVAL

Approval Documentation that forms part of this certification:

| Drawing No. | Rev./ Issue No. | Date | Title |
|-------------|-----------------|------------|---|
| C20ASS | 0 | 17/01/2009 | FP20S – General Assembly Drawing |
| C40ASS | 0 | 16/01/2008 | FP40S – General Assembly Drawing |
| C80ASS | 0 | 16/01/2008 | FP80S – General Assembly Drawing |
| C1AS | 2 | 29/05/2009 | FP100S – General Assembly Drawings |
| C2AS | 2 | 25/05/2009 | FP200S – General Assembly Drawings |
| C5AS | 2 | 16/02/2009 | FP500S – General Assembly Drawings |
| B12AS | 0 | 01/01/2008 | FP1200 – General Assembly Drawing |
| B12EH | 0 | 01/01/2008 | FP1200 – External Housing Construction Drawing |
| B12IH | 0 | 01/01/2008 | FP1200 – Internal Housing Construction Drawing |
| B12IAS | 0 | 01/01/2008 | FP1200 – Internal Assembly Drawing |
| B20AS | 0 | 01/01/2008 | FP2000 – General Assembly Drawing |
| B20IAS | 0 | 01/01/2008 | FP2000 – Internal Assembly Drawing |
| B30AS | 0 | 01/01/2008 | FP3000 – General Assembly Drawing |
| B30IAS | 0 | 01/01/2008 | FP3000 – Internal Assembly Drawing |
| B2030EH | 1 | 01/01/2008 | FP2000 & FP3000 – External Housing Construction Drawing |
| B2030IH | 0 | 01/01/2008 | FP2000 & FP3000 – Internal Housing Construction Drawing |
| B122020BRKT | 0 | 01/01/2008 | FP1200 – Mounting Bracket |
| B2030BRKT | 0 | 01/01/2008 | FP2000 & FP3000 – Mounting Bracket |
| B57EH | 1 | 01/10/2008 | FP 5700 – External Housing Construction Drawing |
| B57IH | 0 | 01/01/2008 | FP5700 – Internal Housing Construction Drawing |
| B57IAS | 0 | 01/01/2008 | FP5700 – Internal Assembly Drawing |
| B57BRKT | 0 | 01/01/2008 | FP5700 – Mounting Bracket |
| AELACT | 0 | 01/01/2008 | Electrical Activators for all Models where fitted |

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SCHEDULE OF APPROVAL

Approval Documentation that forms part of this certification:

| Supporting Documentation | | | |
|--------------------------|---|------------|---|
| Technical Dossier | 0 | 22/07/2010 | SMO Ref 7498123– Electronic copy of the Technical file covering all models listed on page 1 |
| Technical Dossier | | Feb 2012 | Updated to include minor changes to some drawings, Efectis Witness Test Report and Updated KIWA Certificate |
| Reports & Certificates | - | - | KIWA Certificate K21477/08 01/04/2010 UL Test Report, Project Ref 05CA05359, File EX6960 USCG Report CG-D-03-06 Russian Maritime Register of Shipping, Type approval Certificate Ref 10.80012.180 dated 11/06/2010 for MCS 1270 Hughes Associates INC Analysis Report dated Nov 2004 & 15/01/2009 |
| | - | 06/08/2010 | Technical Dossier Assessment Report 2411/7498123 |
| | - | Aug 2011 | K21477/08 01/08/2011 |
| | | 26/01/2012 | Cone Calorimeter Tests of IMO MSC Circ 1270 Class A Plastic Materials – Hughes Associates Inc |
| | - | Jan 2012 | Efectis Test Report R1134, Fire test - Wood Cribs & Plastic Sheets |
| | | 12/09/2011 | KIWA, EMC Test Report 126076-EMC |
| Manuals | 5 | 01/10/2011 | Information, Instruction & User Manual |
| | 2 | 14/02/2012 | Annex 1 Marine Manual to be read in conjunction with the above manual |

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DESIGN CALCULATION.

AGENT

The quantity (mass) of aerosol agent to be used should be determined as follows:

$$W = \frac{V \times q \text{ (g)}}{f}$$

where

W = Agent mass (g) (Total mass required to protect the specific volume)

V = Volume of enclosure (m³) (Protected volume)

q = Design application density (gr/m³) (net mass of agent per unit volume (g/m³) required by the system designer for the fire protection application)

f = Efficiency coefficient of generator's model (%) (net mass of agent delivered by a generator model (size))

q = 120 gr/m³

Efficiency coefficients (related to each generator model (size)):

FP-20S/SE= 60%

FP-500S = 63%

FP-40S= 63%

FP-1200 = 65%

FP-80S= 60%

FP-2000 = 61%

FP-100S = 63%

FP-3000 = 62%

FP-200S = 61%

FP-5700 = 61%

The total number of generators (N) to be used is derived by the following formula

$$N = \frac{W \text{ (total agent mass)}}{\text{nominal mass (initial mass of the solid compound) of each generator model (size)}}$$

Example: FP2000 = 2000 grams of nominal mass

FP5700 = 5700 grams of nominal mass

Note: If different generator models (size) should be selected, the total mass of extinguishant (solid compound) shall not be less than the quantity required (W).

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TECHNICAL SPECIFICATION

| | |
|--------------------------------|--|
| Model | FP-20S |
| Type | Cold |
| Activation mechanism FP20S | thermal activation by thermocord at 172°C |
| Activation mechanism FP20SE | electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec) |
| Current intensity to be tested | N/A |
| Weight gross | 310 g |
| Weight net extinguishing agent | 20 g |
| Operational discharge time | 5 - 10 seconds |
| Discharge outlet | 2 |
| Discharge length | 0.6 m |
| Size | 165 mm x 32 mm (incl. connector housing) |
| Self activation temperature | 300°C |

| | |
|--------------------------------|--|
| Model | FP-40S |
| Type | Cold |
| Activation mechanism | thermal activation by thermocord at 172°C |
| | electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec) |
| Activator type | heating element with 2.3 ohm resistance |
| Current intensity to be tested | maximum 5 mA |
| Weight gross | 610 g |
| Weight net extinguishing agent | 40 g |
| Operational discharge time | 5 - 10 seconds |
| Discharge outlets | 2 |
| Discharge length | 1.2 m |
| Size | 140 mm x 51 mm |
| Self activation temperature | 300°C |

| | |
|--------------------------------|--|
| Model | FP-80S |
| Type | Cold |
| Activation mechanism | thermal activation by thermocord at 172°C |
| | electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec) |
| Activator type | heating element with 2.3 ohm resistance |
| Current intensity to be tested | maximum 5 mA |
| Weight gross | 870 g |
| Weight net extinguishing agent | 80 g |
| Operational discharge time | 5 - 10 seconds |
| Discharge outlets | 2 |
| Discharge length | 2 m |
| Size | 185 mm x 51 mm (incl. connector housing) |
| Self activation temperature | 300°C |

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SCHEDULE OF APPROVAL

TECHNICAL SPECIFICATION

| | |
|--------------------------------|---|
| Model | FP-100S |
| Type | Cold |
| Activation mechanism | thermal activation by thermocord at 172°C electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec) |
| Activator type | Heating element with 2.3 ohm resistance |
| Current intensity to be tested | Maximum 5 mA |
| Weight gross | 1370 g |
| Weight net extinguishing agent | 100 g |
| Operational discharge time | 5 - 10 seconds |
| Nozzle | optional |
| Discharge outlet | 1 |
| Discharge length | 1 m |
| Size | 155 mm x 84 mm (incl. connector housing) |
| Self activation temperature | 300°C |

| | |
|--------------------------------|---|
| Model | FP-200S |
| Type | Cold |
| Activation mechanism | thermal activation by thermocord at 172°C electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec) |
| Activator type | heating element with 2.3 ohm resistance |
| Current intensity to be tested | maximum 5 mA |
| Weight gross | 1840 g |
| Weight net extinguishing agent | 200 g |
| Operational discharge time | 5 - 10 seconds |
| Nozzle | Optional |
| Discharge outlet | 1 |
| Discharge length | 2 m |
| Size | 185 mm x 84 mm (incl. connector housing) |
| Self activation temperature | 300°C |

| | |
|--------------------------------|---|
| Model | FP-500S |
| Type | Cold |
| Activation mechanism | thermal activation by thermocord at 172°C electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec) |
| Activator type | heating element with 2.3 ohm resistance |
| Current intensity to be tested | maximum 5 mA |
| Weight gross | 3340 g |
| Weight net extinguishing agent | 500 g |
| Operational discharge time | 5 - 10 seconds |
| Discharge outlet | 1 |
| Discharge length | 2.5 m |
| Size | 295 mm x 84 mm (incl. connector housing) |
| Self activation temperature | 300°C |

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Certificate

Certificate No. BSI/A.1/3.46/560436

Date: 23 March 2012

TECHNICAL SPECIFICATION

Model FP-1200
Type Cold
Activation mechanism thermal activation by thermocord at 172°C
electrical (6 - 36 V D/C 0.8 A in 3 - 4 sec)
heating element 2.3 ohm resistance
Activator type maximum 5 mA
Current intensity to be tested 10900 g (excl bracket)
Weight gross 1200 g
Weight net extinguishing agent 10 - 15 seconds
Operational discharge time 1
Discharge outlet 3.5 m
Discharge length 216 mm x 300 mm x 167 mm
Size 300°C
Self activation temperature

Model FP-2000
Type Cold
Activation mechanism thermal activation by thermocord at 172°C
electrical (6 - 36 V D/C 0.8 A in 3-4 sec)
heating element 2.3 ohm resistance
Activator type maximum 5 mA
Current intensity to be tested 15500 g
Weight gross 2000 g
Weight net extinguishing agent 10 - 15 seconds
Operational discharge time 1
Discharge outlet 3.5 m
Discharge length 300 mm x 300 mm x 185 mm
Size 300°C
Self activation temperature

Model FP-3000
Type Cold
Activation mechanism thermal activation by thermocord at 172°C
electrical (6 - 36 V D/C 0.8 A in 3-4 sec)
heating element 2.3 ohm resistance
Activator type maximum 5 mA
Current intensity to be tested 16300 g
Weight gross 3000 g
Weight net extinguishing agent 15 - 20 seconds
Operational discharge time 1
Discharge outlet 4 m
Discharge length 300 mm x 300 mm x 185 mm
Size 300°C
Self activation temperature

SCHEDULE OF APPROVAL

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Date: 23 March 2012

SCHEDULE OF APPROVAL

TECHNICAL SPECIFICATION

| | |
|--------------------------------|---|
| Model | FP-5700 |
| Type | Cold |
| Activation mechanism | thermal activation by thermocord at 172°C electrical (6 - 36 V D/C 0.8 A in 3-4 sec) |
| Activator type | heating element 2.3 ohm resistance |
| Current intensity to be tested | maximum 5 mA |
| Weight gross | 26400 g |
| Weight net extinguishing agent | 5700 g |
| Operational discharge time | 15 - 20 seconds |
| Discharge outlet | 1 |
| Discharge length | 8 m |
| Size | 300 mm x 300 mm x 300 mm |
| Self activation temperature | 300°C |

Conditions of Certification

- i) The BSI/A.1/3.46/560436 issue 2 certificate remains valid unless cancelled or revoked, provided the conditions listed below are complied with and the equipment remains satisfactory in service
- ii) The equipment detailed on page 1 on this certificate is to be manufactured in accordance with Production Quality Assurance system (Module D)
- iii) Detailed User instructions are to be provided with each product.
- iv) If the specified standards are amended during the validity of this certificate, this product type is to be re-approved prior to it being supplied to vessels to which the amended standards apply.
- v) Production tests are to be conducted in accordance with the applicable requirements of the IMO Resolutions and applicable standards and be recorded by the manufacturer in accordance with the approved Production Quality Assurance system (Module D) of the Marine Equipment Directive.
- vi) Each item, batch or lot of the equipment is to have the "Mark of Conformity" affixed and be issued with a "Declaration of Conformity".

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Certificate

EC QUALITY SYSTEM (MODULE D) CERTIFICATE No. BSI/MED/PC/560437

This is to certify that BSI did undertake the relevant type approval procedures for the equipment identified below which was found to be in compliance with the Fire protection requirements of Marine Equipment Directive (MED) 96/98/EC, as amended, last amended by Directive (2009/26/EC), subject to any conditions in the schedule attached hereto.

The

Manufacturer **FirePro Systems Limited**
Registered office **6 Koumandarias & Spyrou Araouzou Street
Tonia Court No2, 6th Floor
Limassol 3036
Cyprus**
Manufacturing location **Ayios Athansios
4 Falea Street
Limassol District
Cyprus**

maintains and applies a quality system in accordance with the requirements of the Maritime Equipment Directive Annex B, Module D.

Scope:

A.1/3.46 *Equivalent fixed gas fire extinguishing systems for machinery spaces (aerosol systems)*

This certificate remains valid unless cancelled, expired or revoked.

First issued: 20 August 2010 For and on behalf of the BSI, a Notified Body for the above Directive
Date of issue: 23 March 2012 Notified Body Number 0086.
Expiry date: 19 August 2013


Gary Fenton, Global Assurance Director

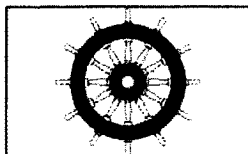
Notes:

This BSI/MED/PC/560437 issue 2 certificate authorises the manufacturer or his authorised representative established within the Community in conjunction with the EC TYPE EXAMINATION (MODULE B) CERTIFICATE of the equipment listed in the scope to affix the "Mark of Conformity" (wheelmark).

This certificate loses its validity if the manufacturer makes any changes or modifications to the approved quality system, which have not been notified to, and agreed with the notified body named on this certificate and/or after lapse of time, withdrawal or revocation of the EC Type Examination (Module B) Certificate.

Example for the Application of the "Mark of Conformity":

"Wheelmark" Format yy Last two digits of year mark affixed.
0086 Notified Body number undertaking surveillance module



0086/yy

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Certificate

Certificate No. BSI/MED/PC/560437

Date: 23 March 2012

Annex to
**EC QUALITY SYSTEM (MODULE D)
CERTIFICATE No. BSI/MED/PC/560437**

| Product Designation | Model | Certificate No. | Issue Date | Notified Body |
|---------------------|---|-------------------------|------------|---------------|
| A.1/3.46 | FP20S, FP40S, FP80S, FP100S, FP200S, FP500S, FP1200, FP2000, FP3000 & FP5700 aerosol generating fire extinguishing system unit with dry condensed extinguishing agent, Fire Rating Type A & B | BSI/MED/A.1/3.46/560436 | 23/03/2012 | 0086 |

Conditions of Certification

- i) This BSI/MED/PC/560437 issue 2 certificate remains valid unless cancelled or revoked, provided the conditions listed below are complied with and the equipment remains satisfactory in service
- ii) The equipments detailed above are to be manufactured in accordance with Production Quality Assurance system (Module D) of the Marine Equipment Directive.
- iii) If the specified standards are amended during the validity of this certificate, the product type are to be re-approved prior to it being supplied to vessels to which the amended standards apply.
- iv) Production tests are to be conducted in accordance with the applicable requirements of the Directive and be recorded by the manufacturer in accordance with the approved Production Quality Assurance system (Module D) of the Marine Equipment Directive.
- v) Each equipment is to have the "Mark of Conformity" affixed and be issued with a "Declaration of Conformity".

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