

product certificate
K21477/12 UK



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FirePro

fixed dry aerosol fire extinguishing components

STATEMENT BY KIWA

With this product certificate, issued in accordance with the Kiwa Regulations for Product Certification, Kiwa declares that legitimate confidence exists that the products supplied by

FirePro Systems Ltd.

complying with the technical specifications as laid down in this product certificate and marked with the Kiwa®-mark in the manner as indicated in this product certificate, on delivery, may be relied upon to comply with Kiwa evaluation guideline BRL-K23001/04 "the product certificate for fixed dry aerosol fire extinguishing components".

Bouke Meekma
Kiwa

Publication of the certificate is allowed.

Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid

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Certification process consists of initial and regular inspection of:

- quality system
- product
- testing



FirePro fixed dry aerosol fire extinguishing components

Certificate

This product certificate by Kiwa is based on pre-certification tests as well as periodic inspections by Kiwa and parts of UL subject 2775. Please note that Underwriters Laboratories (or UL in short) was not involved with the preformed tests as mentioned in this product certificate.

Additional listing

The following guidelines are additional listed in this product certificate:

- ISO 15779, Condensed aerosol fire extinguishing systems - Requirements and test methods for components and system design, installation and maintenance - General requirements (ISO 15779:2011,IDT), December 2011
- CEN/TR 15276-1, Fixed fire fighting systems - Condensed aerosol extinguishing systems - Part 1: Requirements and test methods for components, February 2009
- UL subject 2775, outline of investigation for fixed condensed aerosol extinguishing system units, November 5, 2008

Generator specifications

The products mentioned below belong to this product declaration.

Type	Housing Red coated steel	Activation	Type	Housing Stainless steel	Activation
FP1200	Box	Electrical / Thermo cord	FP20ES	Cylinder	Electrical
FP2000	Box	Electrical / Thermo cord	FP20S	Cylinder	Thermo cord
FP3000	Box	Electrical / Thermo cord	FP40S	Cylinder	Electrical / Thermo cord
FP5700	Box	Electrical / Thermo cord	FP80S	Cylinder	Electrical / Thermo cord
			FP100S	Cylinder	Electrical / Thermo cord
			FP200S	Cylinder	Electrical / Thermo cord
			FP500S	Cylinder	Electrical / Thermo cord

Non-pressurized generator.

Application and use

Total flooding fire-extinguishing systems are used primarily for protection against hazards that are in enclosures or equipment that, in itself, includes an enclosure to contain the extinguishant. Condensed aerosol generators can be used as a part of fire fighting systems in buildings, plants or other structures. It covers total flooding systems primarily related to buildings, plant and other specific applications, utilizing electrically non-conducting condensed aerosol fire extinguishants.

The following are typical of such hazards, but the list is not exhaustive:

- Electrical and electronic hazards;
- Telecommunications facilities;
- Flammable and combustible liquids and gases;

Where aerosol generators are used in a potentially explosive application, the suitability of the generator to the atmosphere for the determined life shall be assessed.

The fire extinguishing components shall be suitable for extinguishing fires of the following classes:

- Class A according EN2 and NFPA 2010
- Class B according EN2 and NFPA 2010
- Class C according NFPA 2010

Conditions for application

- The numbers and types of the extinguishing components have to be determined in conformity with the guidelines and calculation methods of the supplier.
- Distribution is to be done by supplier or companies authorised by the supplier.
- Before usage an instruction is to be given by a trainer or instructor for this product authorized by the supplier.
- The installation and maintenance of the fire extinguishing components have to take place according to the specifications of the supplier, ISO15779, CEN/TR 15276-2, NFPA 2010 and/or evaluation guideline BRL-K23003.
- For specific details regarding the owner's manual, see ISO15779, CEN/TR 15276-1 and UL 2775.

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Point of interest during use or limitation of use

The condensed aerosol extinguishing components should not be used on fires involving the following unless relevant testing by accredited testing laboratories has been carried out to the satisfaction of the Authority:

- Deep seated fires in Class A materials
- Chemicals containing their own supply of oxygen, such as cellulose nitrate;
- Mixtures containing oxidizing materials, such as sodium chlorate or sodium nitrate;
- Chemicals capable of undergoing auto thermal decomposition, such as some organic peroxides;
- Reactive metals (such as sodium, potassium, magnesium, titanium and zirconium), reactive hydrides, or metal amides, some of which may react violently with some aerosol extinguishants;
- Condensed aerosol generators shall not be used to protect classified hazards or similar spaces containing flammable liquids or dusts that can be present in explosive air–fuel mixtures unless the generators are specifically listed for use in those environments.
- Temperatures for use of aerosol extinguishing agents shall be within the supplier's listed limits.
- Unless specifically approved as an agent blend or mixture, systems employing the simultaneous discharge of different agents to protect the same enclosed space shall not be permitted.
- Where unrelated extinguishing or suppression systems, such as a sprinkler system or a gaseous fire-extinguishing system are provided and can operate prior to or during the hold time of the aerosol system, the other agent shall not adversely affect the aerosol.

The above list may not be exhaustive.

- Care shall be taken when discharging extinguishant into potentially explosive atmospheres. Electrostatic charging of aerosol generators or other conductors not bonded to earth may occur during the discharge of extinguishant. These conductors may discharge to other objects with sufficient energy to initiate an explosion. Where the system is used for inerting, generators shall be adequately bonded and earthed.
- Under certain conditions, the potential for explosive atmospheres may exist. Areas where such potential may exist are classified as hazardous. Condensed aerosols may be used in hazardous areas subject to the supplier obtaining the specific listings and approvals for such areas from the appropriate authorities. The EU Directive 94/9/EC (ATEX Directive) should be taken into consideration.
- For condensed aerosols, special care shall be taken to determine the maximum ambient temperature at which the aerosol generator can be installed, without risk of actuation by temperature itself.
- Systems employing the simultaneous discharge of aerosols and other extinguishants, such as a sprinkler system or a gaseous fire-extinguishing system, to protect the same enclosed space shall not be permitted.
- Aerosol extinguishing systems are intended for the types of fire for which they are a suitable extinguishing medium.
- The design, installation, service, and maintenance of aerosol systems shall be performed by persons skilled in aerosol fire-extinguishing system technology.
- The end user should consider the potential adverse effects of aerosol extinguishing agent discharge residue on sensitive equipment and other objects.
- Local applications ¹⁾ of condensed aerosol extinguishing systems are not covered by this product declaration.
- Local applications require a pre-engineered and pre-designed system which has been tested and approved for a specific application by an authority such as Kiwa or by an accredited testing laboratory.
- For specific details regarding the owner's manual, see ISO15779, CEN/TR 15276-1 and UL 2775.

¹⁾ a local application is used for the extinguishment of surface fires in flammable liquids, gasses, and shallow solids, where the enclosure does not conform to the requirements for total flooding.

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Manual

At delivery the product should be accompanied by an operation manual in the English language, known and authorized by Kiwa.

Following minimum items shall be described:

- Type of aerosol generators;
- Design application density;
- Description of occupancies and hazards to be protected against;
- Specification of aerosol generators;
- Equipment schedule or list of materials for each piece of equipment or device, showing device name; supplier, model or part number and description;
- System calculation;
- Enclosure pressurization and venting calculations;
- Description of fire detection, actuation and control systems.
- Requirements for inspection, maintenance and testing of an aerosol fire-extinguishing system and for the training of inspection and maintenance personnel.

For specific details regarding the owner's manual, see ISO15779, CEN/TR 15276-1 and UL 2775.

Marking

The products should be marked with the Kiwa®-mark.



Place of the mark:

- On the generator

Required specifications:

- Name of the product and supplier
- Supplier's type designation
- Production date and serial number
- Mass of aerosol-forming compound
- Temperature range
- Storage humidity range
- Service life
- Distances as specified in table 5
- Reference to the application instructions
- Certification mark
- Class A according EN2 and NFPA 2010
- Class B according EN2 and NFPA 2010
- Class C according NFPA 2010

Method of marking:

- Non-erasable and non-detachable;
- Non-flammable;
- Permanent and legible

RECOMMENDATIONS FOR CUSTOMERS

Check at the time of delivery whether:

- The supplier has delivered in accordance with the agreement;
- The mark and the marking method are correct;
- The products show no visible defects as a result of transport etc.

If you should reject a product on the basis of the above, please contact:

- FirePro Systems Ltd
- and, if necessary,
- Kiwa Nederland B.V.

Consult the supplier's processing guidelines for the proper storage and transport methods.

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Product performance

Cross reference ISO 15779, Condensed aerosol fire extinguishing systems - Requirements and test methods for components and system design, installation and maintenance - General requirements (ISO 15779:2011,IDT), December 2011

Chapter	Description	Demand ¹⁾	Result	Remarks
1.	Scope			
2.	Normative references			Implemented
3	Terms and definitions			Implemented
4	Use and limitations			
4.1	General			Implemented
4.2	Aerosol agent description	A	Pass	See manual, FirePro Version 5, 01-10-2011
4.3	Application	A		See manual, FirePro Version 5, 01-10-2011 See table 1
4.4	Limitation of use	A		See manual, FirePro Version 5, 01-10-2011
4.5	Electrostatic discharge	A		See manual, FirePro Version 5, 01-10-2011
4.6	Potentially explosive atmosphere	A		See manual, FirePro Version 5, 01-10-2011
4.7	Temperature limitations	A		See manual, FirePro Version 5, 01-10-2011 See table 5 Temperature limitations from -10 °C to +50°C
4.8	Compatibility with other extinguishments	N/A		Not permitted
4.9	Environmental	A	Pass	See SNAP listing by US Environmental Protection Agency (EPA)
5	Safety			
5.1	General	N/A		
5.2	Toxicity	A	Pass	See SNAP listing by US Environmental Protection Agency (EPA)
5.3	Reduced visibility	Not tested		
5.4	Turbulence	A		See manual, FirePro Version 5, 01-10-2011
5.5	Thermal hazards	A		See manual, FirePro

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Chapter	Description	Demand ¹⁾	Result	Remarks
				Version 5, 01-10-2011 See table 5
5.6	Safety precautions	N/A		
5.7	Electrical hazards	N/A		
5.8	Electrical earthing	N/A		
5.9	Electrostatic discharge	N/A		
6	Extinguishment			
6.1	General			Implemented
6.2	Design application density requirements			Implemented See table 1
6.3	Aerosol generator performance requirements			Implemented See table 3
6.4	Marking	A	Pass	See manual, FirePro Version 5, 01-10-2011
7	Specifications, plans and approvals			
7.1	Specifications	N/A		
7.2	Enclosure	N/A		
7.3	Total flooding quantity	N/A		
7.4	Design application density adjustment	N/A		
7.5	Unit size and quantity of aerosol generators	N/A		
7.6	Operating conditions	N/A		
7.7	Duration of protection	N/A		
7.8	System discharge	N/A		
7.9	Detection, actuation and control systems	N/A		
8	Commissioning and acceptance			
8.1	General			Implemented
8.2	Tests	N/A		
9	Inspection, maintenance, testing and training			
9.1	General			Implemented
9.2	Inspection	N/A		
9.3	Maintenance	N/A		
9.4	Training	N/A		
Annex A	(normative) Documentation requirements			
A1	General			Implemented

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Chapter	Description	Demand ¹⁾	Result	Remarks
A2	Working documents	N/A		
Annex B	(informative) Toxicity and visibility testing			
B1	Introduction			Implemented
B2	Assessing toxicity: irritation and inhalation toxicity tests	N/A		
B3	Assessing toxicity: literature review	N/A		
B4	Assessing visibility for a powdered aerosol: a model approach	N/A		
B5	Design of the model	N/A		
B6	Potential settling rates and the effect on visibility	N/A		
B7	Accounting for refractive index	N/A		
B8	Designing the lighting and space to conform with physical properties of the powdered aerosol	N/A		
B9	Utilizing light of specific wavelengths and photo luminescent marking systems	N/A		
B10	Decreasing distance to exits	N/A		
B11	Training	N/A		
B12	Recommended testing procedures	N/A		
Annex C	(normative) Test methods			
C1	General			Implemented
C2	Conditions	A	Pass	
C3	Samples	A	Pass	
C4	Compliance	A	Pass	
C5	Extinguishing application density determination			Implemented
C6	Discharge time test			Implemented
C7	Temperature and humidity operation range tests	A	Pass	EN 60068-2-30, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle) variant 1
C8	Accelerated ageing test	A	Pass	
C9	Corrosion test	A	Pass	
C10	Stress corrosion test	A	Pass	Materials used in the construction are not susceptible to ammonia stress corrosion.
C11	Vibration test	A	Pass	Acceleration amplitude for components which are designed to be attached to machinery
C12	Impact test	A	Pass	
C13	Drop test	A	Pass	

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Chapter	Description	Demand ¹⁾	Result	Remarks
C14	Casing and aerosol flow temperatures test C14.1 Casing temperatures test C14.2 Aerosol flow temperature test	A		Implemented See C.16.3 See C.16.2
C15	Ignition performance test	A	Pass	
C16	Function test	A	Pass	
C16.1	Discharge time	A	Pass	See table 4
C16.2	Aerosol flow temperatures	A	Pass	See table 5
C16.3	Casing temperature test	A	Pass	
C16.4	Effective mass of extinguishant	A	Pass	See manual, FirePro Version 5, 01-10-2011 See Table 2
C16.5	Test procedure	A	Pass	
C16.6	Requirements	A	Pass	
C17	Fire exposure	A	Pass	
Annex D	(normative) Extinguishing application density/coverage test procedure			
D1	General			Implemented
D2	Principle			Implemented
D3	Extinguishing system			Implemented
D4	Extinguishing application density			Implemented
D5	Aerosol generator distribution verification tests			
D5.1	Minimum height/maximum coverage test	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80 • FP100 • FP200 • FP1200 See Table 3
D5.2	Maximum height test	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80 • FP100 • FP200 • FP1200 • FP5700 See Table 3
D6	Extinguishing application density tests			
D6.1	Wood crib test	A	Pass	See Table 1

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Chapter	Description	Demand ¹⁾	Result	Remarks
D6.2	n-Heptane pan test	A	Pass	See Table 1
D6.3	Polymeric sheet fire test D6.3.2.2 Polymethyl methacrylate (PMMA); D6.3.2.2 Polypropylene, D6.3.2.2 Acrylonitrile-butadiene-styrene polymer (ABS)	A	Pass	See Table 1
D6.4	Class A compatible wood crib test	A	Pass	See Table 1
D7	Test of the determination of the maximum leakage area/volume ratio	Not Tested		

¹⁾ A = Applicable

N/A = Not Applicable

Not tested

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Cross reference CEN/TR 15276-1, Fixed fire fighting systems - Condensed aerosol extinguishing systems - Part 1: Requirements and test methods for components, February 2009

Chapter	Description	Demand ¹⁾	Result	Remarks
1.	Scope			Implemented
2.	Normative references			Implemented
3	Terms and definitions			Implemented
4	Component requirements			
4.1	Condensed aerosol generator			See manual
4.2	Solid aerosol-forming compound			See manual
4.3	Cooling mechanism			See manual
4.4	Ignition device			
4.4.1	General			Implemented
4.4.2	Electrical ignition device			Implemented
4.4.3	Thermal ignition device			Implemented
4.4.4	Other methods of ignition device	N/A		
4.5	End plate and housing			Implemented, see manual
4.6	Extinguishants			Implemented, see manual
5.	Condensed aerosol generator requirements			
5.1	General	A		Implemented See 5.16 and 7.3 See table 2 See table 5
5.2	Extinguishing factor	A		Implemented See 7.4 See table 1
5.3	Agent distribution	A		Implemented See 7.5 See table 3
5.4	Discharge time	A		Implemented See 7.6 See table 4
5.5	Ambient temperature and humidity operation ranges	A		See 7.7
5.6	Service life	A		See 7.8
5.7	Shelf life and storage conditions	Not relevant in relationship to BRL-K23001		See Manual
5.8	Corrosion	A		Implemented

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Chapter	Description	Demand ¹⁾	Result	Remarks
				See 7.9 and 7.10
5.9	Vibration	A		Implemented See 7.11
5.10	Mechanical shock	A		Implemented See 7.12 and 7.13
5.11	Discharge temperature			
5.11.1	General			Implemented
5.11.2	Casing temperature	A		See 7.14
5.11.3	Aerosol flow temperature	A		Implemented See manual, FirePro Version 5, 01-10-2011 See 7.14 See table 5
5.12	Ignition device			
5.12.1	General			Implemented
5.12.2	Electrical ignition device	A		Implemented See 7.15
5.12.3	Thermal ignition device	N/A		
5.13	Function reliability	A		Implemented See 7.16
5.14	Open fire conditions	A		Implemented See 7.17
5.15	Accessories	A		Implemented See 7.9, 7.11, 7.12 and 7.13.
5.16	Documentation	A	Pass	See manual, FirePro Version 5, 01-10-2011
6	Marking	A	Pass	See manual, FirePro Version 5, 01-10-2011
7.	Test methods			
7.1	Conditions	A		Implemented
7.2	Samples	A		Implemented
7.3	Conformity	A		Implemented See manual, FirePro Version 5, 01-10-2011
7.4	Extinguishing factor determination	A		Implemented

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Chapter	Description	Demand ¹⁾	Result	Remarks
				See manual, FirePro Version 5, 01-10-2011 See specific test in Annex A. See table 1
7.5	Coverage determination	A		Implemented See manual, FirePro Version 5, 01-10-2011 See specific test in Annex A. See table 3
7.6	Discharge time test	A		Implemented See manual, FirePro Version 5, 01-10-2011 See 7.16.1 See table 4
7.7	Temperature and humidity operation range tests	A	Pass	EN 60068-2-30, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle) variant 1
7.8	Accelerated ageing test			15 Years See manual, FirePro Version 5, 01-10-2011
7.9	Corrosion test	A	Pass	
7.10	Stress corrosion test	A	Pass	Materials used in the construction are not susceptible to ammonia stress corrosion.
7.11	Vibration test	A	Pass	Acceleration amplitude for components which are designed to be attached to machinery
7.12	Impact test	A	Pass	
7.13	Drop test	A	Pass	
7.14	Casing and aerosol flow temperatures test			
7.14.1	Casing temperatures test	A	Pass	
7.14.2	Aerosol flow temperature test	A	Pass	Implemented See manual, FirePro Version 5, 01-10-2011 See 7.16 See Table 5
7.15	Ignition performance test	A	Pass	

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Chapter	Description	Demand ¹⁾	Result	Remarks
7.16	Function test			
7.16.1	Discharge time	A	Pass	See table 4
7.16.2	Aerosol flow temperatures	A	Pass	See table 5
7.16.3	Test procedure			Implemented
7.16.4	Casing temperature test	A	Pass	
7.16.5	Discharged mass	A	Pass	
7.16.6	Explosive atmosphere actuation test	A	Pass	
7.16.7	Requirements			Implemented
7.17	Heat exposure test	A	Pass	
7.18	Explosive atmosphere test	A	Pass	
Annex A	(normative) Extinguishing factor/coverage test procedure			
A1	General			Implemented
A2	Principle			Implemented
A3	Extinguishing system			Implemented
A4	Extinguishing factor			Implemented
A5	Aerosol generator distribution verification tests			
A5.1	Minimum height/maximum coverage test	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80 • FP100 • FP200 • FP1200 See Table 3
A5.2	Maximum height test	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80 • FP100 • FP200 • FP1200 • FP5700 See Table 3
A6	Extinguishing factor tests			
A6.1	Wood crib test	A	Pass	See Table 1
A6.2	n-Heptane pan test	A	Pass	See Table 1
A6.3	Polymeric sheet fire test A6.3.2.2 Polymethyl methacrylate (PMMA);	A	Pass	See Table 1

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Chapter	Description	Demand ¹⁾	Result	Remarks
	A6.3.2.2 Polypropylene, A6.3.2.2 Acrylonitrile-butadiene-styrene polymer (ABS)			
A6.4	Composite wood fire test A6.4.2.2 Reformed wood (chops) both sides plastic lined A6.4.2.2 MDF (Medium Density Fibreboards) according to EN 622 and EN 316 not lined A6.4.2.2 Multilayers plywood (kiln spruce or fir) not lined	A	Pass	See Table 1
A7	Aerosol generator explosive atmosphere test A7.1 Actuation test inside an explosive atmosphere environment.	A	Pass	

¹⁾ A = Applicable

N/A = Not Applicable

Not tested

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Cross reference
UL subject 2775, outline of investigation for fixed condensed aerosol extinguishing system units,
November 5, 2008

Chapter	Description	Demand ¹⁾	Result	Remarks
Introduction				
1.	Scope			Implemented
2.	Components			Implemented
3	Units of measurements			Implemented
4	Undated references			Implemented
5	Glossary			Implemented
Construction				
6	General			Implemented
7	Electrically operating alarm	N/A		
8	Control and indicators	N/A		
9	Pneumatic control assembly pressure vessels	N/A		
10	Pressure relief devices for pneumatic control assemblies	N/A		
11	Gaskets and O-rings	N/A		
12	Pressure gauges for pneumatic control assemblies	N/A		
13	Puncturing mechanisms	N/A		
14	Electrically operating devices	N/A		
15	Condensed aerosol extinguishing agents			See SNAP listing by US Environmental Protection Agency (EPA)
16	Pneumatic control gases	N/A		
17	Polymeric materials and nonmetallic parts	N/A		
18	Anti-recoil devices	N/A		
19	Pressure switches	N/A		
Performance				
20	General			Implemented

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Chapter	Description	Demand ¹⁾	Result	Remarks
21	Discharge test	A	Pass	See Table 4
22	Temperature measurement test	A	Pass	See Table 5
23	Mounting device test	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80
24	Rough Usage test	A	Pass	
25	Vibration test	A	Pass	Acceleration amplitude for components which are designed to be attached to machinery
26	Pyrotechnic reaction containment test	A	Pass	
27	Fire exposure test	A	Pass	
28	High humidity test	A	Pass	
29	Moist hydrogen sulfide air mixture corrosion test	A	Pass	
30	Moist carbon dioxide sulfur dioxide air mixture corrosion test	A	Pass	
31	Salt spray corrosion test	A	Pass	
32	Thirty day elevated temperature test	A	Pass	
33	Temperature cycling test	Not Tested		
34	One-year time leakage test	N/A		
35	Hydrostatic pressure test	N/A		
36	Pressure relief tests	N/A		
37	Flexible hose assembly hose low temperature test	N/A		
38	Calibration test gauges	N/A		
39	Burst strength test gauges	N/A		
40	Overpressure test gauges	N/A		
41	Impulse test gauges	N/A		
42	Pressure relief test gauges	N/A		
43	Water resistance test gauges	N/A		
44	Pneumatic operation test	N/A		
45	Pneumatic time delay verification test	N/A		

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Chapter	Description	Demand ¹⁾	Result	Remarks
46	Pressure operated alarm test	N/A		
47	Operation test of manual activators and manual pull stations	N/A		
48	500 cycle operation test			Implemented
48.1	Electrical initiators	A	Pass	
48.2	Other devices	N/A		
49	Class A and B fire extinguishment tests			Implemented
49.1	General			Implemented
49.2	Class A fire extinguishment tests	A	Pass	See Table 1
49.3	Class B fire extinguishment tests	A	Pass	See Table 1
50	Distribution verification extinguishment tests with extinguishing system units			Implemented
50.1	General			Implemented
50.2	Test enclosure			Implemented
50.3	Maximum area coverage and minimum height test arrangement procedure	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80 • FP100 • FP200 • FP1200 See Table 3
50.4	Maximum height test procedure	A	Pass	The following types were tested: <ul style="list-style-type: none"> • FP20 • FP40 • FP80 • FP100 • FP200 • FP1200 • FP5700 See Table 3
51	Distribution verification extinguishment test with automatic extinguisher unit	N/A		
51.1	General	N/A		
51.2	Test enclosure	N/A		
51.3	Maximum area coverage, minimum height and maximum volume test arrangement procedure	N/A		

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Chapter	Description	Demand ¹⁾	Result	Remarks
51.4	Maximum height and maximum volume test arrangement procedure	N/A		
52	Automatic extinguisher unit automatic operation extinguishment unit	N/A		
52.1	General	N/A		
52.2	Test enclosures	N/A		
52.3	Test arrangement procedure	N/A		
53	Elastomeric parts test	N/A		
54	Stress corrosion cracking test for brass parts	A	Pass	Materials used in the construction are not susceptible to ammonia stress corrosion.
55	Aging test condensed aerosol generator	A	Pass	15 years
56	Aging test plastic materials	N/A		
56.1	Air-oven aging test	N/A		
56.2	Light and water test	N/A		
57	Nameplate exposure test	N/A		
58	Nameplate adhesion test	N/A		
59	Nameplate abrasion test	N/A		
60	Locking device and tamper indicator test	N/A		
Manufacturing and production tests				
61	General			Implemented
61.1	General			Implemented
61.2	Aerosol-forming compound	A	Pass	
61.3	Electrical initiators	A	Pass	
61.4	Hydrastatic pressure test – shells for pneumatic control assemblies	N/A		
61.5	Gauge calibration test for pneumatic control assemblies	N/A		
61.6	Leakage test for pneumatic control assemblies	N/A		
Markings				
62	General	A	Pass	

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Chapter	Description	Demand ¹⁾	Result	Remarks
Instructions				
63	General			Implemented
64	Owner's manual	A	Pass	See manual, FirePro Version 5, 01-10-2011
65	Design, installation, operating and maintenance instruction manual	A	Pass	See manual, FirePro Version 5, 01-10-2011

¹⁾ A = Applicable

N/A = Not Applicable

Not tested

FirePro fixed dry aerosol fire extinguishing components

Tests not performed (with requirements):

ISO 15779

- D7 Test of the determination of the maximum leakage area/volume ratio
- D5.1 Minimum height/maximum coverage test
 - FP500
 - FP2000
 - FP3000
 - FP5700 (Minimum)
- D5.2 Maximum height test
 - FP500
 - FP2000
 - FP3000

CEN/TR 15276-1

- A5.1 Minimum height/maximum coverage test
 - FP500
 - FP2000
 - FP3000
 - FP5700 (Minimum)
- A5.2 Maximum height test
 - FP500
 - FP2000
 - FP3000

UL2775

- § 23 Mounting device test
 - FP100
 - FP200
 - FP500
 - FP2000
 - FP3000
 - FP5700
- § 33 Temperature cycling test
- § 50.3 Maximum area coverage and minimum height test arrangement procedure
 - FP500
 - FP2000
 - FP3000
 - FP5700 (Minimum)
- § 50.4 Maximum height test procedure
 - FP500
 - FP2000
 - FP3000

FirePro fixed dry aerosol fire extinguishing components

Product specifications

Table 1

Fire Class		Listing	According CEN/TR 15276-1	According UL 2775	According ISO 15779	Pre burn time in seconds	Soak period in seconds	Test room in m ³	Density in grams in m ³
NFPA	EN2	Material / fuel							
A	A	Wood crib	A.6.1	-	D.6.1	120	600	105.4	102
A	A	Class A compatible wood crib test	-	49.2.2	D.6.4	120	600	105.4	74
A & C	A	Polymethylmethacrylate	A.6.3	49.2.3	D.6.3	210	600	100	55.2
A & C	A	Polypropylene	A.6.3	49.2.3	D.6.3	210	600	100	55.2
A & C	A	ABS	A.6.3	49.2.3	D.6.3	210	600	100	62
A	A	Reformed wood (chops)	A.6.4	-	-	360	600	100	55.2
A	A	MDF	A.6.4	-	-	360	600	100	55.2
A	A	Multilayers plywood	A.6.4	-	-	360	600	100	55.2
B	B	Heptane (830 KiloWatt)	A.6.2	49.3	D.6.2	30	30	100	52
-	B	Heptane (6 MegaWatt)	-	-	-	30	30	1250	52
-	C	Propane (30 KiloWatt)	-	-	-	30	30	100	30
-	F	Solid deep-frying fat	-	-	-	30	1800	80	76
Additional listing									
	B	Nedalco alcohol Fortoir min. 96%	-	-	-	30	600	80	52
	B	Petrol Euro95	-	-	-	30	600	80	52

Table 2

Type	Housing Type	Efficiency in %	Type	Housing Type	Efficiency in %
FP1200	Box	65%	FP20ES	Cylinder	60%
FP2000	Box	61%	FP20S	Cylinder	60%
FP3000	Box	62%	FP40S	Cylinder	63%
FP5700	Box	59%	FP80S	Cylinder	60%
			FP100S	Cylinder	63%
			FP200S	Cylinder	61%
			FP500S	Cylinder	63%

FirePro fixed dry aerosol fire extinguishing components

Table 3

Type	Housing Type	Agent distribution according CEN/TR 15276-1, UL 2775, ISO 15779 and BRL-K23001/4			Maximum area coverage in m
		Minimum height in m	Maximum area coverage in m	Maximum height in m	
FP1200	Box	0.45	5.66 * 5.66	3.5	2.02 * 2.02
FP2000	Box				
FP3000	Box				
FP5700	Box			5.0	3.70 * 3.70
FP20ES	Cylinder	0.45	1.00 * 0.55	1.0	0.50 * 0.50
FP20S	Cylinder	0.45	1.00 * 0.55	1.0	0.50 * 0.50
FP40S	Cylinder	0.45	1.00 * 1.08	1.0	0.70 * 0.70
FP80S	Cylinder	0.45	1.00 * 2.12	2.0	0.70 * 0.70
FP100S	Cylinder	0.45	1.63 * 1.63	1.0	1.10 * 1.10
FP200S	Cylinder	0.45	2.30 * 2.30	2.0	1.09 * 1.09
FP500S	Cylinder				

Table 4

Type	Housing Type	Discharge time In Sec	Type	Housing Type	Discharge time In Sec
FP1200	Box	10 - 15	FP20ES	Cylinder	5 - 10
FP2000	Box	10 - 15	FP20S	Cylinder	5 - 10
FP3000	Box	15 - 20	FP40S	Cylinder	5 - 10
FP5700	Box	15 - 20	FP80S	Cylinder	5 - 10
			FP100S	Cylinder	5 - 10
			FP200S	Cylinder	5 - 10
			FP500S	Cylinder	5 - 10

Table 5

Type	Housing Type	Distance in m		
		75°C	200°C	300°C *
FP1200	Box	1.2	0.2	0
FP2000	Box	1.2	0.2	0
FP3000	Box	1.7	0.7	0
FP5700	Box	1.8	0.8	0
FP20ES	Cylinder	0.1	0	0
FP20S	Cylinder	0.1	0	0
FP40S	Cylinder	0.1	0	0
FP80S	Cylinder	0.1	0	0
FP100S	Cylinder	0.1	0	0
FP200S	Cylinder	0.3	0.1	0
FP500S	Cylinder	0.5	0.2	0

* note: CEN/TR 15276-1 and ISO 15779 are referring to 400°C