



# Certificate of Conformity

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## Product designation

**Fike, Micromist®, pre-engineered water mist fire suppression system**  
(Refer to the Schedule/enclosures for further specified details)

## Agent/distributor

Fire Protection Technologies Pty Ltd  
Unit 1 / 251 Ferntree Gully Road, MT WAVERLEY, VIC, AUSTRALIA, 3149

## Registrant

Fike® Corporation  
47 Loveton Circle, Suite F, SPARKS, MD, UNITED STATES, 21152

### Producer

Fike® Corporation  
704 SW 10th Street, BLUE SPRINGS, MISSOURI, UNITED STATES, 64015

## Conformance criteria and evaluation

The Fike, Micromist®, pre-engineered water mist fire suppression system has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. SSL Appraisal Specification FAS-117, Version 2.1, 'Aqueous Mist Type Fixed Fire-Protection Systems'.

## Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

(Limitations/conditions of conformance continue)

This certification is issued within the scope of CSIRO Verification Services – Rules governing ActivFire Scheme and is valid only for the product(s) as submitted for evaluation and verification of conformity, subject to the following conditions.

- Reference to details, limitations and requirements, where documented as a schedule/enclosure with this certificate.
- The Registrant is responsible for their attestation of conformity and ensuring that on-going production complies with the conformance criteria defined in this certificate.
- This certificate will not be valid if any changes or modifications are made to the product which have not been notified and validated by CSIRO Verification Services.
- This certificate is subject to periodical re-validation upon verification that all requirements, as determined by the conformity assessment body, continue to be satisfactorily met by the Registrant.
- This certificate may only be reproduced in its published form, without modification and inclusive of all schedules/enclosures.
- Any changes, errors or omissions, must be submitted in writing and if necessary or requested, substantiated with relevant evidence.
- Any representations, such as advertising or other marketing related activities or articles shall reflect the correct contents of this certificate and conform with all relevant trade practices and consumer protection legislation and regulations.
- Any terms or conditions of use as applicable to content and documentation as published or accessed through web sites administered by the CSIRO Verification Services.

Issued by

David Whittaker  
Executive Officer – ActivFire Scheme



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Specified limitations/conditions, determined from the evaluation for conformity, include the following.

- i. The Fike, Micromist®, pre-engineered water mist fire suppression system shall be used only in enclosures that do not exceed 260 m<sup>3</sup> in volume and 4.9 m in internal height. The dimensions of the protected enclosure shall not vary significantly from 7.3 m x 7.3 m x 4.9 m high for a 405 litre (107 gallon) system, or 7.3 m x 4.9 m x 4.9 m high for a 265 litre (70 gallon) system. Intended significant variations to these dimensions shall be discussed with the Special Hazards Section of FM Global Engineering prior to implementation. The system, including the nozzles and the water distribution piping, shall not be installed where the temperature varies outside the range 4.4°C to 54.4°C or where the equipment will be exposed to inclement weather.

**Note:**

It is a requirement that the water in the system container is of potable quality and does not contain any organic or inorganic chemical additive. Only an intermittent water-cycling program as recommended for the particular application, in the listed Fike Micromist® System Design, Installation, and Maintenance Manual, shall be used.

- ii. Wherever possible, nozzles shall be pendent mounted. The top face of the nozzle diffuser plate shall be not more than 0.30 m below the ceiling soffit, and nozzle centre-to-centre spacing shall not exceed 2.44 m. The maximum horizontal distance of any pendent-mounted nozzle from a wall shall be 1.22 m. The maximum number of nozzles that shall be used with the 405 litre (107 gallon) and 265 litre (70 gallon) systems is 9 and 6 respectively. For systems that protect combustion turbines, nozzles shall be located and aimed such that no nozzle discharge will directly impact the turbine casing.
- iii. This fire suppression system shall not be used to protect substances that react with water to produce violent reactions or significant amounts of hazardous products. These substances include:
  - (a) Highly reactive metals such as sodium, potassium, magnesium, titanium, lithium, zirconium, uranium and plutonium.
  - (b) Metal alkoxides such as sodium methoxide.
  - (c) Metal amides, such as sodium amide.
  - (d) Carbides, such as calcium carbide.
  - (e) Halides, such as benzoyl chloride.
  - (f) Hydrides, such as lithium aluminium hydride.
  - (g) Oxyhalides, such as phosphorus pentasulphide.
  - (h) Silanes, such as trichloromethyl silane.
  - (i) Sulphides, such as phosphorus pentasulphide.
  - (j) Cyanates, such as methylisocyanate.

The Fike, Micromist®, pre-engineered water mist fire suppression system shall *not* be used for direct application to liquefied gases at cryogenic temperatures, such as liquefied natural gas or LPG, which boil violently when heated by water.

**Note:**

The Fike Cheetah® control panel, which is listed as part of this water mist system, has not been verified as conforming to the requirements of AS 4428 and therefore its use should be limited to *control* of the system's nitrogen and water valves only. All other fire-protection functions such as damper and fan control, plant shut-down, fire-detection, status indication, and alarm signalling, shall be provided by a CIE, and associated peripheral equipment, that verified as conforming with the relevant Australian Standard. An appropriate electrical interconnection shall be installed between the control output relay of the CIE and the control input terminals of the Cheetah® panel.

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## Producer's description

The Fike, Micromist®, pre-engineered water mist fire suppression system is an "intermediate pressure" (1,200 kPa to 3,450 kPa) system that uses a fine *potable water* spray to control a fire. The fine spray extinguishes the fire by cooling the flame and fire plume, by dilution of the fire's air supply with water vapour, and by reducing radiant heat.

The suppression system is primarily intended to protect the following hazardous areas:

- (a) Machinery spaces, up to 260 m<sup>3</sup>, housing hazards such as oil pumps and / or reservoirs, fuel filters, gear boxes, drive shafts, lubrication skids, internal combustion engine test cells, or spaces with incidental storage of flammable liquids
- (b) Turbine generator enclosures of up to 260 m<sup>3</sup>, housing gas turbines / generator units.

However, the Fike, Micromist®, pre-engineered water mist fire suppression system can also be used to achieve, separately or combined, a wide range of performance objectives including:

- (a) Fire extinguishment
- (b) Fire suppression
- (c) Fire control
- (d) Temperature control
- (e) Exposure protection.

The Fike, Micromist®, pre-engineered water mist fire suppression system is supplied as a custom-ordered "package" consisting of a factory pre-assembled skid-mounted water supply "system", a job-specific number and type of Fike water mist nozzles, and a factory pre-programmed Fike Cheetah® control panel (Note: This listing covers the use of this panel *only* with *this* water mist system, and *only* to provide the function of cyclic control of the water discharge).

The nozzle assemblies receive the water through the pre-engineered piping network. The nozzles create a fine water mist by the impingement of the water on the edge of a circular plate. The water mist produced is directed into the protected space as determined by nozzle placement. The water containers are heavily galvanized inside and out, to provide reasonable assurance of satisfactory service life. Each water container is fitted with a bursting disc rated at 3,450 kPa at 22°C, for protection against inadvertent or accidental over-pressure.

The Fike, Micromist®, pre-engineered water mist fire suppression system extinguishes a fire by delivering a controlled *cyclic intermittent* supply of water to a network of water mist nozzles that is specifically designed and arranged to protect, typically, either a machinery space or a turbine generator enclosure. Upon activation, the Fike Cheetah® control panel sends signals to the electrically-operated valves of the propellant nitrogen supply and the water storage container. The nitrogen supply valve is maintained open throughout the entire active protection period, but the motorized valve of the water container is cyclically opened and closed in response to the selected cycling program of several such "standard" programs that have been factory-programmed into the system's Cheetah® control panel. This suppression system is designed to provide protection for at least the duration of coast-down of a typical large combustion turbine and, for all applications, to operate for not less than 10 minutes, including cycling "dwells".

The skid-mounted "system" is furnished as either a 256 litre (70 gallon) or 405 litre (107 gallon) nominal water storage standard assembly. These assemblies consist of a welded steel skid platform, one foot-mounted upright cylindrical water container (the water tank), one or two specially-equipped pre-filled 60.72 litre upright cylinders of industrial dry nitrogen, and valves and tubing as required to control and transfer the nitrogen gas and water. The foot of the water tank is bolted to the skid platform. The nitrogen cylinder(s) are not fixed directly to the skid platform, but are supported by band-clamping to the water tank. Pipes and fittings for reticulation of the water to the water mist nozzles are provided by the installer.

The nitrogen container is filled in the Fike factory with industrial dry nitrogen to a pressure of 12,750 to 13,650 kPa at 21°C. It can be re-filled to the same specification by an accredited local industrial gases supplier, although standard industrial nitrogen cylinder outlet valving is not fitted. A factory pre-set regulator reduces the nitrogen pressure to 2,200 kPa prior to admission to the water container. The contents of the water container are not pressurized until the system is activated and nitrogen gas subsequently automatically supplied to the water container.

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## Technical specification

The following details are a representative extract of the technical specification for the Fike, Micromist®, pre-engineered water mist fire suppression system and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

### General specifications:

System parameter	System nominal water capacity (litres / US gallons)	
	265 / 70	405 / 107
Maximum protected volume (cu. m)	173.3	260.0
Maximum protected height (m)	4.90	
Minimum protected width (m)	4.88	
Number of water containers	1	
Number of 67.2 litre nitrogen cylinders	1	2
Overall length of system (m)	1.21	
Overall width of system (m)	0.75	
Overall height of system (m)	1.70	2.17
Maximum number of nozzles per system	6	9
System maximum ambient temp. (°c)	54.4	
System minimum ambient temp. (°c)	4.4	
Nozzle rating (l/min each @ kpa)	7.95 @ 2,140 ±103	
Minimum ceiling to nozzle diffuser distance (mm)	300	
Maximum horizontal spacing of nozzles (m)	2.44	
Maximum horizontal distance from nozzle to wall (m)	1.22	
Nitrogen cylinder construction	Spun alloy steel	
Nitrogen cylinder design code	DOT 3AA-2300	
Nitrogen cylinder filling specification	127.6 to 136.5 bar @ 21°C	
Water container construction	Welded steel (galvanized externally & internally)	
Water container design code	DOT 4BA-500	
Rating of water container bursting disc	3,450 kPa @ 22°C	

### Equipment Items

Description	Part num. / Drg. num.	Date : rev.
Assembly, drain / fill valve	02-4235	29/07/97 : 0
Check valve, 1/2 inch	02-4571	06/01/99 : 1
Cheetah addressable control system - 110 v	10-052-G-1	01/07/99 : A
Cheetah addressable control system - 110 v	10-052-R-1	01/07/99 : A
Cheetah addressable control system - 240 v	10-052-G-2	01/07/99 : A
Cheetah addressable control system - 240 v	10-052-R-2	01/07/99 : A
Design, installation & maintenance manual, Micromist® systems	06-153	February, 1999
Dual relay module	55-023	03/01/97 : 0
Fast release contact module	55-020	31/12/96 : 0
Hose (1/2 inch)	02-4606	28/12/98 : 1
Hose (1/4 inch)	C02-1279	20/02/97 : 1
Hose (1/4 inch)	C02-1290	20/02/97 : 0
Hose (1/8 inch)	02-4538	30/12/98 : 2
In-line filter	02-4585	15/05/99 : A
Liquid level indicator	02-4236	07/04/99 : 2
Main valve assembly	C85-1087	16/11/98 : 1
Mounting skid	73-0039	12/05/99 : 4
Mounting strap, nitrogen cylinder	C70-213	13/07/92 : 0
Mounting strap, water	70-1384-R	08/07/98 : 2
Nitrogen / air valve assembly	73-0010	04/04/00 : B
Nitrogen fill valve	73-012	29/09/99 : B
Nozzle assembly, machinery space	73-0024	12/11/98 : 3
Nozzle assembly, turbine room	73-0023	12/11/98 : 3
Pilot valve assembly	C85-1093	16/11/98 : 1
Pressure gauge	C02-1257	29/10/98 : 1
Pressure regulator	02-4574	01/03/99 : 3

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Description	Part num. / Drg. num.	Date : rev.
Pressure switch	02-4550	28/12/98 : 1
Rupture disc assembly	73-0040	14/09/98 : 1
Rupture disc, water cylinder	D3632-1	18/03/99 : 2
Safety disc, nickel	C85-1002	04/08/97 : 3
Siphon tube, 265 l (70 gallon)	73-0046	25/08/98 : 0
Siphon tube, 405 l (107 gallon)	73-0049	25/08/98 : 0
Solenoid releasing module	55-022	31/12/96 : 0
Solenoid valve	C02-1254	08/03/93 : 0
Supervised output module	55-021	31/12/96 : 0
Water cylinder, 265 l (107 gallon)	73-0027	25/04/00 : B
Water cylinder, 405 l (70 gallon)	73-0032	25/04/00 : B
Water valve	02-4472	01/06/98 : 1
Water valve adaptor	73-0034	09/10/98 : 1
Water vent valve	02-4526	06/05/98 : 0

### Piping requirements:

These requirements are applicable to the pipe and fittings of the water distribution system only. Pipe and fittings shall be of a suitable grade of stainless steel, or of hot-dipped galvanised carbon steel. Black carbon steel pipe may also be used, with the agreement of the Authority Having Jurisdiction, but is not recommended. Pipe and fittings shall comply with the relevant requirements of AS 4041 'Pressure Piping', or with those of ASME B31.1 Power Piping Code, for a minimum working pressure of 2,205 kPa at 54.4°C. Stainless steel fittings shall comply with the relevant requirements of the above Codes, and shall be specifically intended for use with the selected stainless steel tubing. Pipework shall be sized, arranged, and supported, in accordance with the requirements of Section 2 of the listed Fike Micromist<sup>®</sup> System Design, Installation, and Maintenance Manual.