ACTIVFIRE®
ACTIVE FIRE PROTECTION-EQUIPMENT LISTING SCHEME

Commonwealth Scientific and Industrial Research Organisation, Australia
Ph.: +61 (0)3 9252 6000 Fax: +61 (0)3 9252 6011
Web site: http://www.activfire.gov.au E-mail: info@activfire.gov.au

LISTING NUMBER **afp - 1781**

Dates: Registration: 12-Oct-2005
Version: ....5 ....20-Nov-2008
Valid until†: 31-Jul-2009

PRODUCT LISTING DATA SHEET
(Active Fire Protection Equipment)

Product designation

Pyrogen™, EXA/EXA-M Series, pyrotechnically generated, aerosol fixed fire suppression system

(Refer to the Technical Specification section of this document for further specific detail)

Supplier

Pyrogen Technologies (Aust) Pty Ltd
18 Barry Avenue, MORTDALE, NSW, AUSTRALIA, 2223

Manufacturer

Pyrogen Manufacturing Sdn. Bhd.
No. 17, Jalan Pemberita U1/49, Temasya Industrial Park, 40105 SHAH ALAM, SELANGOR DARUL ESHAN, MALAYSIA

Supplier's description

The Pyrogen™, EXA/EXA-M Series, pyrotechnically generated, aerosol fixed fire suppression system is a pre engineered compact, non-stored pressure, electrically-actuated fixed fire protection system which extinguishes fire by using an extremely fine low settling-rate chemical dry-powder plus inert gases. The powder particles are induced into the fire and quickly cause complete chemical inhibition of the fire's radical-forming chain reactions. This, together with the oxygen dilution and cooling produced by the inert gases, rapidly extinguishes the flaming combustion of most fuels. The chemical dry-powder and inert gases are produced by a rapid but non-explosive exothermic reaction, of a patented "aerosol-forming substance", which commences within the shell of each Pyrogen® "generator" immediately after electric initiation. During the reaction, the inert gases and "micron-sized" particles of powdered chemical extinguishant are forcefully ejected from the nozzle holes of the generator and thereby thoroughly mixed with the atmosphere within the protected area. The inert gases emitted by the generator are predominantly nitrogen, carbon dioxide, and water vapour. At a specified minimum clearance from a nozzle opening the aerosol temperature shall not exceed 200°C (CEN, ISO) when in contact with combustible materials and 400°C (CEN, ISO) when in contact with non-combustible materials.

The initiation of the EXA/EXA-M Series generators is by means of an electrical activation ignition device located inside the generator. Any extinguishing system control panel is likely to be capable of activating one or several generators simultaneously. A suitable panel should be chosen by reference to the Pyrogen® Fixed Aerosol – Fire Suppression System Manual, or with the help of an authorised Pyrogen® equipment supplier.

The supplied equipment of a Pyrogen™, EXA/EXA-M Series, pyrotechnically generated, aerosol fixed fire suppression system includes, mounting brackets, and all necessary fasteners to attach these to the generator. A weather and vibration resistant electrical connector with a plug or a junction box with electrical terminals is furnished with all generators.

The Pyrogen™, EXA/EXA-M Series, pyrotechnically generated, aerosol fixed fire suppression system is suitable for use in marine or tropical environments, as evidenced by results of its testing for resistance to vibration, salt-spray corrosion, and moisture ingress. Accidental and deliberate releases of Pyrogen® aerosol do not contribute to global atmospheric warming or ozone depletion.

This product listing data sheet should be read in conjunction with the general requirements of the terms and conditions of listing under the ActivFire Scheme.

Executive Officer

© CSIRO Australia, 2008

† Listing may be subject to amendment, suspension or withdrawal at any time. Always verify current status.

Conformance criteria and evaluation

The Pyrogen™, EXA/EXA-M Series, pyrotechnically generated, aerosol fixed fire suppression system has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian/New Zealand Standard AS/NZS 4487:1997, 'Pyrogen fire extinguishing aerosol systems'.
2. Australian/New Zealand Standard AS/NZS 1851.16:1997, 'Maintenance of fire protection equipment - Pyrogen fire extinguishing aerosol systems'.
3. NFPA Standard NFPA 2010-2006, 'Aerosol Fire Extinguishing Systems'.
4. CEN prCEN/TR 15276-1, 'Fixed firefighting systems - Condensed aerosol extinguishing systems - Part 1: Requirements and test methods for components (00191148)'.
5. CEN prCEN/TR 15276-2, 'Fixed firefighting systems - Condensed aerosol extinguishing systems - Part 2: Design, installation and maintenance (00191149)'.

Listing is subject to ActivFire Scheme terms and conditions as applicable to the designated registrant and supplier.

Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this Product Listing Data Sheet, are derived from qualifications within the report of the testing agency and/or other related technical documentation. It is recommended that all details with respect to design, assembly and installation instructions and restrictions should be checked against the supplier's/manufacturer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

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

i. This equipment is intended for use in normally unoccupied areas. Use in protected areas, which may be occupied, is subject to effective design strategies, requirements and measures for human evacuation which are determined and verified in accordance with the relevant requirements of the regulations, standards and criteria as accepted authorities having jurisdiction.

ii. Ambient temperature of protected enclosure between -50°C and +65°C. (EXA models) and -50ºC and +85ºC (EXA-M models).

iii. Design and installation shall be done in accordance with the Pyrogen®, Design, Operation & Maintenance Manual, Fixed Aerosol Fire Suppression System, Revision No. 2.0, Issued July 2008 (Pyrogen® Part No. D2005-0205)

iv. Height limitations height to protected enclosure in accordance with following table.

General Series		M Series	
Generator	Max. enclosure height	Generator	Max. enclosure height
EXA-Z3	1 m	EXA-M-Z2	1 m
EXA-Z6	1.25 m	EXA-M-Z6	1.25 m
EXA-1	2.0 m	EXA-ML-1	2.0 m
EXA-2	2.5 m	EXA-MS-1	2.0 m
EXA-5	3.0 m	EXA-M-2	2.5 m
EXA-10	3.5 m	EXA-M-5	3.0 m
EXA-20	4.0 m	EXA-M-10	3.5 m
EXA-30	4.0 m	EXA-MB-10	3.5 m
EXA-50	4.5 m		

v. Due to a potential hazard of high temperatures at the end-plate nozzle, the following minimum clearances from the discharge nozzle for each type of generator should be observed during installation

General Series		M Series	
Generator	Minimum clearance	Generator	Minimum clearance
EXA-Z3	200 mm	EXA-M-Z2	150 mm
EXA-Z6	300 mm	EXA-M-Z6	300 mm
EXA-1	400 mm	EXA-ML-1	400 mm
EXA-2	700 mm	EXA-MS-1	400 mm
EXA-5	700 mm	EXA-M-2	700 mm
EXA-10	1000 mm	EXA-M-5	700 mm
EXA-20 to EXA-50	1,500 to 2,000 mm	EXA-M-10	1,000 mm
		EXA-MB-10 (at each end)	700 mm

Technical specification

The following details are a representative extract of the technical specification for the Pyrogen™, EXA/EXA-M Series, pyrotechnically generated, aerosol fixed fire suppression system and may be subject to change. Complete and current details should be determined from the designated supplier's/manufacturer's technical manual/data sheets.

Generator	Mass of generator	Mass of aerosol forming composition	Max. protected volume @ 100 g/m^3	Nozzle outlet	Length	Diameter	Discharge times
EXA-Z3	360 g	30 g	0.3 m^3	Mono	101 mm	38 mm	20 s
EXA-Z6	650 g	60 g	0.6 m^3	Mono	121 mm	51 mm	25 s
EXA-1	940 g	100 g	1 m^3	Mono	122 mm	64 mm	30 s
EXA-2	1,350 g	200 g	2 m^3	Mono	162 mm	64 mm	30 s
EXA-5	2,850 g	500 g	5 m^3	Mono	215 mm	89 mm	30 s
EXA-10	10,000 g	1,000 g	10 m^3	Mono/Radial	200 mm	220 mm	30 s
EXA-20	17,500 g	2,000 g	20 m^3	Mono	254 mm	220 mm	30 s
EXA-30	25,500 g	3,000 g	30 m^3	Mono	342 mm	310 mm	35 s
EXA-50	30,000 g	5,000 g	50 m^3	Mono	450 mm	310 mm	35 s
EXA-M-Z2	300 g	20 g	0.2 m^3	Mono	80 mm	40 mm	5 s
EXA-M-Z6	650 g	60 g	0.6 m^3	Mono	160 mm	40 mm	10 s
EXA-ML-1	800 g	100 g	1 m^3	Mono	240 mm	40 mm	15 s
EXA-MS-1	800 g	100 g	1 m^3	Mono	105 mm	70 mm	15 s
EXA-M-2	1,200 g	200 g	2 m^3	Mono	162 mm	70 mm	15 s
EXA-M-5	2,300 g	500 g	5 m^3	Mono	242 mm	113 mm	15 s
EXA-M-10	8,500 g	1,000 g	10 m^3	Mono	434 mm	113 mm	20 s
EXA-MB-10	8,500 g	1,000 g	10 m^3	Bi	434 mm	113 mm	20 s

Accessories	Part number
Thermal activation device T-start-45C	302 T-45
Thermal activation device T-start-72C	303 T-72
Thermal activation device T-start-110C	304 T-110
Activation device T-start Manual	305 T-man
Detection circuit junction box for T-start/ TAD	306 DCJB
Protective cup	307 P CUP
High lithium power accelerator for T-start/ TAD with isolation switch	308 HL-PAWIS
Solid electrolyte power accelerator for T-start/ TAD with isolation switch	309 SEP-PAWIS
Back up rechargeable power accelerator For T-start/ TAD with isolation switch	310 BUR-PAWIS
Thermal activation device TAD-45	TAD-45
Thermal activation device TAD-72	TAD-72
Thermal activation device TAD-110	TAD-110
Thermal activation device TAD-P (manual operation)	TAD-P
Activation device TAD-manual	TAD_Manual, Rev. 1.3
FireChase Detection and Actuation System With Isolation Switch	101 2ZWDIS
FireChase Detection and Actuation System	102 2ZD
FireChase Detection system two circuit	103 2ZIP
FireChase Detection system four circuit	104 4ZIP
FireChase CNC Detection and Actuation System	107 CNC FDDP
Dual-Output Booster (fully monitored) to increase number of connected canisters or use high current output for ancillaries up to 5Amp	201 DOB2
Junction Box for Monitoring 1 Discharge Line (metal case for industrial panel)	202 JB-1IN
Junction Box for Monitoring 2(3) Discharge Lines (plastic case for marine & automotive applications)	203 JB-2/3 MA
Junction Box for Monitoring 4(5) Discharge Lines (plastic case for marine & automotive applications)	204 JB-4/5 MA
Flush-mounting Plate for Detection and Activation System	205 FMP CP 101-4
Igniter Interface Unit (IIU) to monitor Discharge line through SFM (1 IIU per canister)	206 IIU
Supervision Firing Module (SFM) - universal interface to monitor & discharge (up to 10) canisters by any type of Detection and Activation Systems	207 SFM
Junction Box for Monitoring 2(3) Discharge Lines (aluminum casting case suitable for aggressive environment in marine & automotive applications)	208 ALJB-2/3 MA
Junction Box for Monitoring 4(5) Discharge Lines (aluminum casting case suitable for aggressive environment in marine & automotive applications)	209 ALJB-4/5 MA
Power pack input 240 VAC output 12 VDC 7.2A/h Battery in a box	701 PP12

† Listing may be subject to amendment, suspension or withdrawal at any time. Always verify current status.

Accessories	Part number
Power pack input 240 VAC output 24 VDC 7.2A/h Battery in a box	702 PP24
12VDC 7.2A/h Back up battery in a box with isolation switch for vehicle and marine applications	703 BUB12
24VDC 7.2A/h Back up battery in a box with isolation switch for vehicle and marine applications	704 BUB24
Sign Illuminated with Sounder EVAC	513SIWS-EVAC
Sign Illuminated with Sounder DNE	514IWS-DNE

Classifications:

Suitable for fire
Class A – combustible solids
Class B – flammable liquids
Class C – flammable gases
Class E – electrically energised fires

Handling and transport: In accordance with the requirements for goods classification as U.N. No. 3178 Dangerous Goods Class 4.1, Category C, Hazchem Code 1[T]

Minimum design factor:

Class B and surface Class A fires: 100 g/m^3
Dense cable fires: 200 g/m^3

Canister characteristics:

Material: Stainless steel (EXA models)
Stainless or galvanised mild steel (EXA-M models)
Temperature range: -50° to +65°C (EXA models); -50° to +85°C (EXA-M models)
Humidity range of application: 0 - 98%, non-condensing
Shock: Tested at 10g for >13,000 impacts
Vibration: 5g @ 50 - 250Hz
Corrosion resistance: Exceeds UL 1058 requirements

Aerosol characteristics:

Minimum particle size: 1 micron
Oxygen level: 17% to 20% (typical)

Electrical activation:

Nominal resistance: 0.6 - 5.0 Ohms (depends on model)
Activation current: 100 - 1500 mA (depends on model)
Actuation time: 2 -10 milliseconds

Service Life: 5 - 10 years

Supplementary information

Nil supplementary information.

† Listing may be subject to amendment, suspension or withdrawal at any time. Always verify current status.