Pyrogen
The Aerosol Fire Supression System

Now available
exclusively from

Pyroshield

Specialist Fire Protection

Pyroshield

Suppliers of The Pyrogen Aerosol Supression System

A revolution is taking place in Fire Suppression. Developed from solid rocket fuel technology, Pyrogen is the world's first commercially available Aerosol Fire Extinguishing System. Designed as a safe & practical alternative to Halon, Halocarbons, Chemical Powders and Inert Gases Pyrogen is available from stock in a wide range of canister sizes. Pyrogen is an inert non-toxic solid that remains stable until electrically or thermally activated, where upon it produces a gas-like extinguishing aerosol. The aerosol attacks the fire chemically and physically, giving virtual instant extinguishment & preventing re-ignition, and in certain instances, explosions. For many applications Pyrogen is the only practical alternative to Halon.

Some of the sizes available

Simply installed close to the potential hazard

When electrically or thermally ignited, Pyrogen generates the fire extinguishing aerosol

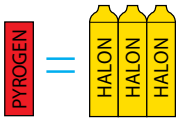
Easily reinstalled within minutes

off-shore

commercial and military aircraft

data rooms

Benefits of Pyrogen



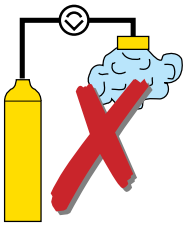
3 times more effective than Halon.

At a maximum* design concentration of 100g per m^3 Pyrogen exhibits equal or better extinguishing properties than Halon 1301 at 330g per m volume), as certified by Scientific Services Laboratory. Pyrogen has the lowest extinguishing concentration amongst commercially available agents.

* Recommended maximum for Class A, B, C, E & F type fires. Refer to table on reverse.

Environmentally Friendly

Pyrogen has been certified as having Zero Ozone Depleting Potential (ODP) & Zero Global Warming Potential (GWP). It is officially listed by the US Environmental Protection Authority under its Halon replacement 'Significant New Alternatives Program' (SNAP).

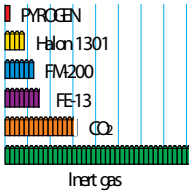


No Pressurised Cylinders or Pipe work.

Pyrogen Canisters are self contained, zero pressure units. As well as being light & safe to transport, they require no additional pipes, nozzles or distribution equipment. They cannot leak, burst or deteriorate, and can be stored for up to 10 years without maintenance.

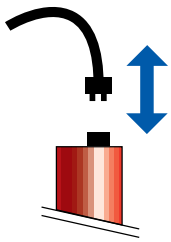
Tests & certification

Pyrogen has been tested by LPC, Scientific Service Laboratories (Australia) and is undergoing further certification worldwide. For the latest approval listings and test data please contact your nearest Pyrogen dealer.



Compact & Weight Saving.

Pyrogen canisters can provide the smallest & lightest fire extinguishing system currently available. With space requirements of up to 1/40th of Inert gases, and weight penalties of often only 10% of competing systems, Pyrogen in many cases is the only practical Halon replacement.



Simple to Install & Recommission.

Pyrogen canisters are electrically (or automatically thermally) activated. Simple wiring & plug in connectors can reduce installation times to a 1/3rd or less. If discharged, new canisters may be reinstalled in minutes* affording minimal downtime and eliminate potentially hazardous periods of non-active fire suppression .

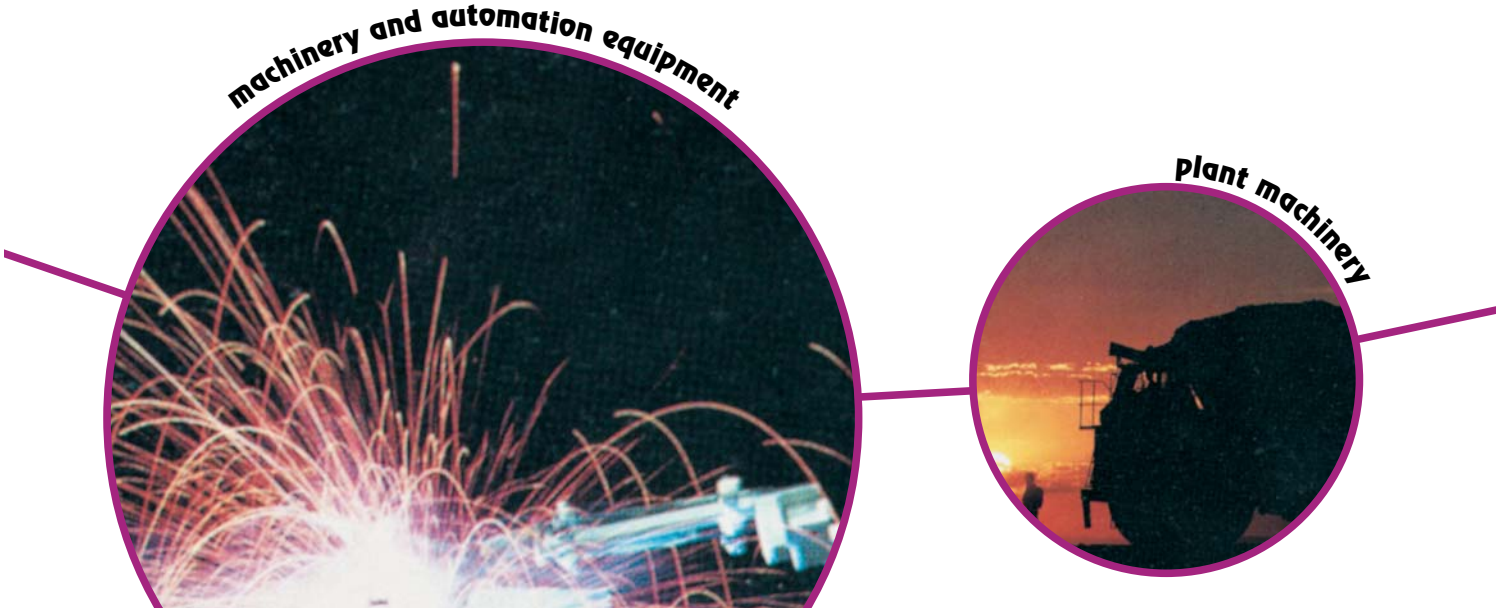
* Providing all and any necessary safety checks & inspections have been completed.

Low Toxicity.

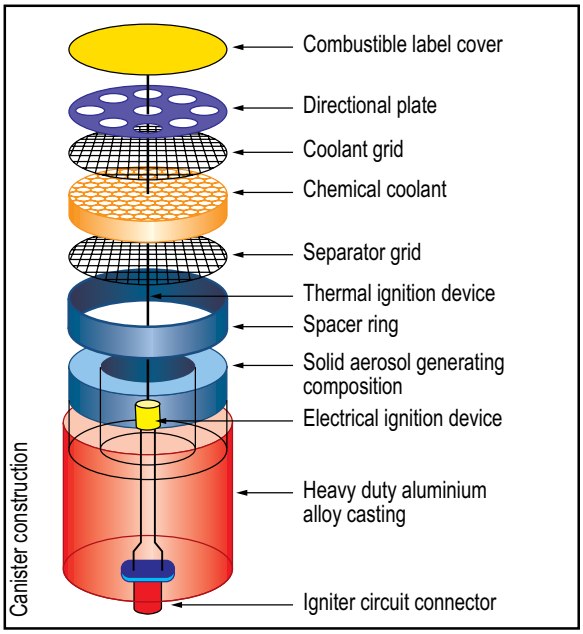
Unlike some Halon alternatives, Pyrogen produces no aggressive acids such as Hydrogen Fluoride upon contact with hot surfaces. Pyrogen produces no chlorine or bromide and does not deplete oxygen to suppress the fire.

Cost Effective

With minimal space & weight requirements, simple installation, zero maintenance and up to 10 years service life, Pyrogen is arguably the most cost effective Halon alternative available.



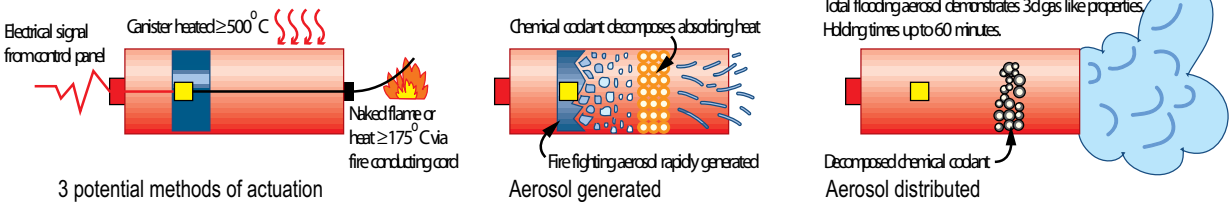
How it works



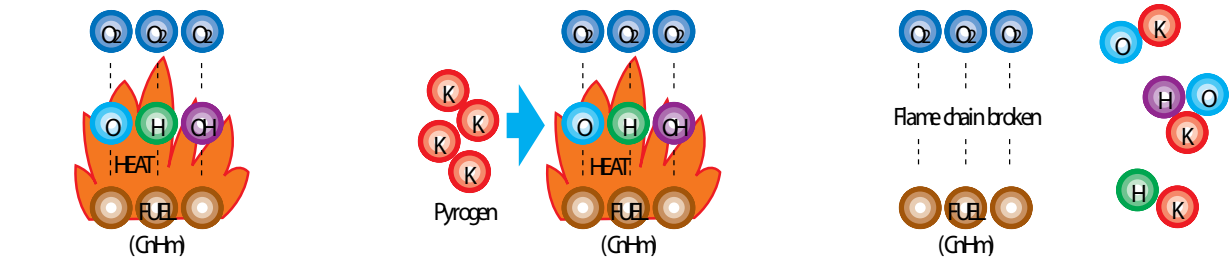
The principle of extinguishing action employed by Pyrogen is unique - a special solid chemical, when electrically or thermally ignited, produces combustion products - micron size dry chemical particles and gases. Dry chemical particles, (mainly potassium carbonates), and gaseous mixture, (mainly carbon dioxide, nitrogen and water vapour), mix together into a uniform fire extinguishing aerosol. Before being released into a protected area, the hot aerosol propels itself through a unique solid chemical coolant, which decomposes absorbing huge amounts of heat, thus ensuring flameless discharge and uniform distribution of the cool aerosol within the area.

The high rate of aerosol discharge ensures a tremendous knockdown effect. Micron size aerosol particles exhibit gas-like threedimensional qualities that allow the agent to rapidly distribute throughout enclosure and reach even the most concealed and shielded locations. Homogeneous distribution is achieved in a matter of seconds, while long holding times all help to prevent fire re-ignition.

Physical reaction within the canister



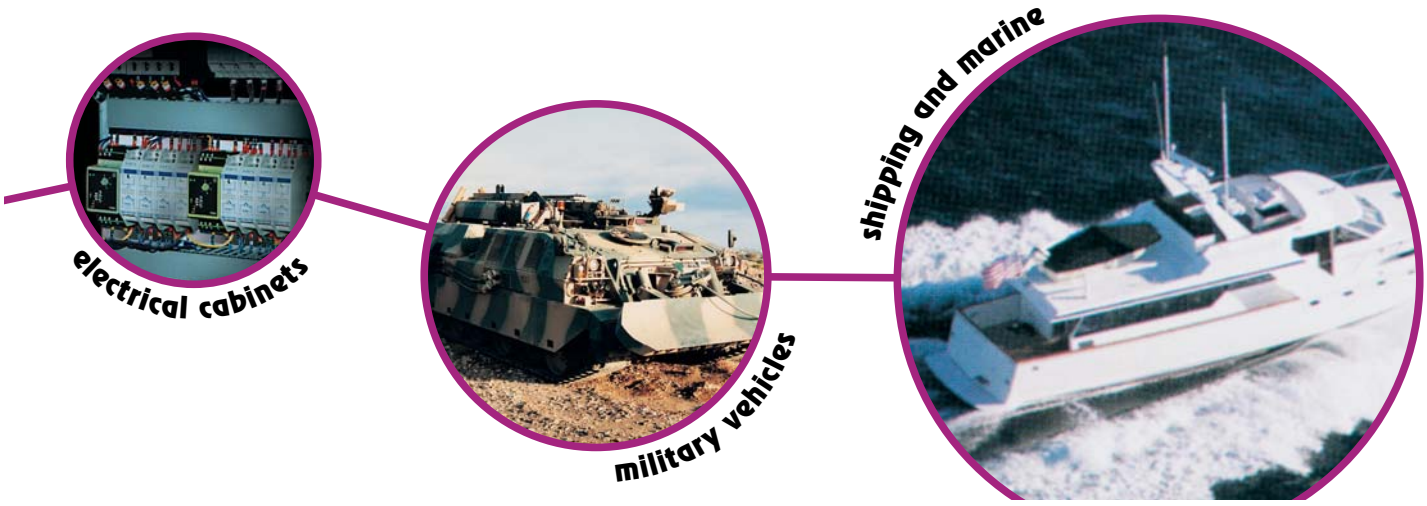
Principle of the chemical reation suppressing the fire



Stage 1
Fire is propagated by the 'flame chain carriers' O, H & OH

Stage 2
Pyrogen aerosol introduces potassium radicals (K) into the flame chain reaction

Stage 3
K radicals attach themselves to O, H & OH and remove them from the flame chain *without* depleting Oxygen



Technical data

Canister Characteristics

Canister Material:	Marine Grade Aluminium Alloy
Surface Treatment:	Powder Coated (red)
Max/Min Ambient	-50ºC ~ +60ºC
Shock:	Tested at 10g for >13,000 impacts
Vibration:	5g @ 50~250Hz
Corrosion Resistance:	Greater than UL 1058
Impact Resistance:	IP558
Humidity:	≤96%

Electrical (Thermal) Characteristics

Supervision/Monitoring Circuit:	≤1mA
Activation (Electrical):	≥400mA @6/12/24v for 10mS
Activation (Thermal):	≥175°C
Connector:	4 pin Military Type 2 PMDT Analog MIL-C-5015

Aerosol Characteristics

(at maximum design concentration)

Potassium Carbonates, solid:	~ 7g/m3
Nitrogen Gas:	~ 70% by vol.
Carbon Dioxide Gas:	~ 1.2% by vol
Carbon Monoxide Gas:	~ 0.4% by vol
Nitrogen Oxides, Gas:	40 – 100 ppm
Ammonia, Gas:	~ 0.075% by vol
Temp at Nozzle + 500mm:	≤75°C
Oxygen (level)	17% to 20% (typical)
Holding time	≤60 mins

Classifications

Suitable for Fire:	Class A - Combustible Solids Class B - Flammable Liquids Class C - Flammable Gases Class E - Electrically Energised Fires Class F - Fats & Cooking Oils
Handling & Transport:	Accordance with UN 1325 & Dangerous Goods Code: 4.1 Haz.Chem. Code : 2[Y] E
Packaging Group:	III

Comparison table

Agent	Formula	%	TOXICITY	ODP	GWP (100yrs vs CO2 =1)	Atmospheric lifetimes (yrs)	Extinguishing concentration (Class B fires) %v.v.	Extinguishing concentration (Class B fires) g/m 3	Mechanism of fire suppression
PYROGEN	KNO_3 Plasticised Nitrocellulose Carbon Admixtures	62.3% 12.7% 9% 16%	LOW*	0	0	0	---	100	chemical
Halon 1301	$CBrF_3$		LOW	10	5600	65	5	330	Chemical
FM-200	CF_3CHFCF_3		LOW	0	2900	36.5	7	530	physical
NAF S III	$CHCl_2CF_3$ $CHClF_2$ $CHClFCF_3$	4.75% 82% 9.5%	LOW	0.036	1450	12	11.9	530	physical
FE-13	CHF_3		LOW	0	11700	264	16-18	470	physical
FE-25	CHF_2CF_3		LOW	0	2800	32.6	10.9	580	physical
Argonite	N_2 Ar	50% 50%	LOW	0	0	0	33.6	600	physical
Argotec	Ar	100%	LOW	0	0	0	38	500	physical
Inergen	N_2 Ar CO_2	52% 40% 8%	LOW	0	0	0	37.5	500	physical
Carbon dioxide	CO_2	100%	HIGH	0	--	--	50	900	physical
Water	H_2O		NIL	0	0	0	--	--	physical
Chemical powders			LOW	0	0	0	--	1400-1800	chemical or physical

* Pyrogen has been certified as low toxicity by the Academy of Science & Biophysics Institute, Moscow.

Installation data

Available sizes

Parameter	MAG-02	MAG-1	MAG-2	MAG-3	MAG-4	MAG-5	MAG-11	MAG-12	MAG-13	MAG-14	MAG-15	MAG-16	MAG-17
Mass of generator, g	110	400	500	700	4,500	1,830	12,000	14,500	21,000	28,000	38,000	46,000	53,000
Mass of aerosol forming composition, g	20	60	100	200	1,000	500	1,500	2,200	3,500	6,000	6,500	8,400	11,000
Max protected volume, m^3 @ 100g/m^3	0.2	0.6	1	2	10	5	12	17	27	46	50	65	85
Nozzle outlet	bi-	mono-	mono-	mono-	bi-	mono-	mono-	mono-	mono-	mono-	mono-	mono-	mono-
Length, mm	120	80	95	145	350	190	180	247	235	260	175	227	285
Diameter, mm	25	75	75	75	95	95	247	247	306	402	492	492	492
Discharge time, sec	<2.0	<3.0	<5.0	<7.0	<10.0	<8.0	<12.0	<12.0	<15.0	<15.0	<15.0	<15.0	<15.0

Health & Safety Statement

Primarily due to the high obscuration, PYROGEN is designed for use in normally unoccupied areas such as data rooms, machinery and engine spaces, control cabinets and storage areas. Inadvertent exposure to the aerosol should be avoided using normal precautions such as warning signals, pre-discharge alarm and post-discharge warning and venting. Accidental exposure to aerosol should be limited to 5 minutes.

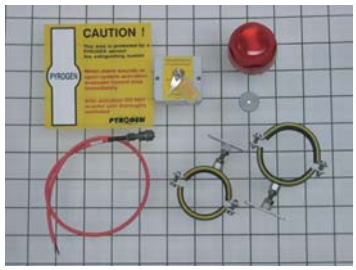
As obscuration may impede the egress of personnel, hold off devices may be required for large areas or those with internal obstructions. Further details on the safe application, installation, operation and recommissioning of PYROGEN systems is given in the design manual and a manufacturers safety data sheet is available upon request.

Pyroshield (UK)

Pyroshield's New Premises at Trafford Park Manchester.

Fire panels

Part of Pyroshield's PyroSense Detection, Alarm & Activation Control Panel range, covering both Industrial & Marine Applications



Accessories

A complete range of accessories are available to ficiltate complete installtions

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