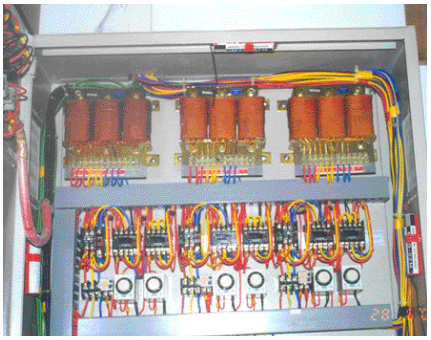
Industrial Applications

Aviation

- Maintenance shops
- Containers
- Cargo bays
- Helicopters
- General aviation
- Commercial airlines
- Ground support equipment

Electricity

- Computers
- Transformer rooms
- UPS's and ISP's
- Data centers
- Server farms
- Electrical cabinets
- Power substations
- Internet hotels / motels
- Back-up power supplies



Pyrogen MAG-02 canisters mounted in an electrical cabinet

Marine

- Electrical power panels
- Pump rooms
- Engine rooms
- Machinery spaces
- Electrical switch banks
- Cargo-holds and containers
- Emergency fire-fighting systems

Military

- Machinery and computer rooms
- Offices
- Field kits
- Military mobile base containers
- Warehouses
- Isolated or remote locations
- Temporary storage and construction offices
- Emergency / temporary replacement for out-of-service systems

Mining

- Electrical cabinets
- Switchboards
- Generator rooms
- Power substations
- Diode bridge cubicles
- Maintenance workshops
- All mining equipment

Machinery

- Construction equipment
- Road-paving equipment
- Timber-harvesting equipment

Oil, Gas & Petrochemical

- Pump rooms
- Rig operators
- Co-generation
- Machinery spaces
- Electrical cabinets
- Drilling companies
- Electrical distribution systems

In addition to protecting the entire sub-station control room, as shown, smaller MAGs can be mounted inside the control cubicles to provide local protection

Smart. Tough. Safe. Pyrogen™

Data Sheet Listing
AFP - 1317

Australian & New Zealand
Standards Approval
AS/NZS 4487:1997

US EPA SNAP

PRODUCT CERTIFICATION

Standards
- Pyrogen Fire Extinguishing Aerosol Systems AS/NZS 4487:1997 Standards Australia/ Standards New Zealand
- Maintenance of Fire Protection Equipment, Part 16: Pyrogen Fire Extinguishing Systems AS/NZS 1851.16:1997 Standards Australia/ Standards New Zealand

Listing
- SSL (Scientific Services Laboratories Australia) Register of Fire Protection Equipment – PyrogenTM, MAG Series, Pyrotechnically-generated, Fine Aerosol-powder Type Fire-Extinguishing System, afp-1317

Acceptance letters
- Fire & Rescue Department of Malaysia
- Bureau Veritas France, Marine Division
- BHP Australia, Environmental Department
- Snowy Mountains Hydro-electric Authority Australia, Telecommunications Sites

Approvals & Certificates
- Registration under SNAP program US EPA
- Approval for protection of small boat machinery spaces Maritime and Coastguard Agency, UK
- Approval for use on NSW commercial vessels, Waterways Authority, Australia
- Certificate of Standard Approval, Marine Register of Navigation, Russia
- Registration for Design Factor, SSL Australia
- Certification for Area Coverage to UL 1058, WorkCover Authority, Australia
- Certification for Electrical Conductivity, Sydney Electricity, Australia
- Approval for Chemical Ingredients, NICNAS, Australia
- Certification on Ozone Depletion, Academy of Science, Russia
- Dangerous Goods Classification, Soyuz, Russia
- Certification on Guaranteed Shelf Life, Soyuz, Russia
- Certification on Vibration & Shock Resistance, Soyuz, Russia
- Certification on Corrosiveness, Institute of Aviation Mechanical Engineering, Russia

PRODUCT TESTING

SSL Australia Test Reports
- SSL - 30-Day Elevated Temperature Test and Salt Spray Corrosion Test of UL1058 Standard
- SSL - Extinguishing Design Factor

WorkCover Authority Australia Test Reports
- WorkCover Authority - A Test Report on the Performance of a Fire Extinguishing Aerosol System in a Room Fire Test to UL 1058 Standard
- WorkCover Authority - A Report on Room Fire Test on MAG-4 and MAG-5 Generators to UL 1058 Standard

Power Industry Applications
- Substation Electrical Panel Cubicles Fire Tests – Integral Energy, NSW, Australia
- Report on Pyrogen Demonstration at Wollongong Electrical Engineering Pty Ltd
- Report on Pyrogen Demonstration at Snowy Mountains Hydro-electric Authority
- Report on Pyrogen Demonstration for protection of Substation Diode Bridge Electrical Cubicles – Murrin Murrin Nickel-Cobalt Project, WA, Australia

Industrial Applications
- Protection of Fume Cabinets – Hi-Safe Systems Fire Protection, Netherlands
- Protection of Libraries – Scientific & Research Centre for Conservation & Restoration of Documents, State Library of the Russian Federation

Performance Test Reports
- Pyrogen Design Factor - Class A and Class B Fires
- Performance of Pyrogen in a Class A Fire - Test to UL 1058 standard;
- Oil Fire Test

Safety Data
- Material Safety Data Sheet
- Emergency Procedure Guide – Transport
- Pyrogen Toxicity - Abstract
- Pyrogen Toxicity – Full Report
- Sanitary Certificate - Health Ministry of the Russian Federation, Department of the State Sanitary & Epidemic Inspection

Firepak Oil and Gas Industries, Ltd.

7171 Harwin Dr Suit3 316
Houston Texas 77036

T: 713 952 1996
F: 713-952 1997
E-mail: jbrooks@pyrogen.com
www.pyrogen.com

PYROGEN™

From rocket fuel to the world's most effective fire extinguisher

Developed from advanced aerospace technology – Pyrogen is the world's first commercially available aerosol fire extinguishing system

Pyrogen is non-pressurized, non-conductive and its extinguishing action is instantaneous

A further advantage is that if the Pyrogen aerosol enters delicate equipment, engines or electrical components – it causes no damage

Available in a wide range of canister sizes, Pyrogen does not deplete oxygen and was designed as the most economical and practical alternative to Halon, halocarbons, chemical powders and inert gases

WorkCover New South Wales

mca Maritime and Coastguard Agency

European Certification Bureau Nederland ECB

ACTIVFIRE SSL LISTED

Active Fire Protection Data Sheet Listing AFP - 1317

Australian & New Zealand Standards Approval AS/NZS 4487:1997

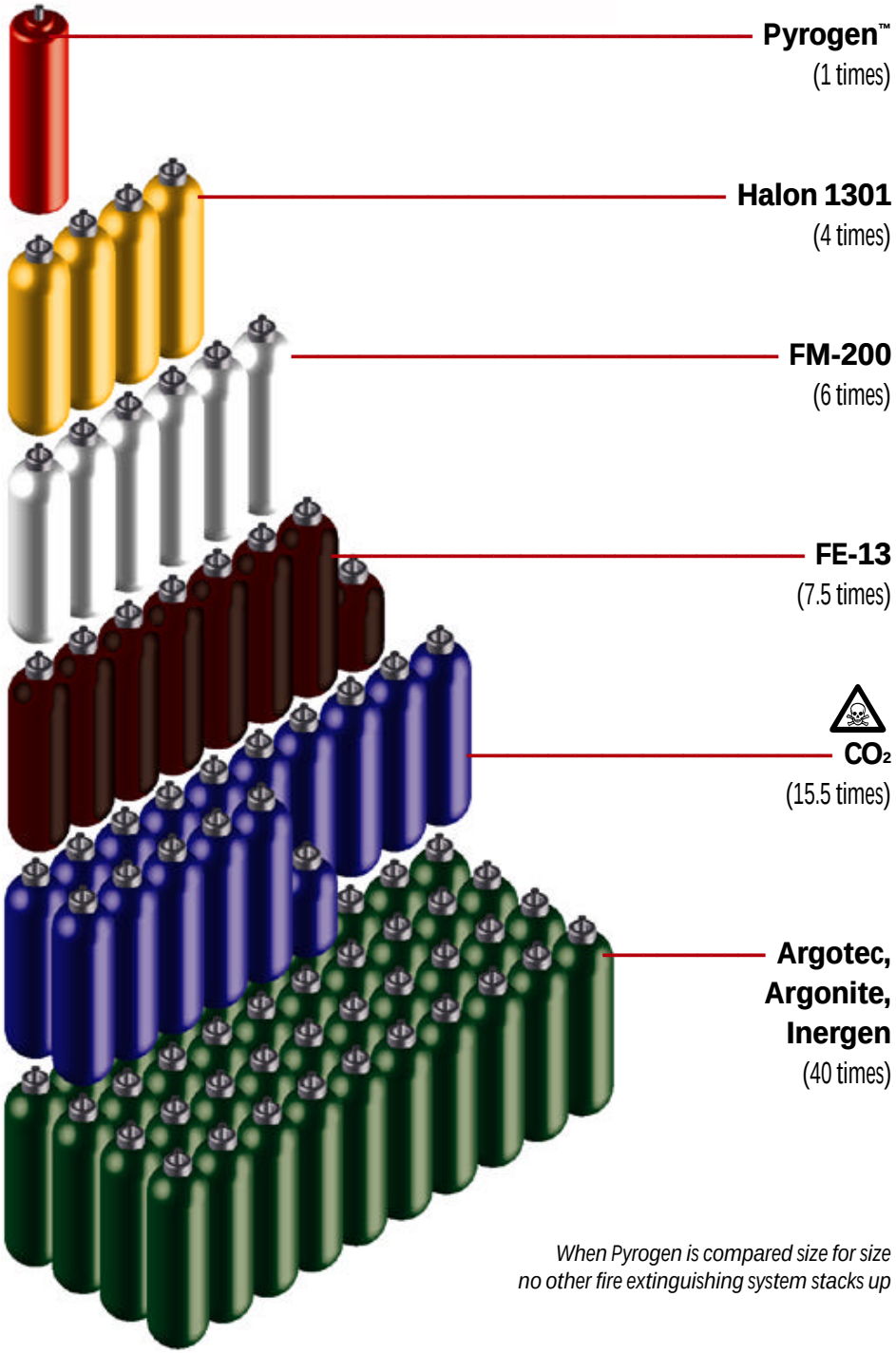
FO&GI

How Pyrogen Works

"Pyrogen's principle of extinguishing action is unique" explains Dr. Julia Berezovsky, Pyrogen's General Manager, "A special solid chemical, when electrically or thermally ignited, produces combustion products – micron-sized dry chemical particles and gases that mix into a uniform aerosol, an actual extinguishing medium"

"This aerosol is extremely effective in extinguishing fires, especially those involving materials of hydrocarbon origin, such as petroleum, diesel, hydraulic liquid, lubricants, natural gas, wood, etc".

The micron-sized aerosol particles exhibit gas-like three-dimensional qualities that allow the agent to quickly distribute throughout the enclosure and reach into the most concealed and shielded locations.



When Pyrogen is compared size for size no other fire extinguishing system stacks up

"Pyrogen's extinguishing action is achieved by interfering chemically with the fire reaction and then by thermal cooling. Normal design concentration is only 100g per cubic metre, which is more than three times lower than Halon 1301's [330g/m^3]".

Such low design concentration coupled with an almost instantaneous extinguishing action makes Pyrogen one of the most efficient and convenient agents in the world. Operation of the extinguishing unit can be electrical or thermal.

Smart. Tough. Safe. Pyrogen.™

Pyrogen MAG-12 canisters mounted in an electrical substation

Active Fire Protection Data Sheet Listing AFP - 1317

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Key Extinguishing Actions

Pyrogen's extinguishing action is achieved primarily by interfering chemically with the fire reaction

Pyrogen cools the fire to a temperature below which the fire reaction cannot continue

Key Performance Attributes

Pyrogen has the lowest extinguishing concentration amongst commercially available agents - three times lower than Halon 1301

Pyrogen requires no pressure cylinders or piping

Agent	Formula	Mass %	Toxicity	ODP*	GWP** 100yrs/CO_2=1	Atmospheric Lifetimes (yrs)	Extinguishing Concentration %ww	Extinguishing Concentration g/m³	Mechanism of Fire Suppression
Pyrogen™	KNO_3	62.3	Low	0	0	0	–	100	Chemical/Physical
	Plasticised Nitrocellulose	12.7							
	Carbon	9							
	Admixtures	16							
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 S11	$CHCl_2CF_3$	4.75	Low	0.036	1450	12	12	530	Physical
	$CHClF_2$	82							
	$CHClFCF_3$	9.5							
FE-13	CHF_3	50	Low	0	11700	264	15	470	Physical
Argonite	N_2	50	Low	0	0	0	33.6	600	Physical
	Ar	50							
Argotec	Ar	100	Low	0	0	0	38	500	Physical
Inergen	N_2	52	Low	0	0	0	37.5	500	Physical
	Ar	40							
	CO_2	8							
Carbon Dioxide	CO_2	100	High	0	1	–	50	900	Physical
Water	H_2O		Nil	0	0	0	–	–	Physical
Chemical Powders			Low	0	0	0	–	1400-1800	Chemical/Physical

**ODP = Ozone Depleting Potential, **GWP = Global Warming Potential*

Smart. Tough. Safe. Pyrogen.™

Key Environmental Benefits

Zero ozone depletion potential

Zero global warming potential

Outstanding Benefits

Three times more effective than Halon

Environment-friendly

Instantaneously extinguishes fire

Does not deplete oxygen level

Significant cost savings

Low toxicity

Other Benefits Include:

- Recognised by international authorities
- Reduced weight
- Requires no pressure cylinders or piping
- In-built thermal release
- Easily re-installed the same day
- Simple installation and recommission
- Will replace Halon, CO_2 or other fixed systems
- Can be added to existing protection installations
- Electrically non-conductive
- Less extinguishing agent needed
- No costly storage space needed
- Minimal maintenance
- Perfect where water or chemical agents are impractical
- Can be installed when normal systems are out of service for maintenance, repair, or loss of water pressure

Pyrogen Extinguishes

Class A Fires
– involving solid materials, generally organic, and can be further categorized into surface burning fires and deep-seated fires

Class B Fires
– involving liquids or liquefiable solids

Class C Fires
– involving gases

Class E Fires
– involving electrically energized fuels (UL Class C)

Class F Fires
– involving fats and cooking oils (UL Class K)

Health & Safety Statement

Pyrogen's dense aerosol is most effective 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 five minutes.

The Pyrogen aerosol cloud can reduce visiblility and hamper the evacuation 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 re-commissioning of Pyrogen systems is given in the design manual and our safety data sheet is available upon request.

Marine installation in a high-speed power boat

Products

Pyrogen Kits
Pre-engineered kits for marine and vehicle applications

Fire Panels
Purpose-built Pyrosafe fire control and alarm panels

Accessories
A complete range of accessories to facilitate complete installations

CD Rom
A CD or video is available to clearly demonstrate Pyrogen's versatility

Firepak Oil and Gas Industries Ltd.

Master Distributor

7171 Harwin Drive Suite 316
Houston Texas 77036

164 Nw Jib St
Oak Harbor Wa 98277

T: 713 952 1996
F: 713 952 1997
E-mail : jbrooks@pyrogen.com
www.pyrogen.com