



PYROinert

INERT GAS FIRE SUPPRESSION SYSTEM



PYROGEN
INERT GAS FIRE SUPPRESSION SYSTEM
PYROinert

TECHNICAL SPECIFICATIONS

1. Agent	IG-541 (50% N ₂ / 50% Ar)
2. Cylinder Capacity	60 Litre
3. Filling Capacity	22 kg
4. Nominal Pressure @ 37°C	300 Bar
5. Working Temperature	-20°C to +60°C

Serial Number: _____
Date of Manufacture: _____
Inspected On: _____
Scheduled Maintenance Due: _____

WARNING!
DO NOT OPEN THE VALVE OR REMOVE THE CYLINDER FROM THE WALL OR FROM THE SUPPLY LINE.

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IN CASE OF EMERGENCY
CONTACT YOUR SUPPLIER OR CONTACT:
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Clean | Environmentally Safe | 300bar versatility

PYROinert



PYROinert Inert Gas Fire Suppression Systems

PYROinert Inert Gas Fire Suppression System is the environmentally friendly fire protection solution of choice for archive rooms, data centres, control rooms, vaults and many other high valued assets.

PYROinert is a Clean Agent system comprising Nitrogen, Argon and Carbon Dioxide of various composition. As inert gases are found naturally in the atmosphere, they do not contribute to global warming nor harm the ozone layer. Due to the vast availability of inert gas supply, refilling costs are significantly lower than other fire suppression systems. They are non-conductive, non-corrosive, colourless, odourless and chemically inert [non-reactive].

PYROinert extinguish fire by lowering the oxygen content in the protected enclosure to below the level that supports combustion or re-ignition of fire. Under normal conditions, the oxygen level in air is approximately 21%. To extinguish fire, PYROinert reduces the oxygen level to approximately 12% to 15%. At this oxygen level, personnel present inside the protected enclosure would still be able to breathe.

PYROinert is stored in 80 litre pressurised cylinders with filling pressures of either 200Bar or 300Bar. Installation of PYROinert can be via single row or double row manifolds. Every cylinder is equipped with quick release valve, pressure gauge, bursting overpressure safety device and discharge hose. The master cylinder (first cylinder of the system) will be equipped with an electro-pneumatic release unit for actuation via electric signals from a Fire Extinguishing Control Panel.

Inert Gas Systems are Clean Agents which is described clearly by the National Fire Protection Association of America under their standard NFPA2001: Standard on Clean Agent Fire Extinguishing Systems and the International Standards Organisation under ISO 14520: Gaseous fire-extinguishing system.

PYROinert has been evaluated and certified by VdS Loss Prevention in Cologne, Germany – which is Europe's foremost institute for fire protection and security certification.



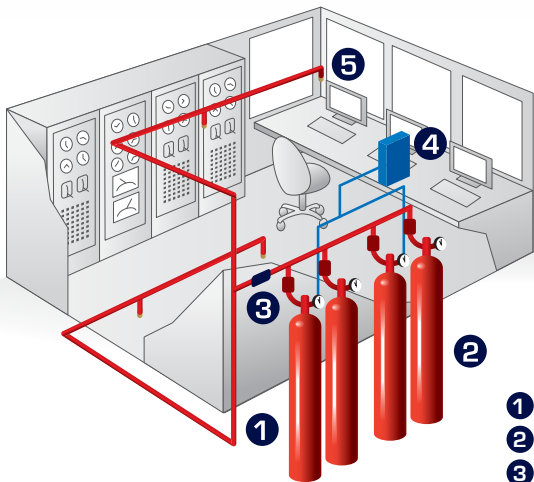
Fire Suppression Mechanism



Fire is only possible with the three elements as shown in the fire triangle.

The elements being: ▲ OXYGEN ▲ HEAT ▲ FUEL

During the discharge of PYROinert, the Nitrogen and Argon will flood the protected room and steadily replace Oxygen within the room. When the oxygen level is reduced to below 15%, fire will cease to exist. The extinguishment is normally achieved within 60 seconds from the discharge of the system.

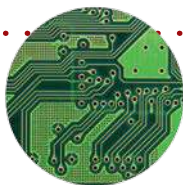


- 1 Cylinders
- 2 Reserve cylinders
- 3 Restrictor
- 4 Control panel
- 5 Agent nozzle

OXYGEN CONCENTRATION LEVEL

20.9%
20%
19%
18%
17%
16%
15%

Combustion Thresholds of Materials



Printed Circuit Boards



Wood, Cables, Polymeric Material



Paper, Carton, Cardboard



Heptane, Alcohol, Propane

Normal Atmosphere

Oxygen Level Inside Aircraft Cabin At Approximately 3,000m



No Fire Can Start Below This Oxygen Level

Materials normally found in IT & Switchgear Rooms

Type of fuel for fire

Room integrity test

According to NFPA 2001 standards, it is crucial for the extinguishing agent to be retained in the protected room for an extended period of time (minimum 10 minutes) to prevent re-ignition and spread of fire. To achieve this goal, PYROinert provides this service using a calibrated door fan test unit without discharging any extinguishing agent.

What is room integrity testing?

The extinguishment effectiveness of any gaseous system depends largely on achieving the designed concentration in a room and how long it can be maintained to prevent re-ignition and spread of the fire. Based on the standards, the agent needs to be maintained for 10 minutes.

To achieve this, the door blower fan system is used to check the leak-tightness of the room. The values obtained from these tests will be evaluated and compared to known tested values to show that the room is sufficiently tight to contain the extinguishing agent for the required period of time.



How is it performed?

The door fan equipment is fitted to the door of the room and turned on to either pressurise or depressurise the room by blowing air or removing air. A steady pressure is maintained and values of the room pressure is obtained and keyed into a specifically designed software which complies with the requirements of standards ISO14520 and NFPA.

The software converts the flow and pressure values to an Equivalent Leakage Area (ELA) value which is basically the total area of leakage in the room. The retention times are further calculated for different heights of protection depending on the equipment protected. Predictions of the retention times obtained from this software are conservative and are based on worst case scenarios. This ensures the reliability of the tests performed and ensures predictable results when compared with actual discharge of extinguishing agent into the room.

If the room fails the leakage test, the door fan equipment can be used to identify the leakage locations where the building contractor can then rectify.



The Advantages of PYROinert

Clean

- Colourless and odourless
- Non-toxic
- Non-corrosive
- No fogging when discharged
- No residue after discharge – no clean-up required
- Not harmful towards equipment

Chemically inert

- Non-reactive
- Non-conductive
- No temperature shocks

Environmentally safe

- Zero ozone depletion potential
- Zero global warming potential
- No atmospheric life - Natural gas

Economical refilling cost

- One of the lowest refilling cost amongst fire suppression systems
- Refilling gas readily available
- Fast turn-around for filling of cylinders

300bar versatility

- 30% extra filling capacity
- Fewer cylinders required – less storage space needed
- Further delivery distance for agent

No.	Description	PYROinert	
		200Bar	300Bar
1.	Cylinder Capacity	80 Litre	
2.	Filling Pressure	200Bar	300Bar
3.	No. of Cylinders Required (100m ³)	3.0	2.0
4.	Space Required for Cylinder Bank (Ratio)	1.0	0.7
5.	Discharge Pressure	Approx. 60Bar	
6.	System Piping	Identical	
7.	Discharge Time	60s	
8.	Cylinder Bank distance from protected room (Ratio)	1.0	2.0

	Composition		
	Nitrogen	Argon	CO ₂
PYROinert-01	-	100%	-
PYROinert-55	50%	50%	-
PYROinert-100	100%	-	-
PYROinert-541	52%	40%	8%

Applications

PYROinert is very safe for use in occupied areas. During discharge, the visibility in the room would remain as normal and the discharged agent is non-toxic. PYROinert is suitable for use in areas containing vital systems that support critical operations or high valued assets, such as the following:

- Archive Rooms
- Museums
- Libraries
- Computer Rooms
- Telecommunication Rooms
- Vaults
- Substation Control Rooms
- Switch Rooms
- Generator Rooms
- Financial Centres and Banks
- Medical Rooms





www.pyrogenfire.com



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