



Gaseous Fire  
Suppression  
Systems

# Contents

Why Gaseous Suppression	03
Why Tyco	04
Applications	05-06
INERGEN	07-08
Inert Gases Using i-Flow Technology	09
SAPPHIRE	10-11
FM-200	12
CO <sub>2</sub>	13
Gaseous Systems Features and Benefits	14-15

# Why Gaseous Suppression

There are many fire suppression systems in the market but do you know which one is right for you?

Extensively used for fire protection in high value environments such as data centers, telecommunications sites, museums and archives gas is a rapid fire suppression agent that, on detection of a fire discharges throughout the protected space, extinguishing the fire without secondary damage to the surrounding equipment or facilities.

Gas systems can typically be split down into two categories:

## // Inert

Inerts are naturally occurring and are stored as a gas. They are environmentally friendly and extinguish fire by reducing Oxygen until fire can not be sustained.

Our inert solution, Inergen, is a mixture of Argon, Nitrogen and CO<sub>2</sub>. Inergen has zero ozone depleting potential and has no global warming impact. when discharged Inergen creates no fogging meaning fast, safe and efficient evacuation in the event of a fire.

## // Chemical

Chemical gases are stored as a liquid and extinguish fire by removing heat. Chemical solutions are generally compact in size and therefore can easily be stored in the environment they are protecting.

**Sapphire:** As the greenest chemical agent on the market Sapphire benefits from a Lifetime Blue Sky Warranty. Sapphire utilises Novec™1230. Its large margin of safety assists evacuation in the event of a fire.

**FM-200:** Is a compact and economical gas which uses minimal volume of agent to extinguish fire.

**CO<sub>2</sub>:** Is a highly specialised solution which can be used for total flood, and local applications. It is versatile and economic which is typically used to protect unoccupied premises.

# Why Tyco

As a specialist fire engineering company with a proven track record, demonstrated through our third party accreditations and expertise, we can competently protect your business from fire. Our fully qualified and certificated technicians provide unbiased advice and support for all types of gaseous suppression and work with you to ensure you get the right solution. Whatever the risk; we have a solution to protect it.




// Sapphire Suppression System delivering Novec™ 1230

// Inergen

// CO<sub>2</sub>

// FM-200

## // Suppression Capabilities

	Services	Solutions	Competence
Installation	<ul style="list-style-type: none"> <li>Consultancy</li> <li>Risk assessment</li> <li>Design</li> <li>Supply</li> <li>Install</li> <li>Test</li> </ul>	<p>Preferred solutions:</p>   	<p>Specific Accreditation:</p> <ul style="list-style-type: none"> <li>LPS 1204 (LPCB)</li> <li>Pressure Equipment Directive (RSA)</li> <li>F-gas (FIA &amp; OEM)</li> <li>SOLAS (Lloyds Register)</li> </ul>
Service	<ul style="list-style-type: none"> <li>Routine maintenance</li> <li>24x365 call out service</li> <li>Testing &amp; inspection</li> <li>Integrity testing</li> <li>10yr hydrostatic testing</li> <li>Cylinder replacement</li> </ul>	<p>Install: We can provide alternative solutions if a</p> <p>Service: All gases are serviced and maintained, and fully supported</p>	<p>Support Accreditation:</p> <ul style="list-style-type: none"> <li>LPS 1014</li> <li>LPS 1048</li> <li>ISO 9001 / 14001 / 18001</li> </ul>

# Applications

	INERGEN	i3 (IG-55)	IG-01	IG-100	SAPPHIRE	FM-200	CO <sub>2</sub>
Telecommunication sites	✓	✓	✓	✓	✓	✓	
Data centres	✓	✓	✓	✓	✓	✓	
Museums and archives	✓	✓	✓	✓	✓	✓	
Oil & gas facilities	✓	✓	✓	✓	✓	✓	✓
Power generation installations	✓	✓	✓	✓	✓	✓	✓
Civil and military marine	✓				✓	✓	✓
Mass transit	✓	✓	✓	✓	✓	✓	
Hot process areas	✓	✓	✓	✓			✓
Printing presses							✓
Oil quench tanks							✓
Gas turbines							✓

// The sophistication of modern military hardware and their hazardous operating environments often require specialist fire protection solutions that products such as INERGEN and SAPPHIRE can provide.





// Energy generation industries, whether electricity, gas, oil, wind, wave or nuclear, are by their very nature risk aware. Effective fire protection products and the specialist expertise of Tyco are integral to their operating ethos.



// Protecting the world's heritage from fire requires effective fire suppression but without the risk of damaging irreplaceable artefacts.

// Transportation is the lifeblood of most economies, moving people, goods and machinery by road, sea and air. Flexible and multi-layered fire protection systems are required. They need to deal with events with minimum interference to transport systems. Tyco Fire Protection Products around the world meet this challenge every day.



// Imagine the value to a global business of their data centres that bring their services to customers world wide. Vast banks of servers and data storage equipment are vital to protect from loss or failure. To these international businesses and thousands much smaller, installing the best fire suppression systems is a small price to pay to sustain their valuable systems and data.

/ INERGEN /





***INERGEN is a mixture of three inert, naturally occurring gases: 52% nitrogen, 40% argon, and 8% carbon dioxide.***

***As INERGEN is derived from gases present in the earth's atmosphere, it exhibits no ozone depleting potential, nor does it contribute to global warming.***



INERGEN gas suppresses fire by lowering the oxygen content below the level that supports combustion. When INERGEN is discharged into a room, it introduces the proper mixture of gases that still allows a person to breathe in a reduced oxygen atmosphere. It does not produce a fog when discharged and escape routes remain visible.

Inergen to date is the only gas suppression agent which has been tested and proved to be safe on humans.

The following are typical hazards protected by INERGEN systems:

- // Computer rooms
- // Data centres
- // Tape storage
- // Telecommunication sites
- // Control rooms
- // Vaults
- // Process equipment
- // Museums
- // Art galleries
- // Archives
- // UPS switchgear
- // Other industrial risks



# Inert Gases Using i-Flow Technology

i-Flow technology is designed to be applied to the whole range of inert gases used as environmentally friendly fire fighting agents in fire suppression systems.



i-Flow systems eliminate the peak pressure point and achieve a balanced, constant flow during release.

The patented i-Flow valve regulates the flow at a pressure of 60 bar, whilst maintaining an ability to achieve a discharge of 95% of the gas within 60 seconds.

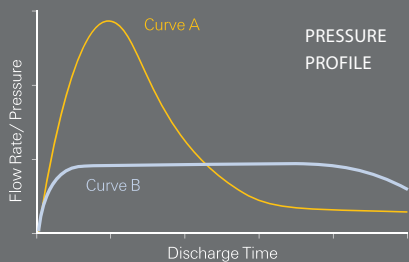
Using i-Flow technology:-

- // Reduces installation costs
- // Reduces installation time
- // Less storage space
- // Functional testing without discharge
- // No environmental impact
- // Immediate reuse

i-Flow technology explained

Curve A shows a standard high pressure inert gas system discharge, with it's distinctive peak flow and pressure spike which requires larger and higher specification pipework and greater venting area.

Compare this with Curve B which illustrates that the peak flow and pressure spike has been eliminated and a more even flow achieved during the entire effective discharge period. This is the i-Flow technology, working to provide a superior fire suppression solution.



/ SAPHIRE /



Novec™ 1230 is the active component of the SAPPHIRE System.

It is a liquid at room temperature allowing it to be transported economically and without restriction.



- // Compact storage
- // Meets all clean extinguishing agent fire protection standards
- // Has the largest margin of safety of any clean agent available
- // It has an Ozone Depletion Potential of zero
- // Has no effect on electrical equipment, electronic data, documents or people
- // It is environmentally sustainable

Research has shown that due to the speedy atmospheric degradation on discharge of approximately 3-5 days, the Global Warming Potential (GWP) of Novec™ 1230 is 1 (relative to CO<sub>2</sub>), for practical purposes negligible.

# FM-200

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FM-200 works by removing the element of heat from a fire thus ensuring combustion is interrupted.



FM-200 has proved to be the most widely used replacement for Halon 1301 with zero ozone depleting potential.

FM-200 is non-conductive so there is no risk of thermal shock to sensitive electronics, it suppress fire without consequential damage and is the system of choice in thousands of facilities around the world.





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$\text{CO}_2$ , the original 'gaseous fire fighting agent used' in fire protection, is a naturally occurring compound with no measurable environmental impact, making it ideal for non-occupied spaces that can be totally flooded with a gaseous fire suppression system for maximum effect.



As a by-product of manufacturing processes  $\text{CO}_2$  is collected, stored and processed for use as a fire suppression solution, is an economic alternative for protecting numerous industrial applications providing personnel are trained in the hazards, safety precautions and operation of  $\text{CO}_2$  systems during and after discharge.

$\text{CO}_2$  is lethal at design concentrations and must not be used in occupied areas or areas where human exposure is possible.

	Features
	<ul style="list-style-type: none"> <li>  A mixture of 3 gases, Argon, Nitrogen and CO<sub>2</sub></li> <li>  No global warming impact</li> <li>  Zero ozone depletion</li> <li>  Tested on humans</li> <li>  Non corrosive/toxic</li> <li>  No fog/mist- no loss of visibility in the event of a fire</li> <li>  CO<sub>2</sub> helps respiration</li> <li>  Recycled Oxygen- same as what we breath</li> <li>  Stored as a gas</li> <li>  Requires Schedule 80 pipes</li> <li>  Creates a low oxygen environment to suppress fire</li> </ul>
 Novec™ 1230	<ul style="list-style-type: none"> <li>  Global warming impact of 1</li> <li>  Zero ozone depletion</li> <li>  Non toxic</li> <li>  Large safety margin</li> <li>  Lifetime Blue Sky Warranty</li> <li>  Atmospheric life span of 5 days</li> <li>  Stored as a liquid as 25 Bar</li> <li>  Vaporises on dispersion</li> </ul>
	<ul style="list-style-type: none"> <li>  High global warming potential covered by the European F-Gas Regulation</li> <li>  Zero ozone depletion</li> <li>  Less of the agent is used to suppress fire</li> <li>  Heavy quality pipework</li> <li>  Stored as a liquid at 25 Bar</li> <li>  Suppresses fire by reducing heat</li> </ul>
CO <sub>2</sub>	<ul style="list-style-type: none"> <li>  Suppress fire by reducing oxygen</li> <li>  Local and total flooding application</li> <li>  Universally available</li> </ul>

## Benefits

- | No risk of agent being banned -backed by a lifetime guarantee
- | Only agent approved for automatic use in manned environments
- | In the event of discharge, the agent is cost effective to replace
- | No evacuation issues
- | Cylinders can be remote from the risk (up to 100m)
- | Directional valve solutions to enable mutli-risks to be protected economically using single cylinder bank
- | Constant flow solution available, therefore reducing size of venting requirement
- | Reduced venting requirement compared to Inerts

- | Future proof – no risk of being banned
- | Used in manned environments
- | Greenest Chemical
- | Can be stored within the risk
- | Compact and space sufficient
- | Venting requirement reduces
- | Economical installation costs

- | Compact storage and space sufficient
- | Can be stored within the risk
- | Low cost pipework
- | Economical installation

- | Does not need to contained
- | It's a byproduct of manufacturing





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