

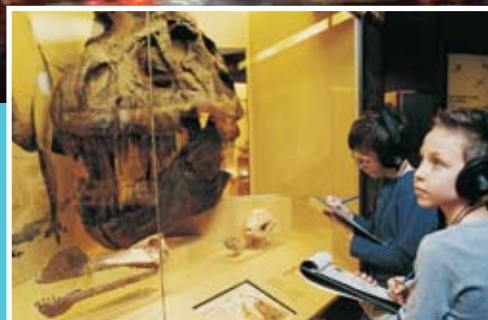
HYGOOD[®]

FM-200[®]

Gaseous Fire Extinguishing Systems

FM-200[®]

- Fast, effective fire protection for critical assets & processes
- Full list of international approvals
- Tried & trusted technology
- Clean & safe solutions



FM-200[®]

Gaseous Fire Extinguishing Systems

fast, clean & safe fire protection

Hygood FM-200[®] systems are internationally accepted as providing reliable and effective fire protection solutions for high value assets, processes and locations, as well as the people who work in these protected areas.

Electrically non-conductive, FM-200 works by removing heat from a fire so that combustion cannot be sustained, its unique characteristics also chemically inhibit re-ignition. When it comes to being safe for use, FM-200 delivers, which is why Hygood FM-200 systems are approved by LPCB and UL; the best solution where personnel safety and process continuity are paramount.

The decision to use Hygood FM-200 can be based on

a number of key factors: it is the most successful of the chemical replacements for Halon 1301 and it is an agent that has been used to successfully protect tens of thousands of high-technology centres around the world. At the latest count, it has been entrusted to safeguard over one hundred thousand applications in more than 70 countries. Its use as a fire suppressant is not inhibited either by the Montreal Protocol or the Kyoto Protocol. Indeed, it is a clean agent that belongs to a class of compounds that was introduced specifically to facilitate the phase-out of ozone depleting gases, such as the now-banned Halon 1301.

At its design concentration, FM-200 does not sufficiently deplete the oxygen level to a point where it is unsafe for occupants to remain in the room. Following a fire, the gas may be dispersed through natural



ventilation, which is made possible by FM-200's freedom from any toxic side effects and – because it contains neither bromine nor chlorine, it has zero ozone depletion characteristics.

Hygood FM-200 agent is stored in cylinders as a liquid, pressurised with nitrogen so requiring only a very small storage 'footprint'.

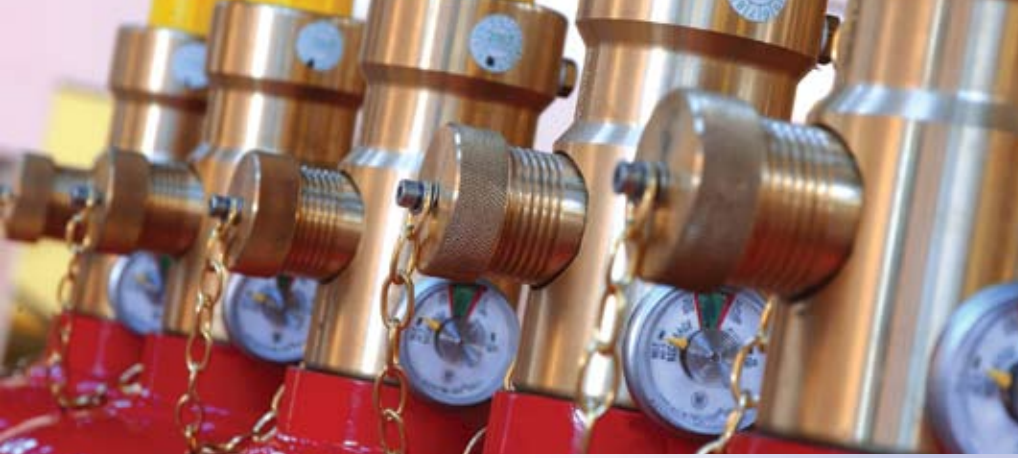
benefits

- Colourless, odourless, non-contaminating gaseous fire protection
- Designed to protect critical assets and processes without damaging them
- Safe to use in occupied areas
- Proven in thousands of successful installations around the world
- Hygood quality & technical/service support

applications

- Computer suites & data centres
- Gas turbine enclosures
- Offshore oil/gas exploration & production facilities
- Telecommunications centres
- Power generation
- Marine
- Museums, archives & data storage





The discharged gas flows through a piping network into the protected area, where it is applied to extinguish the fire, initially largely through heat absorption.

Significantly, there is no risk of thermal shock damage to delicate electronic equipment and FM-200 is electrically non-conductive and non-corrosive. Additionally, it leaves no oily residue or deposits to damage software, data files or communications equipment, meaning post-discharge clean up time and costs are minimal.

Being a good neighbour

Everything we do has some kind of environmental impact, from switching on the air conditioner to starting up the car. However, Hygood FM-200 was created in response to the need to find an effective new agent to replace ozone-depleting Halon fire suppressants. It has very little environmental impact and does not harm the earth's ozone layer.

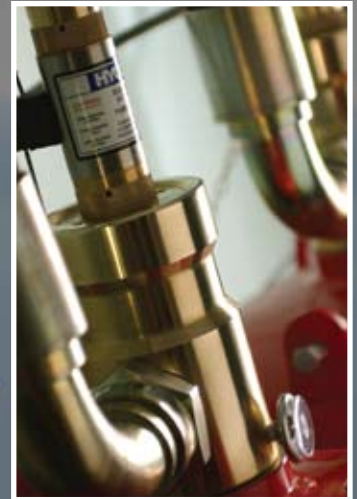


The logo consists of the word "HYGOOD" in white, bold, sans-serif capital letters on a blue rectangular background. Below the blue background is a red horizontal line with a wavy, flame-like pattern, and below that is another solid blue horizontal line.

FM-200® - Proven in thousands of successful installations worldwide

Protecting your most valuable asset

People are the lifeblood of any business, and their protection is vital. Extensively tested and studied, Hygood FM-200 is proven safe for use in occupied, protected areas. Hygood FM-200 systems are designed using bespoke software, which accurately calculates the amount of FM-200 required for the protected space. The target concentration (FM-200 in an identified protected volume) is matched to international third party approvals, which themselves are the result of extensive and repeated fire tests, to match design to fire protection performance.

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tyco
*Fire Suppression
& Building Products*

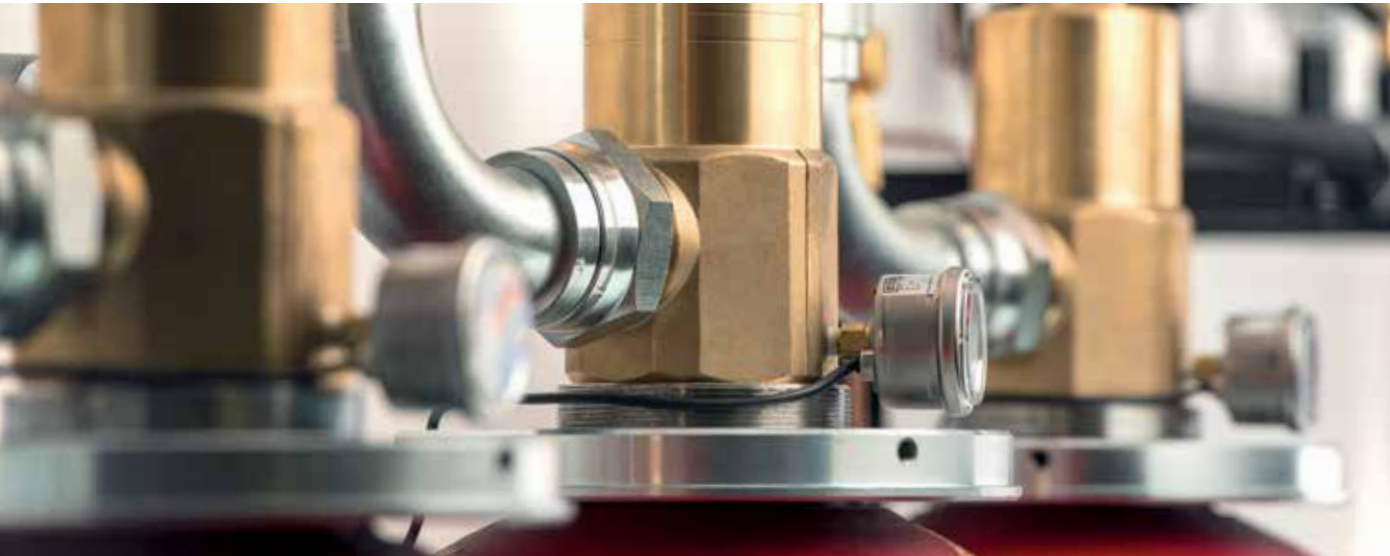
FM-200® Gaseous Fire Extinguishing Systems are manufactured by:

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SAPPHIRE® PLUS



SAPPHIRE PLUS suppression systems

HYGOOD SAPPHIRE® Fire Suppression Systems delivering 3M™ Novec™ 1230 Fire Protection Fluid is a safe, environmentally friendly clean agent that instantly vaporizes upon discharge, absorbing heat and providing total flooding of protected spaces.

70 Bar NOW Available!

SAPPHIRE PLUS is a 70 bar system, which helps reduce the footprint, installation and service time by offering higher fill densities up to 1.4kg/L to reduce the number of containers. The increased pressure also permits the containers to be located much further from the protected space and increases the ability to introduce selector valves to protect multiple hazards from a single container bank. Additionally, pipe sizes may be reduced increasing the economy and design flexibility.

The system benefits from new software, designed to maximise the benefits of the SAPPHIRE PLUS system.

The SAPPHIRE system has a proven track record for protecting people, the environment and high value assets. This clean agent system is custom engineered to quickly suppress fires without causing harm and where clean-up of other agents poses a problem.



SAPPHIRE PLUS Gaseous
Fire Suppression Systems
Delivering 3M™ Novec™
1230 Fire Protection Fluid

- 70 Bar System
- Higher Fill Densities (up to 1.4 Kg/L)
- Reduced Footprint, Installation Cost and Service Time
- Extended Temperature Range -18°C to 65°C (UL/FM)
- Selector Valves
- Extended Pipe Runs
- New Design Software
- Environmentally Friendly
- Approved for Occupied Spaces
- Fast Acting
- Optimised Pipe Sizes
- DOT/TPED Containers
- Dual Approved UL/FM & CE Pressure Gauge or Contacted Pressure Gauge
- Easy Halocarbon Retrofit
- Built-In Placement Switch Within Electrical Actuator

Choose a Revolutionary Fire Suppression System

SAPPHIRE Applications

- Data Centres
- Electrical Switching Rooms
- Machinery Spaces
- Medical Facilities
- Heritage Sites
- Air Traffic Control
- Oil and Gas Facilities

3M™ Novec™ 1230 Fire Protection Fluid provides a wide safety margin because it is used at concentrations of only 4.5 to 5.9% by volume which is well below the maximum 10% concentration for safe exposure. The agent has zero ozone depletion potential (ODP) and with an atmospheric lifetime of three to five days and a global warming potential of 1.0, it is the most environmentally friendly chemical clean agent.

Every SAPPHIRE installation carries a 20 year environmental warranty covering both the agent and the system hardware.

Fast Acting Suppression

SAPPHIRE systems work fast, delivering the agent within 6 to 10 seconds, suppressing fires before they have the chance to spread. Most importantly, when a fire is suppressed quickly, the result is less damage, lower refurbishment costs and reduced downtime.

Multiple Levels of Protection

- Total Flooding of Hazard Areas
- No Damage to Valuable Assets
- Wide Range of Applications
- Effective on Class A, B and C Fires
- UL Listed
- FM Approved
- LPCB RedBook Listed

System Recharging

As the 3M™ Novec™ 1230 Fire Protection Fluid is stored as a liquid at room temperature, the agent may be transported in 300kg drums or 1100kg totes enabling the agent to be made available quickly through a network of approved recharge facilities.



State-of-the-Art Detection and Control

- Addressable or Conventional Options
- Single and Multi-Hazard Agent Releasing Panels
- UL & ULC Listed and FM Approved Options
- CE Marked Option

The SAPPHIRE system is controlled by state-of-the-art detection and control systems using conventional or addressable AUTOPULSE microprocessor, MzXe and FAST 2000 control panels with highly sensitive smoke, heat and flame detectors.

When fire is detected, the control systems will sound alarms, close doors, shut down equipment and release the fire suppression system. The system has manual pull stations and provides automatic detection 24 hours a day, 365 days per year.

The Ultimate Fire Suppression Solution

The HYGGOOD brand promises a full range of quality fire protection solutions. Our extensive network of Authorized HYGGOOD Distributors provides factory trained professionals to serve our customers virtually anywhere in the world.



Approvals	25 Bar	42 Bar	70 Bar
UL Listed / FM Approved System	X		X
VdS System Approvals	X	X	
UL listed / FM Approved Selector Valves			X
EN 12094 Approved Selector Valves	X	X	X
EN 12094 Component Approvals	X	X	X
Combined EN 12094 Component Approval / UL Listed / FM Approved System			X
Marine Approvals	X		
CSIRO Approval	X	X	
CNPP Approval	X		
CNBOP Approval	X	X	
GOST Approval	X	X	
BOMBA Approval	X		
LPCB Redbook Listed			X

About Johnson Controls' Building Technologies and Solutions

Johnson Controls' Building Technologies & Solutions is making the world safer, smarter and more sustainable – one building at a time. Our technology portfolio integrates every aspect of a building – whether security systems, energy management, fire suppression or HVACR – to ensure that we exceed customer expectations at all times. We operate in more than 150 countries through our unmatched network of branches and distribution channels, helping building owners, operators, engineers and contractors enhance the full lifecycle of any facility. Our arsenal of brands includes some of the most trusted names in the industry, such as Tyco®, YORK®, Metasys®, Ruskin®, Frick®, PENN®, Sabroe®, Simplex® and Grinnell®.

For more information, visit www.SapphirePlus.com or follow [@HygoodFire](https://twitter.com/HygoodFire) on Twitter.

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HYGOOD®

CO₂

**Carbon Dioxide
Fire Suppression Systems**

Carbon Dioxide fire suppression systems have been proven effective in numerous unmanned applications:

- Commercial And Industrial Fryers
- Dip Tanks
- Electric Generators
- Electric Generating Equipment
- Electrical Panels
- Marine Applications (including Cargo Holds, Paint Lockers, Engine Rooms, Scr Rooms and Snuffing Systems)
- Spray Booths
- Waste Disposal Equipment
- Gas Turbines
- Coal Silos
- Hazardous Material Storage
- Quench Tanks
- Semiconductor Wet Benches
- Computer Room Subfloors
- Unmanned Control Rooms
- Coating Operations
- Paint Lines
- Wave Solder Machines
- Machining Operations
- Hose Reel Stations
- Transformer Vaults
- Dust Collectors
- Printing Presses
- Inerting Systems



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Fire Suppression
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