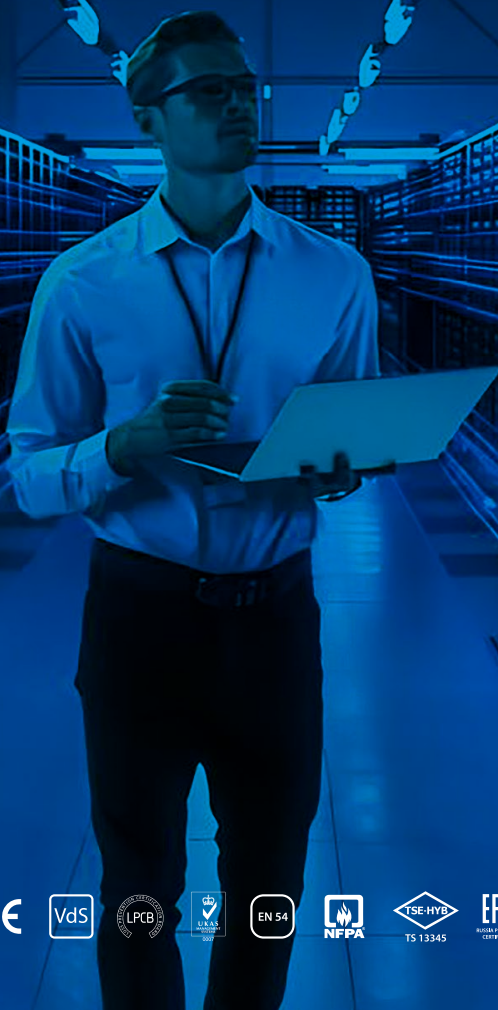




# VENGERANT

PROTECTS FOR THE FUTURE



## VENGERANT CLEAN AGENT FIRE SUPPRESSION



[vengerant.com](http://vengerant.com)

# CLEAN AGENT FIRE SUPPRESSION SYSTEMS

VENGERANT Clean Agent Fire Suppression Systems are meticulously designed to provide rapid and efficient fire suppression across a diverse range of applications. These systems include VENGERANT 227 Fire Suppression Systems, utilizing HFC-227ea (commonly known as FM-200), and VENGERANT 5112 Fire Suppression Systems, utilizing FK-5-1-12 (commonly known as Novec 1230). Designed for swift and effective response, they ensure maximum safety with minimal operational disruption. VENGERANT's solutions are robustly built to endure challenging conditions, offering unparalleled reliability and assurance.

## Ultimate Fire Protection: Excellence in Design and Performance

Our systems utilize clean agents like HFC-227ea and FK-5-1-12, which are safe for people, equipment, and the environment. These agents are effective in suppressing fires quickly without leaving any residue, ensuring minimal downtime and cleanup. The advanced design of our systems allows for efficient discharge and coverage, providing comprehensive protection for even the most sensitive and critical environments. Furthermore, VENGERANT Clean Agent Fire Suppression Systems are engineered to meet the highest industry standards, ensuring reliable performance and peace of mind. By choosing VENGERANT, you are investing in cutting-edge fire protection technology that prioritizes safety, efficiency, and environmental responsibility.





# CLEAN AGENT FIRE SUPPRESSION SYSTEMS

## SWIFT AND EFFECTIVE FIRE SUPPRESSION

Both HFC-227ea and FK-5-1-12 are highly effective in swiftly extinguishing fires by displacing oxygen, ensuring minimal damage and downtime, while also being cost-efficient with minimal maintenance requirements

## NON-CONDUCTIVE, HARMLESS AND ECO-FRIENDLY

Ideal for use on electrical fires, ensuring no conductivity risks. Both HFC-227ea and FK-5-1-12 are clean agents that leave no residue and pose no harm to the environment. Their eco-friendly properties make them a responsible choice for modern fire suppression needs.

## COMPREHENSIVE FIRE HAZARD PROTECTION

Designed to protect a wide array of fire hazards across various sectors with HFC-227ea and FK-5-1-12. From data centers to industrial facilities, these systems are versatile enough to meet the unique needs of different environments, ensuring optimal fire safety.

## EXCEPTIONAL PERFORMANCE IN ALL CONDITIONS

Engineered to operate effectively under the most challenging conditions, ensuring continuous protection with both agents. Whether in extreme heat or cold, these systems maintain their reliability, providing consistent fire suppression performance when it's needed most.



# CLEAN AGENT FIRE SUPPRESSION SYSTEMS

## Designing the Future of Fire Safety: Excellence in Protection and Innovation

At the core of Vengerant Clean Agent Fire Suppression Systems are high-pressure cylinders designed to safely contain the clean agent, coupled with precision-engineered discharge nozzles that ensure even distribution for optimal fire suppression. Our advanced control panels provide reliable monitoring and control, while state-of-the-art smoke and heat detectors offer early fire detection. Additionally, our systems incorporate cutting-edge suppression technology that rapidly detects and extinguishes fires, reducing response times and preventing extensive damage. The integration of advanced analytics allows for real-time monitoring and system adjustments, ensuring the utmost efficiency and reliability in critical situations.

# CLEAN AGENT FIRE SUPPRESSION SYSTEMS

## Advanced Fire Safety 24/7

VENGERANT Clean Agent Fire Suppression Systems offer a range of advantages including cost-effective fire safety by reducing the need for extensive fire damage repairs and replacements. Employing clean agents that are environmentally safe and leave no residue, our systems ensure the well-being of both people and property.

Designed with agents that are harmless to humans, they ensure safety for all occupants during and after activation. Constructed with high-quality materials, our systems provide long-lasting reliability and durability in diverse settings. Available in 25 bar, 42 bar, and 50 bar configurations, they offer adaptable pressure options for flexibility in design and installation. With rapid fire suppression capabilities, our systems minimize damage and downtime, ensuring business continuity. Furthermore, they are designed for ease of maintenance, reducing operational costs and ensuring consistent, reliable performance.



## Usage Areas

- Data Centers: Safeguards critical electronic equipment and data storage from fire damage.
- Manufacturing Facilities: Protects machinery and production lines from potential fire hazards.
- Flammable Liquid Storage Areas: Ensures the safe storage of hazardous materials by providing immediate fire suppression.
- Electrical Rooms: Prevents electrical fires by detecting and suppressing fires at their source.
- Archives and Libraries: Protects valuable documents, books, and historical records from fire damage.
- Telecommunications Facilities: Ensures the safety and functionality of critical communication equipment.
- Chemical Laboratories: Provides immediate fire suppression in environments with hazardous chemicals.
- Hospitals and Healthcare Facilities: Safeguards patients, staff, and sensitive medical equipment.
- Energy Production and Supply Facilities: Safeguards generators, transformers, and other critical power supply equipment from fire, ensuring uninterrupted operation

# CLEAN AGENT FIRE SUPPRESSION SYSTEMS

## Comparative Analysis of Fire Suppression Agents

When it comes to choosing the right fire suppression system, understanding the differences between various agents is crucial. This analysis compares the properties and benefits of FK-5-1-12, HFC-227ea, HFC-125, and Halon 1301, highlighting why VENGERANT 227 and VENGERANT 5112 Fire Suppression Systems stand out.

Agent	FK-5-1-12	HCF-227ea	Halon 1301
Use Concentration	4.5% min.	6.7% min.	5%
NOAL <sup>2</sup>	10% <sup>3</sup>	9%	5%
Safety Marning <sup>4</sup>	67-122%	3-34%	Nil
Global Warming Potential <sup>5</sup>	<1	3350	6290
Ozone Depletion Potential <sup>6</sup>	0.0	0.0	12.0

- 1. Adjusted per 2012 NFPA 2001 requirements for minimum values (excluding halon): Paragraph 5.4.2.4 and Table A.5.4.2.2(b)-
- 2. NOAEL for cardiac sensitization
- 3. NOAEL for acute toxicity, including cardiac sensitization
- 4. Safety Margin = (NOAEL - Use Concentration) / Use Concentration (minimum values received)
- 5. Intergovernmental Panel on Climate Change (IPCC) 2013 Method, 100-year ITH (CO2=1)
- 6. World Meteorological Organization (WMO) 1998, Model-Derived Method

### ADVANTAGES OF HFC-227EA

HFC-227ea is widely recognized for its effectiveness and efficiency in fire suppression, particularly in protecting sensitive electronics and critical environments. It is more economical compared to other agents, providing cost-effective fire safety solutions. Additionally, HFC-227ea systems require less cylinders, less maintenance, further reducing operational costs.

### ADVANTAGES OF FK-5-1-12

FK-5-1-12 stands out for its superior environmental credentials, including a low GWP and zero ODP. It provides a significant safety margin and can be used safely in occupied spaces due to its high NOAEL. Its effectiveness at lower concentrations also means it can be used in various applications with minimal environmental impact.

### THE PHASE-OUT OF HALON 1301

Halon 1301, once a popular choice for fire suppression, has been largely phased out due to its high ozone depletion potential and global warming impact. Regulations and international agreements have mandated the reduction and eventual elimination of Halon 1301 use, prompting the development and adoption of more sustainable alternatives like HFC-227ea and FK-5-1-12



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## VENGERANT CLEAN AGENT FIRE PROTECTION

As Vengerant, we set out with the mission of protecting the future in the world we live in. We aim to provide innovative solutions to fire protection systems. Our strong and determined stance is an indicator of reliability. Every step, every solution is an expression of our desire to provide a safe world to future generations.

As we look to the future, Vengerant aims to expand our global presence and continue to set new benchmarks in the fire safety industry. We are dedicated to innovation, excellence, and the relentless pursuit of safety, ensuring that our clients can trust us to protect what matters most.

At Vengerant, quality is paramount. Our products undergo rigorous testing and quality assurance processes to ensure they perform flawlessly in the most demanding environments. We adhere to international standards and continuously invest in research and development to stay ahead of industry trends and technological advancements.

We are proud to be a pioneer in firefighting, and we are here to reflect this pride to our customers, business partners and every community. Because we, as Vengerant, resolutely pursue the goal of "Protect for the future". The safety of you and our environment is our top priority for our goal.

## CERTIFIED CYLINDER

Available in following sizes:

25 Bar -> 9 Ltr, 16 Ltr, 32 Ltr, 52 Ltr, 70 Ltr, 100 Ltr, 120 Ltr, 150 Ltr, 180 Ltr, 200 Ltr, 240 Ltr, 300 Ltr, 369 Ltr, 420 Ltr  
42 and 50 Bar -> 20 Ltr, 30 Ltr, 50 Ltr, 80 Ltr, 100 Ltr, 140 Ltr, 180 Ltr

VENGERANT 227 and VENGERANT 512 Fire Suppression Systems, including, are meticulously designed to protect a comprehensive array of environments, including data centers, electrical rooms, archives, industrial facilities, silos, and flammable liquid storage areas. Our systems ensure a safe and secure operational environment by providing rapid and effective fire suppression at the source.

By integrating advanced technology, precise engineering, and an unwavering commitment to excellence, VENGERRANT's clean agent fire suppression systems stand out in the industry.

The system is developed according to the NFPA & UL Standards. It can be widely used in various settings such as data centers, manufacturing facilities, electrical rooms, and energy production facilities, including generators and transformers.

Our esteemed clientele encompasses a wide range of establishments, including industrial plants, commercial buildings, healthcare facilities, educational institutions, data centers, telecommunications facilities, chemical laboratories, hospitals, marine environments, public transportation systems, retail stores, parking garages, and more.

## AGENT PROPERTIES

VENGERANT 5112 (FK-5-1-12) is an environmentally friendly fire suppression agent with a Global Warming Potential (GWP) of less than 1 and an Ozone Depletion Potential (ODP) of 0. It operates at a minimum concentration of 4.5%, providing a high safety margin and leaving no residue. This makes it ideal for use in occupied spaces and sensitive environments.

VENGERANT 227 (HFC-227ea) is a highly effective fire suppression agent with a GWP of 3350 and an ODP of 0. It requires a minimum concentration of 6.7% and offers a balanced safety margin. Known for its efficiency and cost-effectiveness, it is suitable for a wide range of applications, including data center

## CLIENTELE



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