

FIREGATOR

AUTOMATIC FIRE SUPPRESSION SYSTEM

School Bus Fire Protection

For Diesel, Gas, Hybrid, and Electric Power Systems



ENGINE COMPARTMENT FIRE RISKS IN SCHOOL AND SPECIAL NEEDS BUSES

Bus transportation is one of the safest forms of public travel, yet engine compartment fires remain a critical safety concern. These incidents place passengers, drivers, and valuable assets at risk while creating costly downtime and vehicle replacement expenses. A simple, durable, and automatic fire suppression solution is essential to reducing this threat.

Engine bay fires can occur without warning due to mechanical failures, electrical shorts, loose wiring, overloaded circuits, or oil and fluid leaks. A 2016 study by the John A. Volpe National Transportation Systems Center reported that one to two school bus fires occur every day in the United States.



Fire protection in buses is challenged by limited space, aging fleets, constant vibration, and harsh operating conditions including extreme temperatures, humidity, and road debris. These factors demand a system that is rugged, maintenance-free, and reliable.

FireGator is designed to meet these conditions, providing automatic protection specifically suited for the realities of school and special needs transportation.

REGULATIONS, STANDARDS, AND BEST PRACTICES

Industry best practices are often shaped by independent third-party research that leads to strong safety recommendations and, in many cases, new regulations. The importance of automatic fire suppression was underscored in a National Transportation Safety Board report following the school bus fire in Oakland, Iowa in December 2017.

In its findings, the NTSB recommended that the U.S. Department of Transportation, the National Highway Traffic Safety Administration, and school bus manufacturers require in-service buses to be equipped with automatic fire suppression systems that, at a minimum, provide protection against engine compartment fires.

This guidance reflects a growing national recognition that proactive suppression technology is essential to reducing risk, protecting passengers, and preventing catastrophic vehicle loss.

FIREGATOR FIRE SUPPRESSION

Advanced Technology

FireGator uses an advanced aerosol suppression agent designed to provide one of the most compact, reliable, and cost-effective fixed fire extinguishing solutions available for vehicle engine compartments. Each unit features a rugged, hermetically sealed stainless steel canister containing a stable solid compound. The system is non-pressurized, eliminating the risks associated with stored pressure designs.

When a fire is detected, the agent automatically releases ultra-fine particles and inert gases that interrupt the chemical chain reaction of combustion. This action rapidly suppresses flames without reducing oxygen levels, making it safe for enclosed environments and occupied vehicles.

The FireGator system operates as a true total-flooding solution, protecting the entire engine bay regardless of where the fire originates. Unlike nozzle-based systems that require precise aiming at a suspected source, the aerosol disperses throughout the compartment and remains suspended longer than traditional agents to help prevent re-ignition.

FireGator suppression agent is UL listed for Class A surface, Class B, and Class C fires, providing broad protection for mixed fuel and electrical hazards.



FireGator® extinguishing units are compact and modular

Cost-Effective Protection

FireGator units are engineered for low installation cost with no piping and no pressure-relief systems required. The simple, durable design operates without stored pressure and requires virtually no maintenance, reducing ongoing operating expenses. Discharge of the suppression agent creates no harmful or damaging byproducts, allowing vehicles to be returned to service quickly. In the event of a fire, downtime and repair costs are kept to a minimum.

FireGator Fixed Fire Suppression Systems

FireGator fire suppression systems are designed to protect a wide range of bus and vehicle engine compartments. The electrically activated units integrate with multiple fire detection options and can operate independently without an external power source or connect to vehicle power depending on the control panel configuration. FireGator generators are fully compatible with modern detection and control technologies, providing flexible installation for new or existing fleets.

A Fully Customized Fixed Suppression System



Engine Compartment Installation and Operation Overview

Install directly in the engine compartment:

Suppression generators, heavy-duty mounting brackets, detection panel, 113 dB alarm, and dash-mounted system switch are securely installed.

Fire and heat detection:

When temperatures reach 300°F, the system activates the audible alarm to alert the driver.

Automatic suppression:

At 350°F, the aerosol generators discharge, rapidly suppressing the fire to minimize damage and vehicle downtime.

Rapid return to service:

The system can typically be recommissioned within hours after activation.

FireGator is also available in thermally or manually operated configurations for applications where electrical power is not available.

Additional Advantages

1. EPA SNAP listed for use in normally occupied and unoccupied spaces
2. Proven, highly effective fire suppression technology
3. Continuous 24/7 automatic protection
4. Ten-year service life with no loss of performance
5. Maintains effectiveness even in rollover conditions
6. Environmentally responsible with zero Global Warming Potential and no Ozone Depletion Potential
7. Manufactured in the United States

These advantages make FireGator suppression an ideal solution for enclosed and special hazard vehicle applications.

Other Notables

1. Suppression generators tested and approved to Swedish Fire Protection Association Standard SBF 128:1, the guideline for fixed automatic fire suppression systems in buses and coaches
2. Technology evaluated by the U.S. Naval Research Laboratory for use as a halon replacement in flammable liquid storage and diesel engine room protection aboard Navy Landing Craft Utility vessels
3. Tested to meet MIL-STD-810G environmental performance requirements
4. Proven effective on Lithium-Ion battery related fires

Protected by FireGator

FireGator generators have protected the engine compartments of 9,700 Mine Resistant Ambush Protected vehicles built and fielded by the U.S. Department of Defense. An additional 2,000 systems



are in service with the Ministry of Defense in Saudi Arabia

and more than 1,000 with the Ministry of Defense in the United Arab Emirates.



This suppression technology is also installed on approximately 1,000 buses in New Zealand. Each vehicle is protected by dual 250E units mounted on either side of the engine to provide full coverage. The bus engine manage-

ment system is integrated to control activation and automatically shut down the engine when a fire is detected.

FireGator technology also safeguards NASA crawler transporters, the largest self-powered machines in the world.

Protecting what matters with FireGator®

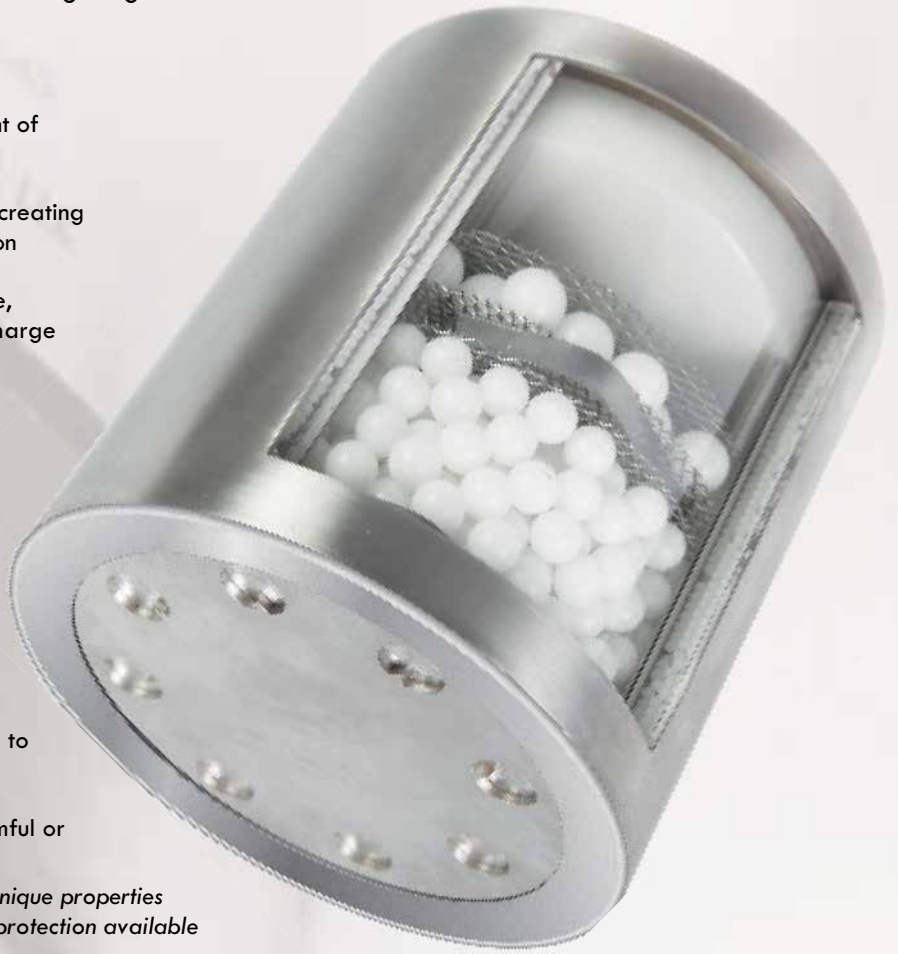


How it Works

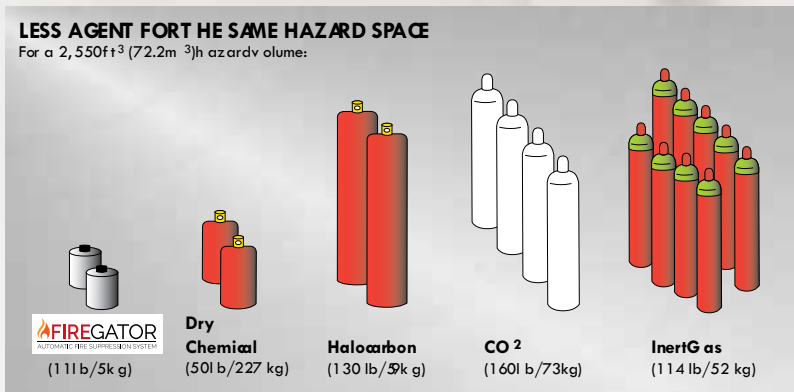
FireGator devices are condensed aerosol generators that produce an ultra-fine suspension of highly active fire-fighting particles when activated.

The elements of operation include:

1. The unit remains fully sealed and stable until the moment of activation
2. An actuator energizes the proprietary solid compound, creating an aerosol agent through controlled exothermic oxidation
3. Ultra-fine particles and inert nitrogen gas build pressure, opening the membrane seal and releasing through discharge ports
4. The agent fills the protected area with a soft, total-flooding suspension without over-pressurizing the compartment
5. Potassium-based ions interrupt the chemical chain reaction of combustion to rapidly suppress flames
6. The agent absorbs heat from the fire and forms inert gases as it decomposes
7. Microscopic particles remain suspended after discharge to help prevent re-ignition
8. After the event, the area can be ventilated with no harmful or corrosive byproducts



The effectiveness of condensed aerosol suppression is driven by unique properties that other agents cannot match, providing the most efficient fire protection available in terms of size, weight, and performance.



- Maximum suppression efficiency in a compact weight
- Protection for Class A surface, Class B, and Class C fires
- Non-toxic, environmentally responsible halon replacement

Proven and Approved Worldwide

Aerosol fire suppression technology is widely established across Europe and Asia, and in recent years it has gained growing acceptance among fire protection professionals throughout the Americas for special hazard protection.

Standards such as NFPA 2010, Standard for Fixed Aerosol Fire Extinguishing Systems, and UL 2775, Fixed Aerosol Extinguishing System Units, now provide recognized guidance for its use in a broad range of applications.

The technology is also listed by the U.S. Environmental Protection Agency under the Significant New Alternatives Policy program as a total flooding system approved for normally occupied and unoccupied spaces.

With zero Ozone Depletion Potential and zero effective Global Warming Potential, FireGator's suppression agent offers a future-proof alternative that is not subject to the restrictions facing many halocarbon agents.



HIGH HEAT DETECTION (HHD) STACKABLE INTEGRATION



HHD3 SENSOR

	Large	Small
Size (mm):	152 x 101 x 76	127 x 76 x 44
Weight (kg):	1.64	.91
Material:	Anodized Aluminum	Anodized Aluminum
Voltage:	12V	12V
Activation Type:	Automatic (Manual Trigger Compatible)	
Stackability:	Can be conjoined with two HHD1 units for expanded suppression coverage	



HHD1 SENSOR

Size (mm):	63 x 57 x 38
Weight (kg):	.23
Material:	Anodized Aluminum
Voltage:	12V
Activation Type:	Automatic (Manual Trigger Compatible)
Stackability:	Conjoin together 5X / + HHD3 + 2



HHD2



HHD3+1



HHD3+2



SYSTEM SWITCH

Size (mm):	81 x 61 x 25
Weight (kg):	.23
Temp Range(°C):	-30 – 60
Voltage:	12V



SYSTEM ALARM

Size (mm):	50 x 50
Weight (kg):	.05
Temp Range(°C):	-20 – 50
Voltage:	12V

SUPPRESSION AGENT

Size (mm):	APPLICATION DETERMINANT (variable)
Weight (kg):	APPLICATION DETERMINANT (variable)
Temp Range(°C):	APPLICATION DETERMINANT (variable)
Voltage:	12V



HIGH HEAT DETECTION (HHD) SYSTEMS



FG250 High Heat Detection and Suppression System For Vans and Vehicles with Engines 5.5L and Below

The FG 250 protects compact engine compartments found in vans and light duty vehicles. High heat sensors monitor critical zones and automatically activate clean agent suppression at the first sign of abnormal temperature. The system stops fires inside the engine bay before they spread, helping prevent vehicle loss and downtime. Designed for tight spaces, the FG 250 installs easily, leaves no residue on electronics, and operates as a stand alone or expandable platform.

Typical Uses: cargo vans, paratransit, service trucks, small buses, delivery fleets, cars



FG500 High Heat Detection and Suppression System For Medium and Large Front Engine Vehicles

The FG 500 is built for larger front engine platforms that generate higher heat and carry greater fire risk. Distributed sensors detect rapid temperature rise around fuel, electrical, and turbo areas, triggering automatic clean agent discharge within seconds. The system provides expanded coverage for complex engine bays while remaining simple to maintain and integrate. Ideal for fleets where passenger safety and vehicle uptime are critical.

Typical Uses: school buses, transit buses, RVs, medium duty trucks, municipal vehicles.