

Stat-X®

Aerosol Fire Suppression

Your Choice for Special Hazard Fire Protection



Traditional Special Hazard Fire Protection

Centers Around Two Technologies

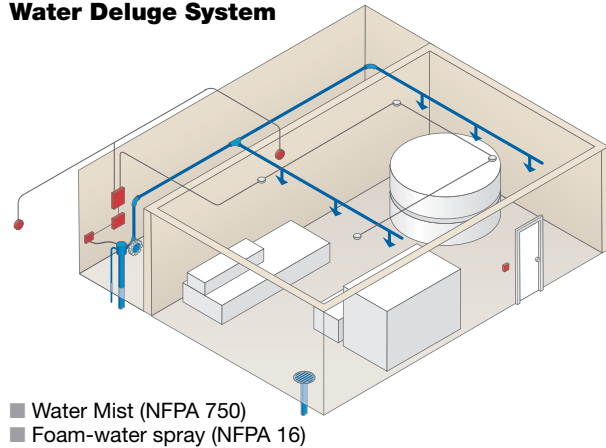
Water deluge and chemical agent fixed systems protect high value assets and processes not possible with sprinkler-based fire protection.

But this technology remains basically unchanged over the years; a supply of agent is stored under pressure, released through a piping distribution network, floods the space, and suppresses the fire.

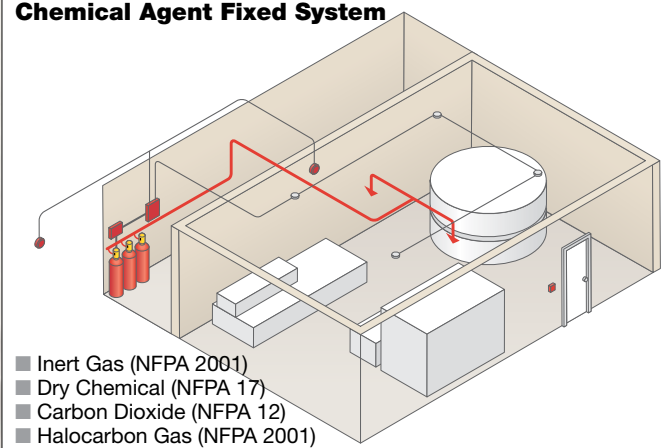
Traditional piped systems require costly installation adaptations like:

- Extra space for agent containers and piping
- Robust fixtures to handle weight and discharge
- System isn't easily reconfigured if space changes
- Extensive and frequent maintenance burden
- Special measures for recharging at remote sites

Water Deluge System



Chemical Agent Fixed System



Stat-X® Aerosol Technology

An Effective and Economical Alternative

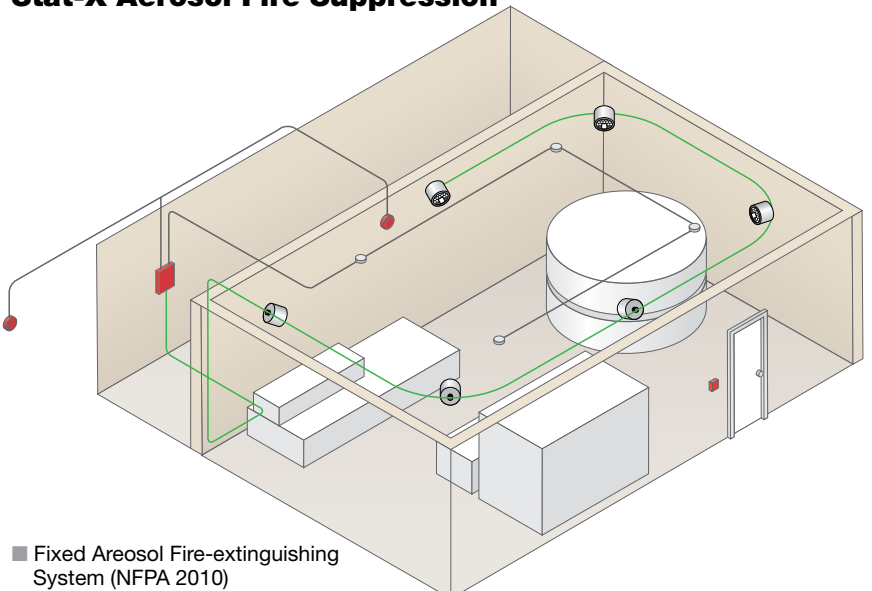
For safety professionals who need effective and economical special hazard fire protection, Stat-X aerosol technology delivers up to 35% savings

in equipment and lifecycle costs compared to traditional systems. This is due to lower initial expense plus minimal ongoing service costs.

Stat-X aerosol technology is different:

- NO distribution piping, manifold, or nozzles
- NO floor space requirement or shoring up for weight
- NO special handling for compressed gas cylinders
- NO venting or ceiling tile clips for discharge forces
- NO solenoid actuators, control heads, or hoses
- NO water drains or pipe freeze protection
- NO system pressurization or room integrity tests

Stat-X Aerosol Fire Suppression



How it Works

Stat-X devices are termed condensed aerosol agent generators because they generate an ultra-fine suspension of highly ionized potassium fire-fighting particles upon actuation.

The key elements in the generation process are:

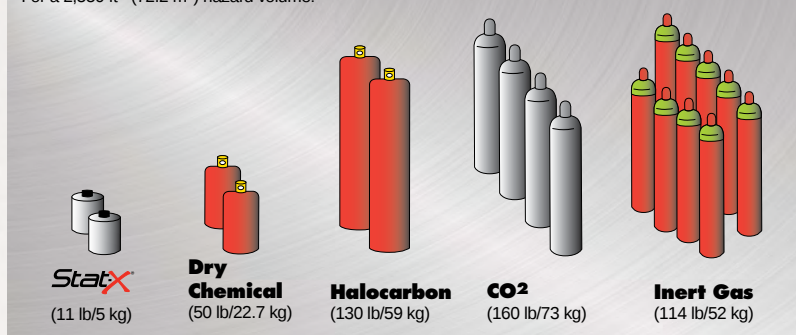
- Device is sealed and stable until actuated
- Actuator at top energizes proprietary compound, creating aerosol agent by exothermic oxidation
- Build-up of ultra-fine particles and nitrogen gas breaks membrane seal and exits through ports
- Discharge fills protected area with a soft suspension of Stat-X agent without “super-pressurizing” space
- Potassium ions combine with fragments of combustion, inhibiting the fire chain reaction
- Agent particles also absorb heat from the fire and form inert gases upon decomposition
- Minute Stat-X agent particles ($\leq 2 \mu\text{m}$) remain in suspension afterwards, helping check re-ignition
- Post-fire area is easily vented and cleaned, with no harmful byproducts generated

The superior effectiveness of condensed aerosols is due to a unique set of characteristics unmatched by other special hazard agents. This is why it is by far the most efficient fire suppression agent by weight.



LESS AGENT FOR THE SAME HAZARD SPACE

For a 2,550 ft³ (72.2 m³) hazard volume:



■ **Most efficient fire suppression by weight**

■ **Effective on A, B & C Class fires**

■ **Negligible residue, minimal clean-up**

■ **Non-toxic, EPA listed halon substitute**

Key Approvals Worldwide

Aerosol fire suppression technology is well-known throughout Europe and Asia. In the past few years, more fire protection engineers in the Americas are recognizing its worth for protecting special hazards.

Norms such as NFPA 2010: Standard for Fixed Aerosol Fire Extinguishing Systems and UL 2775: Fixed Aerosol Extinguishing Systems Units now govern its use in a wide variety of applications.

Stat-X technology is also listed by the USA Environmental Protection Agency as a Halon alternative under its Significant New Alternatives Policy (SNAP) program.

It has no Ozone Depletion Potential (ODP) and zero effective Global Warming Potential (GWP) meaning Stat-X agent is not prone to future bans like many halocarbon agents.



WHAT IS A Stat-X AEROSOL GENERATOR?

An aerosol generator is a self contained extinguishing unit that contains an aerosol forming compound which, during a controlled combustion process within the generator, produces an ultra-fine aerosol extinguishing agent that is significantly more effective than currently available alternatives. The units are constructed of stainless steel components, are listed for both area and volumetric coverage, and require no piping, nozzles, or other distribution equipment. In effect, the generator acts as its own storage, production and delivery device.

ARE THE AEROSOL GENERATORS RE-CHARGEABLE AFTER DISCHARGE?

No. The units are designed for single use only. After discharge turn around time is minimized as re-connection of a new generator is quickly and easily accomplished.

HOW DOES IT WORK?

A highly stable solid charge of the aerosol forming composition is contained within the sealed generator. Upon activation of the initiator, the charge begins a controlled burn producing an ultra-fine aerosol, which is ten times as effective as any agent currently on the market. The effective aerosol passes through a series of oxidation and cooling filters, where the temperature of the aerosol is rapidly reduced before it escapes through the discharge ports of the generator at low pressure. Generator placement within the hazard area provides proper flow and distribution of the highly effective aerosol within the protected volume.

DOES IT REDUCE THE OXYGEN LEVEL?

No, oxygen levels are not affected.

HOW DOES IT EXTINGUISH FIRES?

Unlike other agents that work by reducing oxygen levels or by cooling, the aerosol extinguishes by chemical interaction with the free radicals that fuel the growth of the fire – in the same manner as halon did. The aerosol stream contains ultra-fine (1-2 micron) particles of potassium compounds that provide a large surface area interaction with the fire. In the fire zone the free potassium radicals bind with the free radicals of the fire (O, OH, H) to rapidly slow and extinguish the fire.

HOW EFFECTIVE IS IT?

Stat-X is extremely effective. Tests on class B fires have shown it to be 5 times more effective than halon and 10+ times more effective than other currently available halon alternatives. This dramatically reduces weight and space requirements.

WHERE CAN IT BE USED?

Stat-X is an aerosol and shares many of the flow characteristics of a gas. It is suitable for use in un-occupied and normally un-occupied enclosed volumes and has the added advantages of extended hold times and less susceptibility to leakage. In addition, Unlike HFC's, which can break down and produce deleterious compounds such as hydrofluoric acid when exposed to elevated temperatures, Stat-X does not break down when exposed to a fire.

IS IT SAFE FOR THE ENVIRONMENT?

Yes. **Stat-X** has no global warming potential and no ozone depletion potential.

IS IT APPROVED BY THE EPA?

Yes. **Stat-X** has been approved for sale and use in un-occupied and normally un-occupied spaces by the United States Environmental Protection Agency.

IS IT SAFE FOR SENSITIVE EQUIPMENT?

Stat-X aerosol has been tested on a wide range of materials including structural, aviation composites, and materials commonly used in electronics, and circuit boards. In all cases it has been shown that **Stat-X** has no deleterious effect on the operating capability of equipment.

Due to the ultra-fine particle size and the method of generation, the particulate is quite buoyant and suspends in the gas/air mixture within the protected enclosure. Because of this "buoyant" effect the aerosol does not begin to "settle" for an extended period and, therefore, is extremely easy to vent from the protected area. Only very minor amounts of particulate may be deposited on equipment and, generally, there is no need to do anything beyond extraction of the air within the protected volume through a fan or air handling system – followed by a blow down with compressed air. Any particulate deposited on horizontal surfaces will be $\leq 2\mu\text{m}$ and will not form a continuous layer. Large gaps will exist between particles - leaving no potential for electrical conductivity issues to develop.

As a precautionary measure, however, it is always good practice to inspect and clean the site thoroughly following a discharge. While the aerosol itself is quite "clean", environmental factors are also a consideration. The unknown, and potentially harmful, by-products of an actual fire pose the biggest risk to sensitive electronic equipment. Because unknown products from the fire itself may be present, it is always recommended that equipment be blown down with air or vacuumed following a discharge to insure that no unwanted by-products from the fire itself are present.

IS IT SAFE FOR PERSONNEL?

The aerosol, itself, consists of solid and gas combustion products. The solid phase is composed of highly dispersed particles that present insignificant health hazards for humans at normal design concentrations. The gas phase may contain very small amounts of carbon monoxide CO, carbon dioxide CO₂, nitrogen oxides NO_x, and ammonia NH₃. Production of these gases is minimal in the case of **Stat-X** due to its patented construction, chemical formulation, and its manufacture in the United States using only technical and reagent grade chemicals. In tests conducted by a certified, accredited testing facility in the United States, **Stat-X** generators were shown to produce gas levels several orders of magnitude less than the standard allowed for automobile airbag systems for passenger vehicles.

While the components of the aerosol are not considered toxic at normal concentration levels, ingestion of the ultra-fine particulate may cause short-term discomfort and unnecessary exposure should be avoided. Exposure to the aerosol is generally of less concern than is exposure to the decomposition products of a fire. Accidental exposures under ten minutes are normally considered safe. There is a high obscuration factor with the aerosol and a 30 second time delay and system lock out switch should be used whenever personnel may be present in the protected space.

IS IT A CLEAN AGENT?

The term "clean agent" has traditionally referred to gases. The term itself is inaccurate as all agents may pose post discharge issues. The **stat-x** aerosol does contain ultra-fine suspended particulate which is very buoyant and hangs in suspension for extended periods. Because of this, settling is minimal and removal of the aerosol can be accomplished easily by venting. While the aerosol itself is quite "clean", environmental factors are also a consideration. The unknown, and potentially harmful, by-products of an actual fire pose the biggest risk to sensitive equipment. Because unknown products from the fire itself may be present or because of unwanted environmental conditions, it is always recommended that the area is thoroughly cleaned to insure that no unwanted products are present. For example, on site maintenance and housekeeping may have been lax allowing accumulation of dirt in the enclosure. During discharge, any dirt within the enclosure will be blown around and then deposited as unwanted residue throughout the area.

Also, in rare cases, unit orientation may have been altered improperly or equipment may have been re-oriented within the protected enclosure resulting in an improper discharge directly onto a wall or equipment surface. This could result in the deposit of small, localized areas of highly concentrated agglomerated particulate on that surface. If left untended, an agglomerated mass may take on moisture and may cause non-progressive surface discoloration (copper, bronze) of unprotected metal surfaces. It is therefore, important that any agglomerated particulate be cleaned up with a water/alcohol solution no later than 24 hours following a discharge.

HOW IS A SYSTEM DESIGNED?

stat-x are designed by trained, certified, and authorized distributors using a computer aided design program that uses data on dimensions, areas of leakage and location of un-closeable openings, fire class, and other factors to arrive at a system tailored to the clients specific requirements. The design methods of calculation are part of our listing.

WHAT ARE THE SPACE REQUIREMENTS?

The generators are small, self-contained, and mounted at ceiling height. They do not take up valuable floor space as conventional systems do.

IS A **stat-x SYSTEM EXPENSIVE?**

No. **stat-x** systems are extremely cost effective. While actual costs will vary based on the size of the enclosure, leakage, and class of hazard, in general, an installed system will be significantly less expensive than alternatives. This is due to the small amount of agent required and the fact that installation costs are dramatically reduced because of the elimination of distribution manifolds, piping, and nozzles. **stat-x** thermal units, where appropriate further reduce costs due to the elimination of detection and releasing devices.

WHAT IS THE SERVICE LIFE?

The service life of **stat-x** generators is 10 years+.

WHAT IS A **stat-x THERMAL UNIT?**

stat-x thermal units are suitable for small enclosed spaces such as electronic enclosure, hazmat storage, switchgear cabinets, etc. The units are self contained and utilize a patented thermal detector that is integral to the generator – eliminating the need for ancillary detection and releasing devices. Units are available in several temperature settings to insure applicability to the hazard being protected.



MATERIAL SAFETY DATA SHEET



5852 Baker Road
Minnetonka, MN 55345

MSDS# 004

DATE: 1/11

For information only, call 1-952-935-9745. For emergencies, call CHEMTREC:
DOMESTIC NORTH AMERICA 800-424-9300 INTERNATIONAL 703-527-3887 (COLLECT).

1. PRODUCT

Stat-X® Condensed Aerosol Generators - Models 30 thru 2500.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components – Chemical (Hazardous Components ≥ 1%)	CAS#	COMMENTS:
Potassium Nitrate	7757-79-1	Components are blended and pressed into a highly stable, molded form. Molded composition is contained within a sealed double-walled stainless steel housing – no environmental exposure.
DCDA	461-58-5	
Organic Resin	9003-35-4	
Appearance & Odor:		Beige to white in color. No odor.
Auto-Ignition Temperature:		300°C
Solubility in Water:		Slightly Soluble

3. HAZARD IDENTIFICATION

Possible exposure to aerosol suppression agent if generator is activated. May cause temporary, mild irritation of mucous membrane if inhaled.

4. FIRST AID MEASURES

Contact Method:	Procedure:
Inhalation	Remove to fresh air
Eye Contact	Flush with water
Skin Contact	Wash with soap and water.
Ingestion	Not a likely route of exposure.
Seek medical attention for further treatment, observation, and support if necessary.	

5. FIRE FIGHTING MEASURES

In the event of a fire, evacuate the area and inform emergency services. Ignition of Stat-X produces a fire-suppression aerosol. Water may be used as an additional suppression agent.

6. ACCIDENTAL RELEASE MEASURES

If these devices are spilled they can be safely recovered by hand and should be inspected for damage prior to repacking. Suspect or damaged articles should be labeled and consigned for correct destruction.

7. HANDLING AND STORAGE

Store in temperate conditions. Avoid shock, electric currents, static discharge, excessive heat and extended periods of storage at temperatures greater than 65°C.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Respiratory Protection	Ventilate area completely after discharge. Do not enter area prior to complete venting of enclosure. Use filter mask as necessary during clean-up.
Hand Protection	Wear gloves if handling generators prior to cooling.
Eye Protection	Safety glasses are advisable.
Skin Protection	N/A

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Stainless Steel Cylinder up to 270 mm in length
-------------	---

10. STABILITY AND REACTIVITY

These devices are extremely stable below 125°C. They should be protected from fire, sources of electrical power, shock, and high temperatures.

11. TOXOCOLOGICAL INFORMATION

Toxic by-products of combustion are extremely low. Main by-products are listed below with 15-minute TWA values for a maximum 100g/m³ concentration in a hermetically sealed volume.

Gas	15 minute Time Weighted Average in parts per million
NO ₂	1.08
NO	0.97
CO	84.20

12. ECOLOGICAL INFORMATION

These devices are sealed and present no ecological hazards. The aerosol produced upon ignition has no global warming potential and an ozone depletion potential = 0.

13. DISPOSAL CONSIDERATIONS

Comply with all local, state, and federal/international regulations.

14. TRANSPORT INFORMATION

UN Number: 3178	Shipping Limitations:	
UN Classification: 4.1 Flammable solid, inorganic, n.o.s. (fire suppressant containing potassium nitrate)	Cargo Air	Max single packaging – 100 kgs.
Packaging Group: III	Passenger Air	Max single packaging – 25 kgs.
Division 4.1 articles present no significant hazard as packaged for transport.		

15. REGULATORY INFORMATION

S15	Keep away from heat
S33	Take precautionary measures against risk of static discharge
S35	This material and its container must be disposed of in a safe way
S38	In case of insufficient ventilation wear suitable respiratory equipment
S39	Wear eye/face protection

16. OTHER INFORMATION

Comply with manufacturer's installation and maintenance procedures.

Disclaimer:

The information contained herein is accurate to the best knowledge and belief of Fireaway Inc., and is intended to describe the product for health, safety, and environmental requirements only. It is not intended and should not be construed as a warranty. Consult Fireaway for further information.