TECHNICAL DATA FSS FIRE SUPPRESSION SYSTEMS

PRODUCT DESCRIPTION AND OPERATION

Under *'ISO 15779:2011 Condensed aerosol fire extinguishing systems — Requirements and test methods for components and system design, installation and maintenance — General requirements.'* the specific description for the FSS technology is listed as condensed *<< aerosol extinguishing agent is an extinguishing medium consisting of finely divided solid particles, generally in the order of magnitude of microns in diameter suspended in gas generated and distributed by a combustion process of a solid aerosol-forming compound.>>*

The series FSS50 and FSS50N (technical name ESP004) and FSS100 (technical name ESP005) aerosol systems with manual activation are designed to generate and discharge fine potassium carbonate particles and inert gases to extinguish fires.

FSS-FIRE SUPPRESSION SYSTEMS is a portable aerosol condensed extinguishing device with remarkable extinguishing capability. The two components necessary for the ignition of the FSS are placed on opposite ends of the device, rendering accidental ignition during transport and storage impossible. The device is a small, compact, lightweight cylinder not under pressure that weighs less than 1kg: the upper part of the device is a metal tube containing the extinguishing charge. The lower part of the device is composed of plastic and serves as a support handle. It works much like an old-fashioned road flare: remove the top cap, remove the striker from the bottom of the unit, grasp the handle and strike the exposed top with the striker, directing the agent at the fire from up to 4-6 feet. It is suitable for use on class A, B, C, F/K and Electrical Fires, suitable for use in indoor and outdoor applications, including electrical equipment fires subject to voltages up to 100.000v, distribution cabinets and electronic devices, etc..

FSS is intended for fires in the incipient stage, for the prevention and extinguishing of fires in confined spaces (within 1 to 3 minutes) before it spreads too far.

- Extinguishing agent and actuating device: condensed aerosol is an extinguishing medium consisting of finely divided solid particles, generally in the order of magnitude of microns in diameter, suspended in gas, generated and distributed by a combustion process of a solid aerosol-forming compound. Aerosols are electrically non-conductive gas-like media, which are projected at the base of a fire so to extinguish it.

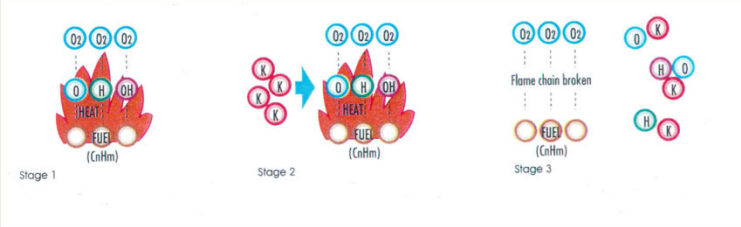
Depriving the oxygen needed to sustain the combustion process, fires are extinguished through saturation. The slow biodegradation in the environment furthers the prevention of subsequent fires. The product works by interrupting a fire's chain of reaction (the "auto-catalyst" of the fire).

The device is composed of stable, solid minerals; it does not contain gas and is not pressurized.

The produced aerosol jet is essentially an inert salt that emits gas already present in the atmosphere.

Once activated, FSS extinguishing process works through two reactions: the physical reaction relates to potassium's tendency to oxidize rapidly in air. When in contact with air, alkaline salts consume great quantities of oxygen, depriving a fire of the oxygen it needs to burn. The chemical reaction is created through the stable link between potassium particles and the fire's combustion particles. Through the two reactions, a quick oxidation process takes place, immediately transforming the jet from a solid state into a gaseous state which frees the potassium particles. These atoms are able to intercept and interrupt any other free particles produced by the fire's chain reaction combustion process. Potassium has strong inhibitor qualities, due to its weak ionization energies.

The chemical reaction is well represented by the below graphics:



Stage 1: fire is initiated by the flame chain carriers' O, H and OH
Stage 2: the aerosol introduces potassium radicals (K) into the flame chain reaction
Stage 3: K radicals attach themselves to O, H and OH and Remove them from the flame reaction without depleting surrounding oxygen.

At the end of the extinguishing process the following is discharged to the atmosphere:

(a) as a solid: particles of Potassium (that have reacted with the Oxygen of the fire) having a granulometry between 3/4 microns (these particles are invisible at sight, heavier than air; they disperse in the air and tend to deposit on the ground); (b) as a gas: as Nitrogen, an inert gas already in the air we breathe at 78%; (c) as water vapor.

The ESP devices are manufactured and packaged in a manner to prevent accidental actuation.

NO. 3 MODELS: **FSS50SEC** **FSS50SEC N** **FSS100SEC**

FEATURES

FSS potential impact on the environment and on users:

- ODP Ozone Depletion Potential = zero
- ATL Atmospheric Lifetime = zero
- Activation time: Immediate
- Usability temperature: from -140º F to +320º F
- Granulometry: from 2 to 4 microns
- Steam: none
- Residue after use: negligible
- Operating temp. ranges: min T -50°C max T +80°C
- The device is NOT pressurized
- GWP Global Warming Potential = zero
- Negligible toxicity
- Electrostatic discharge: none
- Usability humidity: up to 98% U.R.
- Corrosiveness: none
- Thermal shock: none
- Not dangerous to human health
- Environmentally safe

APPLICATIONS

Due to the fast activation and response time, ESP devices are suitable for a wide range of use in indoor/outdoor applications, in a cylindrical configuration for confined and narrow spaces, such as the engine compartment of a vehicle or a control/electrical cabinet, power generation enclosures, computer and server rooms, and the combination of several units for many other applications such as cable ducts, transport vehicles, in restaurant frying cabinets, easily retrofitted into existing systems, etc.

These articles are not intended to function with a view to producing an explosive or pyrotechnic effect, but as SAFETY DEVICES to protect property/equipment and lives, both public and private.

PORTABLE MODELS AND APPLICATIONS

MODEL	DIMENSIONS	JET EMISSION TIME
FSS 50 SEC	approximately 10in long (25cm) x 1.3in Ø (3cm); Weight: approximately 215 gr (2 solid compounds)	Jet emission time: approx. 50 seconds active
FSS 50 SEC N (With cover sleeve to serve as a handle)	approximately 10.2in long (25cm) x 1.3in Ø (3cm); Weight: approximately 260 gr (2 solid compounds)	Jet emission time: approx. 50 seconds active
FSS 100 SEC	approximately 12.9in long (33cm) x 1.3in Ø (3,5cm); Weight: approximately 365 gr (3 solid compounds)	Jet emission time: approx. 100 seconds active

FSS safety devices are capable of extinguishing fires in different classes:

- Class A: Solid material, ordinary combustibles, such as wood, paper, fabric, plastics etc.
- Class B: Flammable liquids, such as gasoline, oil-based paints, solvents, alcohol, acetone, etc.
- Class C: Gaseous category: GLP, methane, acetylene, etc.
- Class E: electrical equipment fires subject to voltages up to 100.000v at 1m; Cable galleries, electronic devices, etc.
- Class F: cooking oil and fats

DISCLAIMER

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