

# HOW OUR LITHIUM EXTINGUISHING SYSTEM WORKS

Our systems use the latest generation of our patented FPC solid compound that is the pinnacle of many years of research and development. When activated the FPC solid compound is transformed into a rapidly expanding extremely effective and efficient fire extinguishing condensed aerosol.

The aerosol is propagated and evenly distributed in the enclosure under protection using the momentum generated during the transformation process. Unlike gaseous agents, the total flooding effect is achieved without increasing the pressure in the protected area/volume. Fire extinguishing is accomplished by the interruption of the chemical chain reactions occurring in the flame and not by the depletion of oxygen and/or cooling as suggested by the traditional triangle of fire.

This technology extinguishes fire by inhibiting the chemical chain reactions in the flame on a molecular level, without depleting oxygen !

Conventional fire extinguishing agents extinguish fire by one or a combination of the following three methods :

**Cooling** : By absorbing heat from the fire and lowering its temperature.

**Starvation** : By reducing or cutting-off the fuel supply.

**Smothering** : By removing oxygen or reducing it below a certain level.

## Transformation Process

In a typical fire, there is intensive inter-reaction between atoms and fragments of unstable free radicals in the presence of oxygen. This continues until the burning fuel is depleted. Our technology extinguishes fire predominantly by inhibiting on a molecular level the chemical chain reactions present in combustion.

On activation of the unit, the FPC compound within is transformed into a rapidly expanding fire extinguishing condensed aerosol consisting mainly of Potassium salt-based  $K_2CO_3$ ,  $H_2O$  (vapor),  $N_2$  and  $CO_2$ .

The gas-type, 3-D, properties of the condensed aerosol facilitate its even and fast distribution in the protected volume as well as its flow into the natural convection currents of combustion.

The solid particles of Potassium salts, which are of a few microns in size, are suspended in an inert gas that displays an extremely high surface to reaction mass ratio - a fact that increases efficiency - which results in less quantities of fire extinguishing agent required.

When the condensed aerosol reaches and reacts with the flame, Potassium radicals ( $K^*$ ) are formed mainly from the disassociation of  $K_2CO_3$ . The  $K^*$ s bind to other flame free radicals (hydroxyls -  $OH\cdot$ ) forming stable products such as KOH. This action extinguishes fire without depleting the ambient oxygen content. KOH reacts further in the presence of  $CO_2$  and forms  $K_2CO_3$ .

The solid particles of Potassium Carbonate ( $K_2CO_3$ ) have a diameter of less than five microns and remain in suspension in the protected room/enclosure for at least 30 minutes, preventing further re-ignition of the fire.

Find all our security points and our products on our website  
[www.ecosafesa.com](http://www.ecosafesa.com)

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