



Specialist Garments for Specialist Applications

INDUSTRIAL FLASH FIRE HAZARD

“... flash fires generate temperatures from 540°C to 1040°C (1000°F to 1900°F). A flash fire depends on the size of the gas or vapor cloud and when ignited, the flame front expands outward in the form of a fireball. The resulting effect of the fireball's energy with respect to the radiant heat significantly enlarges the hazard areas around the gas release.”

NFPA 2112 (A3.3.12)

A hazardous workplace environment exists when any type of flammable liquids and chemicals, combustible dusts, vapors and gases are present. Each of these provides the potential for developing an industrial flash fire capable of killing or injuring employees and causing widespread property damage. All that is required is an ignition source, such as electrical malfunction, sparks from welding/cutting tools, smoking, overheating equipment or spark generation from metal-on-metal contact. While the risk of industrial flash fire extends to a broad number of work environments, the potential for occurrence is greatest in workplaces associated with:

- Oil
- Gas
- Chemical
- Fuels
- Petrochemical and Plastics
- Paints



Industrial flash fires are typically of three seconds duration or less. In this short period of time, regular work wear (such as cotton, polyester and nylon) may begin to burn and continue to burn after the flash fire has abated. Some regular work wear fabrics will not only burn, but melt and stick to the skin of the wearer. This continuation of burn after the flash fire can lead to severe burn injury, dramatically reducing the chances of flash fire survival.



The S&H Protex® range of industrial clothing provides flame retardant protection for employees exposed to the potential of industrial flash fire in their workplace. Providing both comfort and functionality, the S&H Protex® garments self extinguish upon removal from the flame source. There is no prolonged burning—a significant factor in the reduction of burn injury and increasing the likelihood of survival.





ARC FLASH HAZARD

An arc flash occurs due to an arc fault, which is essentially an electrical short circuit that flows through the air (air being the conductor) resulting in the release of a significant amount of energy. This release is characterised by high thermal energy, a loud noise and bright flash, a pressure blast and often debris/shrapnel scattered with velocity over a wide area.

Arc faulting can occur for several reasons, however the most common causes are:

- Where the isolation distance between energised components is reduced. A reduction in isolation distance can happen, for example, where tools are inserted, dropped or accidentally left behind in proximity to these energised components.
- There is a reduction in the energised components' insulation. This may occur due to the formation of dust or corrosion over a period of time building up and providing a pathway for the current to flow.



According to NFPA 70E (Standard for Electrical Safety Requirements for Employee Workplaces), temperatures in an arc flash can reach up to 35,000°F or over 19,000°C, producing burn injury to employees within proximity and setting non-flame retardant clothing on fire. The prolonged burning of non-flame retardant clothing is a significant contributor to the seriousness of burn injury sustained.



The pressure blast, flash and accompanying shrapnel scatter can result in serious harm to an employee, particularly hearing and sight damage. Brain function may well be effected, leading to confusion, concussion or even unconsciousness.

Companies must perform an Arc Flash Hazard Assessment to establish the arc thermal energy from the source of a potential electrical arc fault. This assessment will determine hazard control practices and equipment, the Electrical Arc Flash Hazard Boundary and the level of protective clothing and protective equipment that is required to be worn (the level of which is ascertained by the tasks to be performed within the Electrical Arc Flash Hazard Boundary).



**When It Counts
We've Got You Covered**

