



Flame Protective Clothing for Laboratory Work

DUPONT PROTECTION TECHNOLOGIES

DuPont Protection Technologies has received a number of inquiries regarding flame resistant lab coats. The following information summarizes some relevant information regarding flame resistant garments and lab coats.

Everyday work clothes made from commonly used apparel fibers, including cotton, nylon, and polyester (alone or in blends) are not flame resistant and not designed to protect against a fire hazard. All of these materials will support combustion. If exposed to a flame, cotton can ignite and continue to burn, while nylon and polyester can ignite, burn, melt and possibly adhere to wearer's skin. Essentially, everyday work clothes are inappropriate in these hazard situations; flame resistant protective clothing and measures to reduce potential risk should be adopted.

It is recognized by most regulatory agencies that personal protective equipment (PPE) alone cannot eliminate all risks of injury. PPE must be used as part of a general safety program. As pointed out by OSHA in Appendix B of 29 CFR 1910, Subpart I:

"PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices."

Hazards should be mitigated with engineering controls, work practices and administrative control. PPE should not be relied upon as the only means of protection.

OSHA further notes in 29 CFR 1910.132, that the selection of PPE must be based on a hazard assessment of the workplace. When the hazard assessment indicates the potential for fire related injury, the appropriate Personal Protective Equipment, which typically includes suitably designed flame resistant clothing, should be selected. For example, while FR lab coats may be considered when the risk of fire occurs above the wearer's waist, lab coats may not be suitable if the location of the fire threat may come from below the waist or from the floor. If a fire originates on the floor or around the wearer's legs, there is a potential for

the flames and hot air to flow up and under lab coats (or a shirt not tucked-in) with an increasing probability of additional skin burn injury should the underclothing catch fire. In such cases, the combination of a FR shirt and FR pants, worn with the shirt tucked into the pants or a one-piece FR coverall should be considered for protection of both the upper and lower body.

In addition, if the workplace hazard assessment leads to the conclusion that a threat of fire exists, protective garments made of DuPont™ Tyvek®, ProShield®, ProShield® NexGen®, or Tychem® brand fabrics (with the potential exception of Tychem® ThermoPro) are *not appropriate*. Garments made of flame resistant (FR) materials, such as DuPont™ Nomex® IIIA or Protera® brand fabrics should be considered. However, a flame resistant lab coat may not provide adequate protection compared to garment style PPE, such as coveralls, or pants and shirts (both of which provide more complete body protection) or flame resistant chemical splash suits (such as DuPont™ Tychem® ThermoPro).

Flame resistant garments help to minimize potential burn injury during short term and emergency exposure to flame. Most FR garments are designed to provide the wearer with time to escape from the area where the fire has occurred. Protective apparel cannot prevent all burn injuries. The protective performance of the garment ensemble can be optimized by proper selection, care, maintenance and layering. FR PPE should be cleaned and inspected on a regular basis to remove flammable contaminants and repaired to manufacturer's specifications. In high thermal exposure situations, garments made of nylon, polyester, or polypropylene worn underneath FR PPE may melt and adhere to the skin. Garments worn under FR PPE should be made of non melting materials to maximize thermal performance and minimize the potential for burn injury.

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