



DuPont™ Protera™ Electric Arc Flash Secondary Hazards and Fire Resistant Clothing

TECHNICAL INFORMATION

Electric arc flashes occur when substantial electric current passes through ionized air. Arc flashes are explosive in nature, typically lasting less than 1 second, and emitting high radiant energy. These electric arc flashes can ignite and/or melt everyday clothing. During an arc flash event, there can be many secondary hazards such as hot gases, molten metal splatter, pressure waves, and projectiles. There may also be high decibel noise and electric shock potential.

OSHA 29 CFR 1910.269 states that the employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing that could increase the extent of injury. The National Fire Protection Association's standard NFPA 70E covers all aspects of workplace electrical safety in general industry. NFPA 70E recommends the use of arc and flame resistant PPE which adheres to these performance standards — ASTM F1506, ASTM F1891, and ASTM F2178. ASTM F1506 defines the performance specifications for flame resistant textile materials for use by electrical workers exposed to momentary electric arc and related thermal hazards. ASTM F1506 key protection related requirements include vertical flammability (new and after washing) and arc rating. There are no requirements related to blast pressure, molten metal splatter, and/or gas emissions.

Several test methods and performance standards have been developed by ASTM and NFPA to permit testing and qualification of materials to be used in flame resistant clothing and PPE designed to minimize burn injury to those who might be present during an electric arc flash. The test methods and standards include ASTM F1959, ASTM F1506, and NFPA 70E. Flame resistant fabrics made with DuPont™ Nomex® IIIA, Nomex® Comfortwear, Nomex® AP, and DuPont™ Protera™ have been tested and found to meet the requirements outlined by the ASTM F1959 and NFPA 70E standards. The ASTM F1959 test to determine the arc rating of these fabrics is conducted using actual electric arc flashes, and also includes the liberation of molten metal splatter during the testing. No adverse response has been noted due to molten metal splatter while conducting the required testing to determine the arc rating of Nomex® IIIA, Nomex® Comfortwear, Nomex® AP, or Protera™ fabrics.



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