



Standard Specification for Arc and Flame Resistant Rainwear¹

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1. Scope

1.1 This specification establishes applicable test methods, minimum physical and thermal performance criteria, a suggested sizing guide, and suggested purchasing information for rainwear for use by workers who may be exposed to thermal hazards of momentary electric arcs and open flames.

1.1.1 This specification does not apply to the electrical contact hazards or electric shock hazards involved with electric arcs.

1.1.2 This specification does not apply to flash fire hazards such as industrial hydrocarbon flash fires or other petrochemical flash fire hazards.

1.2 The objective of this specification is to prescribe fit, function and performance criteria for rainwear that meets a minimum level of thermal and physical performance when exposed to a laboratory-simulated electric arc or flame exposure.

1.3 This specification is not intended to serve as a detailed manufacturing or purchasing specification, but can be referenced in purchase contracts to ensure that minimum performance requirements are met.

1.4 Controlled laboratory tests used to determine compliance with the performance requirements of this specification shall not be deemed as establishing performance levels for all situations to which wearers of this protective clothing may be exposed.

1.5 The in-service care and use of this rainwear is beyond the scope of this specification.

1.6 The values stated in inch-pound units are to be regarded as the standard. The SI units shown in parentheses are for information only.

1.7 The following safety hazards caveat pertains only to Sections 7 and 9, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 123 Terminology Relating to Textiles²
- D 751 Test Methods for Coated Fabrics³
- D 1117 Guide for Evaluating Nonwoven Fabrics²
- D 1388 Test Method for Stiffness of Fabrics²
- D 3393 Specification for Coated Fabrics—Waterproofness³
- D 3776 Test Method for Mass Per Unit Area (Weight) of Fabric⁴
- D 6413 Test Method for Flame Resistance of Textiles (Vertical Test)⁴
- F 1958 Test Method for Determining Ignitability of Non-Flame-Resistant Materials for Clothing by the Electric Arc Exposure Method Using Mannequins⁵
- F 1959/F 1959M Test Method for Determining the Arc Thermal Performance Value of Materials for Clothing⁵

2.2 Federal Specifications:

- Federal Test Method Standard (FTMS) No. 191A Method 5903.1⁶
- Federal Test Method Standard (FTMS) No. 191A Method 5516⁶
- Federal Test Method Standard (FTMS) No. CCC-T-191b Method 5204⁶

2.3 AATCC Standards:

- AATCC Test Method 135 Dimensional Changes Automatic Home Laundering of Woven and Knitted Fabrics⁷

3. Terminology

3.1 Definitions:

3.1.1 *afterflame, n*—persistent flaming of a material after the ignition source has been removed.

3.1.1.1 *Discussion*—In arc testing, a visible flaming on or near a test specimen which persists after the arc exposure has ended. The afterflame ceases when flaming is no longer visible.

3.1.2 *afterflame time, n*—the length of time for which a

² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 09.02.

⁴ Annual Book of ASTM Standards, Vol 07.02.

⁵ Annual Book of ASTM Standards, Vol 10.03.

⁶ Available from Standardization Documents Order Desk, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

⁷ AATCC Technical Manual, available from American Association of Textile Chemists and Colorists, One Davis Dr., PO Box 12215, Research Triangle Park, NC 27709-2215.

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