



Designation: F2621/F2621M – 19 F2621/F2621M – 21

Standard Practice for Determining Response Characteristics and Design Integrity of Arc Rated Finished Products and Evaluating other Products in an Electric Arc Exposure¹

This standard is issued under the fixed designation F2621/F2621M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice identifies protocols for use in conducting arc testing on finished products intended for use as thermal protection by workers who may be exposed to electric arc hazards.

1.1.1 The practice is also used for other components which can be exposed to electric arc, but which do not require an arc rating.

1.1.1.1 If items are tested and they do not meet the appropriate standard, it is the responsibility of the specimen submitter to provide this information for indication in the test report.

1.2 Arc Rated protective items are typically tested using this practice to evaluate the performance of the interface area between the product and the other arc flash PPE or to evaluate zippers and other findings.

1.3 When evaluating arc rated PPE with non-arc rated PPE for due diligence (such as respirators, etc.), this practice does not result in an arc rating and for non-arc rated components or products shall be clearly indicated as having no arc rating.

1.4 This practice is not intended to produce an arc rating and does not replicate in all types of arc exposures.

1.5 This practice is used with the following standards:

1.5.1 Protective fabric materials receive arc ratings from Test Method **F1959/F1959M**.

1.5.2 Face protective products receive arc ratings from Test Method **F2178**.

1.5.3 Gloves receive arc ratings from Test Method **F2675**.

1.5.4 Rainwear materials, findings and closures are specified by Specification **F1891**.

1.5.5 Garments are specified by Specification **F1506**.

1.6 The test specimens used in this practice are typically in the form of arc-rated finished products. These arc-rated finished

¹ This practice is under the jurisdiction of ASTM Committee **F18** on Electrical Protective Equipment for Workers and is the direct responsibility of Subcommittee **F18.65** on Wearing Apparel.

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products may include, but are not limited to, single layer garments, multi-layer garments or ensembles, cooling vests, gloves, sleeves, chaps, rainwear, balaclavas, faceshields, and hood assemblies with hood shield windows. Non-arc rated finished products may be included when part of a flame-resistant system, or for evaluating heat transmission through the finished product for incident reenactment, or for evaluation of products needed but not available as arc rated (such as respirators, etc.)

1.7 The arc rated finished product specimens are new products as sold or products which have been used for the intended purpose for a designated time.

1.8 This practice is used to determine the response characteristics or design integrity of arc-rated materials, products, or assemblies in the form of finished products when exposed to radiant and convective energy generated by an electric arc under controlled laboratory conditions.

1.9 This practice can be used to determine the integrity of closures and seams in arc exposures, the protective performance of arc-rated products in areas where garment overlap occurs or where heraldry reflective trim or other items are used, and response characteristics such as afterflame time, melting, dripping, deformation, shrinkage, electric arc ignition, or other damage, or combination thereof, of fabrics, systems of fabrics, flammable undergarments when included as part of a system, sewing thread, findings, and closures.

1.10 This practice can be used for incident reenactment, training demonstrations, and material/design comparisons.

1.11 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.12 This standard shall not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire assessment, which takes into account all of the factors, which are pertinent to an assessment of the fire hazard of a particular end use.

1.13 This standard does not purport to describe or appraise the effect of the electric arc fragmentation explosion and subsequent molten metal splatter, which involves the pressure wave containing molten metals and possible fragments of other materials except to the extent that evidence of projectile damage is assessed and reported.

1.14 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. For specific precautions, see Section 7.*

1.15 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D123 Terminology Relating to Textiles

D4391 Terminology Relating to The Burning Behavior of Textiles

D6413 Test Method for Flame Resistance of Textiles (Vertical Test)

F1494 Terminology Relating to Protective Clothing

F1506 Performance Specification for Flame Resistant and Electric Arc Rated Protective Clothing Worn by Workers Exposed to Flames and Electric Arcs

F1891 Specification for Arc and Flame Resistant Rainwear

F1959/F1959M Test Method for Determining the Arc Rating of Materials for Clothing

F2178 Specification for Arc Rated Eye or Face Protective Products

F2675 Test Method for Determining Arc Ratings of Hand Protective Products Developed and Used for Electrical Arc Flash Protection

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.