



Designation: F2704 – 17

Standard Specification for Air-Fed Protective Ensembles¹

This standard is issued under the fixed designation F2704; 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 specification establishes design, performance, classification, documentation, labeling, and certification requirements for protective ensembles that deliver air to the wearer by means of an air line or powered air purifying respirator (PAPR).

1.2 As a prerequisite to this specification, regulations within Title 42 Federal Code of Regulations, Part 84 are used to establish the conformance of the air-fed protective ensemble to respiratory protection requirements.

1.3 This specification addresses protective ensembles used for environments involving chemical, biological, and radiological/nuclear particulate hazards.

1.4 This specification sets specific criteria for air-fed protective ensembles used to prevent exposure to substances such as, but not limited to, chemical hazards, infectious microorganisms requiring Biosafety Level 4 (BLS4) protection, and environments where it is possible radiological or nuclear particulates will be found.

1.5 This specification is further used for classification of the protective ensemble as limited use or multiple use.

1.6 The values stated in SI units or in other units shall be regarded separately as standard. The values stated in each system must be used independently of the other, without combining values in any way.

1.7 *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.*

1.8 *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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:²

- D751 Test Methods for Coated Fabrics
- D1776 Practice for Conditioning and Testing Textiles
- D2582 Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting
- D3787 Test Method for Bursting Strength of Textiles—Constant-Rate-of-Traverse (CRT) Ball Burst Test
- D3884 Guide for Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
- D4157 Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method)
- D5034 Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)
- D5151 Test Method for Detection of Holes in Medical Gloves
- D5587 Test Method for Tearing Strength of Fabrics by Trapezoid Procedure
- F392 Test Method for Flex Durability of Flexible Barrier Materials
- F739 Test Method for Permeation of Liquids and Gases through Protective Clothing Materials under Conditions of Continuous Contact
- F903 Test Method for Resistance of Materials Used in Protective Clothing to Penetration by Liquids
- F1052 Test Method for Pressure Testing Vapor Protective Suits
- F1154 Practices for Qualitatively Evaluating the Comfort, Fit, Function, and Durability of Protective Ensembles and Ensemble Components
- F1342 Test Method for Protective Clothing Material Resistance to Puncture
- F1359 Test Method for Liquid Penetration Resistance of Protective Clothing or Protective Ensembles Under a Shower Spray While on a Mannequin

¹ This specification is under the jurisdiction of ASTM Committee F23 on Personal Protective Clothing and Equipment and is the direct responsibility of Subcommittee F23.30 on Chemicals.

Current edition approved July 1, 2017. Published July 2017. Originally approved in 2010. Last previous edition approved in 2010 as F2704 – 10. DOI:10.1520/F2704-17.

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.