



Standard Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases Under Conditions of Intermittent Contact¹

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INTRODUCTION

Workers involved in the production, use, and transportation of liquid and gaseous chemicals can be exposed to numerous compounds capable of causing harm upon contact with the human body. The deleterious effects of these chemicals can range from acute trauma such as skin irritation and burn, to chronic degenerative disease such as cancer. Since engineering controls may not eliminate all possible exposures, attention is often placed on reducing the potential for direct skin contact through the use of protective clothing that resists permeation, penetration, and degradation.

This test method is used to measure the resistance to permeation under the condition of intermittent contact of the protective clothing material with liquid or gaseous chemicals. Resistance to permeation and penetration under conditions of continuous contact should be determined by Test Methods F 739 and F 903, respectively. Methods for measuring the effects of the continuous contact of chemicals on the physical properties (that is, degradation) of rubbers, plastics, and coated fabrics are found in Test Methods D 471, Test Method D 543, and Test Method D 751, respectively.

1. Scope

1.1 This test method measures the determination of the resistance of protective clothing materials to permeation by liquid or gaseous chemicals under the condition of intermittent contact.

NOTE 1—The liquid must be volatile or soluble in water.

1.2 *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.* Specific hazard statements are given in Section 3.1.

2. Referenced Documents

2.1 ASTM Standards:

- D 471 Test Method for Rubber Property—Effect of Liquids²
- D 543 Practices for Evaluating the Resistance of Plastics to Chemical Reagents³

D 751 Test Methods for Coated Fabrics⁴

E 105 Practice for Probability Sampling of Materials⁵

E 171 Specification for Standard Atmospheres for Conditioning and Testing Flexible Barrier Materials⁶

F 739 Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases Under Conditions of Continuous Contact⁷

F 903 Test Method for Resistance of Materials Used in Protective Clothing to Penetration by Liquids⁷

F 1001 Guide for Selection of Chemicals to Evaluate Protective Clothing Materials⁷

2.2 Federal Standard:

Fed. Std. No. 191, Method 5030.2 Measurement of the Thickness of Materials⁸

3. Terminology

3.1 Definitions:

3.1.1 *analytical technique, n*—a procedure whereby the concentration of a chemical in a collection medium is quantitatively determined.

¹ This test method is under the jurisdiction of ASTM Committee F-23 on Protective Clothing and is the direct responsibility of Subcommittee F23.30 on Chemicals.

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² *Annual Book of ASTM Standards*, Vol 09.01.

³ *Annual Book of ASTM Standards*, Vol 08.01.

⁴ *Annual Book of ASTM Standards*, Vol 09.02.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.

⁶ *Annual Book of ASTM Standards*, Vol 15.09.

⁷ *Annual Book of ASTM Standards*, Vol 11.03.

⁸ Available from Standardization Documents Order Desk, Bldg 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.