



Standard Test Method for Liquid Penetration Resistance of Protective Clothing or Protective Ensembles Under a Shower Spray While on a Manikin¹

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INTRODUCTION

Personnel in industry and emergency response can be exposed to numerous liquids capable of causing harm upon contact with the human body. These liquids may include chemicals, contaminated blood or body fluids, and other hazardous liquids. The deleterious effects of different chemicals can range from acute trauma such as skin irritation and burn, to chronic degenerative disease such as cancer. Biological-based hazard liquids may include various liquidborne pathogens capable of causing infection directly or with non-intact skin. Since engineering controls cannot eliminate all possible exposures, attention is often placed on reducing the potential for direct skin contact through the use of protective clothing.

Protective clothing is available in a variety of constructions, configurations, and materials, and is designed to provide various levels of protection against many hazards. Protective clothing offering the highest level of chemical protection is constructed to prevent any contact of solid, liquid, or gaseous chemicals with the wearer. Test Method F1052 evaluates the integrity and construction of the vapor protective ensembles by way of an internal pressure test. In some applications, protective clothing need only isolate the wearer from splashes of liquids. This test method evaluates the integrity of the construction and configuration of liquid-penetration-resistant protective clothing or protective ensembles with a shower spray test.

Resistance of materials used in protective clothing to chemical permeation should be evaluated by Test Method F739 for continuous contact and Test Method F1383 for intermittent contact (that is, splash), or by Test Method F1407 using the permeation cup method. Resistance of protective clothing materials to liquid penetration should be determined by Test Method F903. Resistance of protective clothing materials specifically to blood and other potentially infectious materials should be determined by Test Method F1670 and Test Method F1671.

1. Scope

1.1 This test method measures the ability of protective clothing or protective ensembles to resist liquid penetration in the form of a shower spray with surfactant-treated water.

1.2 This test method measures the liquid penetration resistance of the construction and configuration of the overall protective clothing or protective ensemble, but especially of seams, closures, and interfaces with other components such as gloves, boots, hoods, and respiratory protective equipment. It is

intended that this test method be used to assess the liquid penetration resistance of protective clothing and protective ensembles as received from the manufacturer and worn in accordance with their instructions.

1.3 Resistance of materials used in protective clothing to permeation or penetration can be determined in accordance with Test Method F739 (or Test Method F1383 or Test Method F1407) and Test Method F903, respectively. Alternatively, resistance of materials used in protective clothing to penetration by synthetic blood or liquids containing virus can be determined in accordance with Test Method F1670 and Test Method F1671.

1.4 The integrity of vapor protective ensembles is measured by its ability to maintain positive internal pressure with Test Method F1052.

¹ This test method 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.

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