



Standard Test Method for Evaluating the Bacterial Filtration Efficiency (BFE) of Medical Face Mask Materials, Using a Biological Aerosol of *Staphylococcus aureus*¹

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INTRODUCTION

Workers, primarily those in the health care profession, involved in treating and caring for individuals injured or sick, as well as the patient, can be exposed to biological aerosols capable of transmitting disease. These diseases, which may be caused by a variety of microorganisms, can pose significant risks to life and health. Since engineering controls can not eliminate all possible exposures, attention is placed on reducing the potential of airborne exposure through the use of medical face masks.

1. Scope

1.1 This test method is used to measure the bacterial filtration efficiency (BFE) of medical face mask materials, employing a ratio of the upstream bacterial challenge to downstream residual concentration to determine filtration efficiency of medical face mask materials.

1.2 This test method is a quantitative method that allows filtration efficiency for medical face mask materials to be determined. The maximum filtration efficiency that can be determined by this method is 99.9 %.

1.3 This test method does not apply to all forms or conditions of biological aerosol exposure. Users of the test method should review modes for worker exposure and assess the appropriateness of the method for their specific applications.

1.4 This test method evaluates medical face mask materials as an item of protective clothing but does not evaluate materials for regulatory approval as respirators. If respiratory protection for the wearer is needed, a NIOSH-certified respirator should be used. Relatively high bacterial filtration efficiency measurements for a particular medical face mask material does not ensure that the wearer will be protected from biological aerosols since this test method primarily evaluates the performance of the composite materials used in the construction of the medical face mask and not its design, fit or facial sealing properties.

1.5 *Units*—The values stated in SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance of the standard.

1.6 This test method does not address breathability of the medical face mask materials or any other properties affecting the ease of breathing through the medical face mask material.

1.7 This test method may also be used to measure the bacterial filtration efficiency (BFE) of other porous medical products such as surgical gowns, surgical drapes, and sterile barrier systems.

1.8 *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:²

- F171 Practice for Conditioning and Testing Flexible Barrier Packaging
- F1494 Terminology Relating to Protective Clothing

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 F23.40 on Biological.

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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.