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Standard Test Method for Evaluation of Glove Effects on Wearer Hand Dexterity Using a Modified Pegboard Test¹

This standard is issued under the fixed designation F 2010; 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 test method is used for evaluating hand dexterity while wearing gloves.

1.1.1 This test method covers procedures in which the wearer picks up small objects between the thumb and index finger.

1.2 This test method is suitable for evaluating gloves and other forms of hand protection that allow the wearer to pick up small objects between their thumb and index finger.

1.3 This test method does not address all effects of glove use on hand function. Other methods should be considered to evaluate the effects of gloves on grip, tactility, and other hand functions of interest.

NOTE 1—This test method may not apply to all glove types or applications.

1.4 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.

1.5 *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:*

F 1494 Terminology Related to Protective Clothing²

3. Terminology

3.1 *Definitions:*

3.1.1 *dexterity, n*—a hand function referring to the ability of the individual to manipulate objects with their hands.

3.1.1.1 *Discussion*—Dexterity may be classified as requiring fine motor skills in which relatively small objects are manipulated or those involving gross motor skills in which relatively large objects are handled.

¹ This test method is under the jurisdiction of ASTM Committee F-23 on Protective Clothing and is the direct responsibility of Subcommittee F23.60 on Human Factors.

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² *Annual Book of ASTM Standards*, Vol 11.03.

3.1.2 *glove, n*—an item of protective clothing designed and constructed for protecting the hand and wrist.

3.1.3 *hand function, n*—the relative motion and manipulative abilities of the hand.

3.1.3.1 *Discussion*—In this test method, the effect of gloves on a specific hand function, dexterity, is evaluated.

3.1.4 *protective clothing, n*—a product which is designed and constructed for the purpose of isolating parts of the body from a potential hazard.

3.1.4.1 *Discussion*—In this test method, gloves are evaluated to determine the effect on the hand function of the wearer.

3.1.5 For definitions of other protective clothing-related terms used in this test method, refer to Terminology F 1494.

4. Summary of Test Method

4.1 The time required for a test subject to place pegs into a pegboard is measured without gloves and then later while wearing gloves. The additional time required to perform the task while wearing gloves is reported and is used to indicate the effects of the gloves on wearer dexterity.

5. Significance and Use

5.1 The test method is intended to provide a quantitative measurement about the effect of gloves on wearer dexterity by comparing the times required to perform a simple task with and without gloves.

5.2 This test method does not discriminate all glove effects on wearer hand function or apply to all glove types and applications. Additional evaluations or tests representative of the glove use application should be performed to determine the overall impact of gloves on wearer hand function.

6. Apparatus

6.1 *Test Apparatus*, a pegboard apparatus consisting of 25 stainless steel pins and a pegboard. Each stainless steel pin shall have a diameter of 9.5 mm (0.375 in.) and length of 38.1 mm (1.5 in.). The pegboard shall be 200 ± 13 mm (8.0 ± 0.5 in.). The pegboard shall have 25 holes with each hole having a diameter of 9.9 mm (0.39 in.) and a depth of 13 mm (0.5 in.). The holes shall be in a 5×5 pattern and each hole shall have a separation of 25 mm (1 in.) from adjacent holes.

6.2 *Stopwatch*, to measure the time to place the pegs into the pegboard in seconds.