Designation: D5151 – 06 (Reapproved 2015)

Standard Test Method for Detection of Holes in Medical Gloves[1]

This standard is issued under the fixed designation D5151; 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 covers the detection of holes in medical gloves.

1.2 This test method is limited to the detection of holes that allow water leakage under the conditions of the test.

1.3 The smallest hole size that will allow water leakage in a medical glove has not been determined and is beyond the scope of this test method.

1.4 The safe and proper use of medical gloves is beyond the scope of this test method.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *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. Terminology

2.1 *Definitions of Terms Specific to This Standard:*

2.1.1 *medical gloves, n*—medical gloves, as used in this test method, refer to both surgical and examination gloves.

3. Significance and Use

3.1 This test method is designed to detect holes that leak water and thereby compromise the usefulness of the glove.

3.2 This test method is suitable and designed as a reference method to evaluate samples of medical gloves.

4. Apparatus

4.1 *Mandrel*—A clear plastic tube, nominally 6 ± 0.5 cm outside diameter, 5 cm inside diameter or 50 mm schedule 80 poly(vinyl chloride) (PVC) pipe, 38 ± 1 cm long. The mandrel shall have a clamp or rubber band for securing the glove to the mandrel.

4.2 *Graduated Cylinder or Beaker*—As a minimum, the graduated cylinder or beaker shall be marked in increments of 50 cm^3 to a capacity of 1000 cm^3. The markings shall be accurate to within ±10 cm^3 at volumes greater than 500 cm^3.

4.3 *Stopwatch.*

4.4 *Various Clamps, Hangers, and Stands.*

5. Reagents

5.1 *Tap Water*—The water used in this test method shall be clean and free from any visible contaminants.

6. Procedure

6.1 Throughout 6.2 and 6.3, ensure that the exterior of the glove remains dry.

6.2 Mount the mandrel in a vertical position using appropriate stands, clamps, and hangers. Affix the glove to the mandrel by stretching the cuff of the glove around the mandrel. A maximum 40 mm of glove cuff should fit over the bottom end of the mandrel. Use the securing device, as necessary, to hold the glove in place. The remainder of the glove should hang freely from the mandrel when filled with water.

6.3 Pour a minimum of 1000 cm^3 of water having a room temperature of 15 to 30°C into the top of the mandrel. The water shall pass freely into the glove.

6.4 Visually inspect the glove for immediate water leakage. Let the glove hang for 2 min and again inspect for water leakage.

7. Interpretation of Results

7.1 Any glove that shows a droplet, stream, or other type of water leakage shall be considered to have failed the test.

7.2 Water leakage above the junction of the glove cuff and mandrel is not a test failure. If this leakage occurs, remove and dry the outside of the glove and retest.

8. Report

8.1 The report shall include the number of samples tested, the number of failures, and a general description of the location of each hole.

[1] This test method is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.40 on Consumer Rubber Products.

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9. Precision and Bias

9.1 No statement is made about either the precision or bias of this test method. This is a "pass-fail" test procedure not subject to the usual analysis for quantitative variable precision.

10. Keywords

10.1 detection; gloves; holes; medical