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Standard Specification for Rubber General Purpose, Household or Beautician Gloves[1]

This standard is issued under the fixed designation D4679; 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.

ε[1] NOTE—Editorially corrected 8.4.2 in January 2015.

1. Scope

1.1 This specification covers requirements for gloves made of rubber-like latex, whether made of natural or synthetic materials, unsupported with or without a flock lining, intended for household, beautician use, or general use.

1.2 This specification is intended to serve as a guide to permit obtaining gloves of consistent performance. The safe and proper use of gloves is excluded from the scope of this specification.

1.3 The following safety hazards caveat pertains only to the test method portion, Section 8, of this specification: *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]

D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D573 Test Method for Rubber—Deterioration in an Air Oven

D865 Test Method for Rubber—Deterioration by Heating in Air (Test Tube Enclosure)

D3767 Practice for Rubber—Measurement of Dimensions

D5151 Test Method for Detection of Holes in Medical Gloves

2.2 *ISO Standard:*

ISO 2859 Sampling Procedures and Tables for Inspection by Attributes[3]

3. Materials and Manufacture

3.1 Any rubber-like material whether comprised of natural synthetic, or other polymer compound that permits the glove to meet the requirements of this specification is acceptable.

4. Workmanship, Finish, and Appearance

4.1 The gloves shall have a uniform finish and be free of discoloration, thin spots, air bubbles, embedded particles, tackiness, and other blemishes likely to affect serviceability.

5. Precautions

5.1 Performance requirements are limited to minimum physical properties initially, and after heat aging, in accordance with 8.5.2 because performance testing for all possible use situations is impractical. Gloves covered under this specification are not intended for use with, or exposure to, chlorinated or aromatic solvents, or other strong chemicals. If the gloves are made of, or contain natural rubber latex, they are not intended for exposure to products containing petroleum or petroleum derivatives.

6. Performance Requirements

6.1 Gloves, sampled in accordance with Section 7, shall meet the following requirements:

6.1.1 Free from holes when tested in accordance with 8.2,

6.1.2 Consistent design in accordance with 8.3,

6.1.3 Consistent physical dimensions in accordance with 8.4, and

6.1.4 Have acceptable physical property characteristics in accordance with 8.5.

7. Sampling and Inspection

7.1 For referee purposes, gloves shall be sampled and inspected in accordance with ISO 2859. The inspection levels

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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.

[3] Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

and acceptable quality levels (AQL) shall conform to those in Table 1, or as agreed upon between the purchaser and the seller, if the latter is more comprehensive.

8. Test Methods

8.1 The following tests shall be conducted to assure the requirements of Section 6, as prescribed in Table 1.

8.2 *Freedom From Holes*—Testing for freedom from holes shall be conducted in accordance with Test Method D5151.

8.2.1 Manufacturers may use process controls for hole detection but for qualification and referee testing, the test method described in 8.2 shall be used.

8.3 *Design*—The glove surface may be smooth or textured, with or without a pattern on the finger surface, and the glove may have a rolled, natural edge or cut cuff. In any case, the gloves shall be either ambidextrous or in pairs (right hand, left hand) and matched in design.

8.4 *Physical Dimensions Test:*

8.4.1 The gloves shall comply with the dimension requirements prescribed in Table 2. The length shall be expressed in millimetres as measured from the tip of the second finger to the outside edge of the cuff.

8.4.2 The width of the palm shall be expressed in millimetres as measured laid flat at a level between the base of the index finger and the base of the thumb. Values of width per size other than listed shall meet the minimum dimensions specified in Table 2.

8.4.3 The thickness shall be expressed in millimetres as specified in Table 2 when using a dial micrometer described in Practice D3767. For referee tests, cutting the glove is necessary to obtain single thickness measurements.

8.4.4 Manufacturers may use process control tests to determine dimensions, but finished gloves shall be used for qualification tests and referee tests.

8.4.5 *Precision and Bias*—The precision and bias of measuring glove dimensions shall be in accordance with Practice D3767.

8.5 *Physical Requirements Test:*

8.5.1 Before and after accelerated aging, the gloves shall conform to the physical requirements specified in Table 3. Tests shall be conducted in accordance with Test Methods D412.

8.5.2 Accelerated aging tests shall be conducted in accordance with Test Methods D573 or D865. Test the gloves by either one of the following test methods:

8.5.2.1 After being subjected to a temperature of 70 ± 2°C for 166 ± 2 h, the tensile strength and the ultimate elongation shall not be less than the values specified in Table 3. This shall be the condition for referee tests.

8.5.2.2 After being subjected to a temperature of 100 ± 2°C for 22 ± 0.3 h, the tensile strength and ultimate elongation shall not be less than the values specified in Table 3.

8.5.3 Manufacturers may use process control tests to determine suitable shelf life but accelerated aging at 70°C for 166 h shall be used for qualification tests and referee tests.

8.5.4 *Precision and Bias*—The precision and bias of determining tensile strength and ultimate elongation of gloves shall be in accordance with Test Methods D412.

TABLE 1 Performance Requirements

Characteristic	Related Defects	Inspection Level	AQL
Freedom from holes	holes	S-3	4.0
Design	ambidextrous or in pairs, matched design	S-2	2.5
Dimensions	width, length, thickness	S-2	4.0
Physical properties	before aging, after accelerated aging	S-2	4.0

TABLE 2 Minimum Dimensions

Designation	Size				
	Ex Small	Small	Medium	Large	Ex Large
Width, mm	85	90	95	100	105
Length, mm	260 for all sizes				
Thickness, mm	*For all sizes*				
Finger	0.15				
Palm	0.15				

TABLE 3 Minimum Physical Requirements

Before Aging		After Accelerated Aging	
Tensile Strength	Ultimate Elongation	Tensile Strength	Ultimate Elongation
10.0 MPa	500 %	7.5 MPa	375 %

9. Product Marking

9.1 *Glove Identification*—Each glove, pair or individual package, shall be legibly marked to include the size, the name, or trademark of the manufacturer and the country of origin, coded or explicit.

10. Packaging and Storage

10.1 Unless otherwise specified, packaging shall be in accordance with the manufacturer's commercial practice.

10.2 Natural rubber gloves shall not be allowed to come into contact with oil-based antiseptics, phenols and their derivatives, petroleum-based products, or other materials harmful to rubber.

10.3 Gloves comprised of other polymers shall be labeled appropriately to avoid contact with materials that will cause deterioration of the barrier or is otherwise harmful to the material.

10.4 Gloves shall be protected from exposure to excessive heat and light in storage. (Temperatures below 40°C are recommended.)

11. Quality Assurance

11.1 *Responsibility for Inspection*—When specified in the contract or purchase order, the supplier is responsible for performance of all inspection requirements.

11.2 Gloves will be considered to meet the referee performance requirements when test results do not exceed the AQL in Table 1.

11.3 Retests are permissible under the provisions of ISO 2859.

12. Keywords

12.1 beautician; gloves; household; rubber