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Standard Specification for Leather Protectors for Rubber Insulating Gloves¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers leather protector gloves and leather protector mittens to be worn over electrical workers' rubber insulating gloves and rubber insulating mittens.

1.2 It is intended that the gloves specified herein shall fit snugly and without undue wrinkles over rubber insulating gloves and rubber insulating mittens specified in Specification **D120**.

1.3 The gloves of this specification are intended to prevent mechanical and thermal harm to rubber insulated gloves when working on live parts or conductors.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D120 Specification for Rubber Insulating Gloves

D6193 Practice for Stitches and Seams

F496 Specification for In-Service Care of Insulating Gloves and Sleeves

F1506 Performance Specification for Flame Resistant and Electric Arc Rated Protective Clothing Worn by Workers Exposed to Flames and Electric Arcs

F1891 Specification for Arc and Flame Resistant Rainwear

F2675 Test Method for Determining Arc Ratings of Hand Protective Products Developed and Used for Electrical Arc Flash Protection

¹ This specification is under the jurisdiction of ASTM Committee **F18** on Electrical Protective Equipment for Workers and is the direct responsibility of Subcommittee **F18.15** on Worker Personal Equipment.

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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.

2.2 *Federal Specifications:*³

KK-L-170C Leather, Kidskin or Goatskin, Chrome Tanned
DLA MIL-DTL-32092 Leather, Cattlehide, Deerskin and Horsehide, Chrome Tanned

2.3 *IEC Standards:*⁴

IEC 60903:2014 Live working - Electrical insulating gloves

3. Terminology

3.1 *Definitions:*

3.1.1 *glove, n*—a covering for the hand which has separate sections for the thumb and fingers or a mitten which has separate sections for the thumb and multiple fingers.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *protector, n*—a glove designed to be worn over dielectric rubber insulating gloves.

3.2.1.1 *Discussion*—A protector is designed to provide mechanical and thermal protection for the dielectric rubber insulating glove.

4. Significance and Use

4.1 The purpose of the leather protectors is to provide mechanical protection and some thermal protection for rubber insulating gloves. The leather protectors shall not be used for electrical protection.

4.2 It is common practice and the responsibility of the user of this type of protective equipment to prepare complete instructions and regulations to govern the correct and safe use of such equipment.

NOTE 1—Specification **F496** provides significant guidelines on this subject.

5. Materials

5.1 The leather for the body of the glove shall be grain cowhide, buffed grain cowhide, grain deerskin, grain pigskin, grain horsehide, or grain goatskin. Leather shall be free of cuts, open grub holes, or brand marks although well-healed grub

³ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, Attn: NPODS.

⁴ Available from International Electrotechnical Commission (IEC), 3, rue de Varembe, 1st floor, P.O. Box 131, CH-1211, Geneva 20, Switzerland, <https://www.iec.ch>.

scars are permitted. For protectors for Class 0 and Class 00 gloves, grain sheepskin or capeskin are also acceptable.

5.1.1 The thickness of the leather in the hand portion shall not be less than 1.00 mm (0.039 in.) nor greater than 1.60 mm (0.063 in.). For protectors for Class 0 gloves, the leather must be provided in a minimum thickness of 0.58 mm (0.023 in.), with the maximum thickness being 1.2 mm (0.04 in.). For protectors for Class 00 gloves, the leather must be provided in a minimum thickness of 0.40 mm (0.016 in.) with a maximum thickness being 1.20 mm (0.047 in.).

5.1.2 The type of leather chosen, and the thickness will determine the protection provided to the rubber insulating glove.

5.1.3 Any leather material used in the cuffs shall meet the requirements of the tanning standards listed in this specification.

5.2 The cuff shall be made of either leather or polymeric material, or combination of both.

5.2.1 When leather is used for the cuff, it shall be of sufficient stiffness to be self-supporting with a minimum thickness of 1.2 mm (0.047 in.) and a maximum thickness of 1.78 mm (0.070 in.).

5.2.2 When polymeric material is used for cuffs, it shall have 0.51 mm (0.020 in.) minimum thickness and 1.78 mm (0.070 in.) maximum thickness, and shall be supported with fabric or equivalent to provide sufficient stiffness to be self-supporting and to prevent excessive elasticity. Cuffs may be made of one or two layers of cuff material.

5.2.3 Cuffs may also be molded in one piece of elastomeric compounds, and shall be of sufficient thickness to be self-supporting.

5.2.4 Polymeric materials used in cuffs shall be proven to be thermally stable by arc testing. This can be accomplished by choosing materials rated to Specification **F1891** arc rating requirements or by testing the glove base product using the ignition withstand test in Test Method **F2675** with a minimum exposure of 20 cal/cm² with no melting and dripping, and no afterflame >15 s. No arc rating is required but an arc rating is an option, but it shall represent the base product as outlined in Test Method **F2675**.

5.3 An adjustable drawstrap shall be made of either grain or split leather, webbing, or “shirred elastic.” It shall be a minimum of 13 mm (0.50 in.), maximum 19 mm (0.75 in.) wide. Adjustability of drawstrap shall be obtained through the use of synthetic buckles, nylon rings, or Velcro fasteners, except for shirred elastic, which provides its own adjustability.

5.4 Bonded nylon, polyester, or thread meeting the requirements of Performance Specification **F1506** shall be used throughout the protector glove. When bonded nylon or polyester thread is used, it shall be a minimum of size 69 and maximum of size 99, with the exception that when a looper thread is used, its minimum size may be size 46.

5.5 The top edge of leather or polymeric cuffs shall be hemmed or finished with a flame resistant, non-melting binding.

6. Manufacture

6.1 The leather protectors covered by this specification shall be manufactured in either clute, gunn, montpelier, or one-finger mitten patterns.

6.1.1 The clute pattern shall consist of a one-piece palm including the fronts of all four fingers and thumb. The one-piece palm may include the back of the index finger. When the palm includes the back of the index finger, there shall be three fourchettes to form the backs and sides of the other three fingers. When the palm does not include the back of the index finger, there shall be four fourchettes to form the backs and sides of the four fingers. The back of the thumb shall consist of one piece of leather.

6.1.2 The gunn pattern shall be a four-finger and thumb design in which the face of the thumb, the palm, and the first (index) and fourth (little) fingers are of one piece of leather. The palm may also include the back of the index finger. When it does, the back shall be of one piece and shall include the backs of the second, third, and fourth fingers up to the gauntlet. When the palm does not include the back of the index finger, then the back shall be of one piece including the backs of index, third, and fourth fingers up to the gauntlet. The fronts of the second and third fingers may be of one or two pieces of leather with outseams between fingers and the palm of the hand.

6.1.3 The montpelier pattern shall consist of a one-piece palm including fronts of all four fingers and thumb. The one-piece back shall include the backs of all four fingers. The palm and back shall be joined by fourchette strips. The back of the thumb shall consist of one piece of leather.

6.1.4 Mittens shall be of one-finger mitten design, which shall consist of the thumb, index finger, and one palm that will encompass the second, third, and fourth fingers into one. The face of the thumb, front and back of the index finger, and front of the palm shall be of one piece of leather. The back shall be one piece for the palm only. The back of the thumb shall consist of one piece of leather. A fourchette shall be sewn between the index finger and palm to make allowance for fit over the rubber insulating mitten.

6.2 *Thumb*—In all patterns, continuous thumb design, wing thumb, or set-in-thumb may be used. It may be of one or two pieces of material, and its relation to the other parts of the glove or mitten shall be such as not to interfere with the free movement of the fingers.

6.2.1 There shall be a reinforcement consisting of a strip of leather that shall extend from the cuff on the palm side across the thumb crotch.

6.2.1.1 Wing thumb patterns or protectors for Class 0 and Class 00 gloves may be made with or without this strip of leather.

6.3 The cuff shall be made of one or two pieces of cuff material and there shall be a leather or rubber shield reinforcing the front of the cuff. Protectors for Class 0 and Class 00 gloves may be cuffless or, if supplied with a cuff, may have the reinforcing shield omitted.

6.4 *Stitching*—There shall be no less than seven nor more than ten stitches per inch with the ends of the stitching square