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Standard Specification for Temporary Protective Equipotential Bond Mat To Be Used on De-Energized Equipment¹

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1. Scope

1.1 This specification covers the manufacture and testing of the temporary protective equipotential bond mat used on or around de-energized electrical equipment.

1.2 It is common practice for users of protective equipment to prepare complete instructions and regulations to govern in detail the correct use and maintenance of such equipment.

1.3 The use and maintenance of this equipment is beyond the scope of this specification.

1.4 It is recognized that the use of temporary protective equipotential bond mats requires additional equipment for installation and use, typically temporary connecting jumper assemblies.

2. Referenced Documents

2.1 ASTM Standards:²

B 33 Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

D 2261 Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine)

2.2 Other Standards:

Fed Std 191/5100 Strength and Elongation, Breaking of Woven Cloth; Grab Method

Fed Std 191/5874 Temperature, Low; Effect on Coated Cloth

Fed Std MVSS302 Flammability of Interior Materials

A-A-59551 Wire, Electrical, Copper Un-insulated

3. Terminology

3.1 Definitions:

3.1.1 *bonding, n*—the mechanical interconnection of conductive parts to maintain a common electrical potential.

3.1.2 *Equipotential Grounding System, n*—temporary grounding system placed in such locations and arranged in such a manner as to minimize the likelihood of workers being exposed to hazardous differences in electrical potential.

3.1.3 *carrier, n*—the main body of the equipotential bond mat on which the flat braid conductor is sewn.

4. Classification

4.1 Equipotential bond mats covered under this specification shall be designated as Type I or Type II; ~~Class A or Class B~~; Style 1 or Style 2; Grid Conductor 1 to 24 and Carrier Material I or II.

4.1.1 *Type I*, capable of being cascaded (joined together).

4.1.2 *Type II*, without capability of being cascaded.

4.1.3 ~~Class A, with continuity cable.~~

4.1.4 ~~Class B, without continuity cable.~~

4.1.5 ~~Style 1~~, exposed conductor termination.

4.1.6

4.1.4 ~~Style 2~~, jacketed conductor termination.

4.1.7

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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.

4.1.5 *Grid Conductor*, 1 to 24, in accordance with the normal flat width, or equivalent, of the flat braid conductors combination that makes up the grid conductor and perimeter conductor of the carrier, as shown in Table 1.

4.1.8

4.1.6 *Carrier material I*, slip resistant.

4.1.9

4.1.7 *Carrier material II*, without slip resistance.

5. Ordering Information

5.1 Orders for equipotential bond mats under this specification shall include the ASTM designation and the following information:

5.1.1 Quantity,

5.1.2 Type,

5.1.3 Style,

5.1.4 Class,

5.1.5 Grid—5.1.4 Grid Conductor,

5.1.6 Carrier Material,

5.1.7 Size, specified in length and width dimensions, noting any specific configuration requirements; rectangular, L shape, rectangular shape with access hole in middle, etc.

5.2 The listing of types, styles, classes, grid conductors, carrier material and size is not intended to mean that all shall necessarily be available from the manufacturers; it signifies only that, if made they shall conform to the details of this specification.

6. Manufacture and Marking

6.1 Each equipotential bond mat shall be marked clearly and permanently with the name of the manufacturer or supplier, ASTM F 2715, serial number, type, style and class.

7. Chemical and Physical Requirements

7.1 Equipotential bond mats samples selected in accordance with Section 10 shall conform to the physical and chemical requirements as specified in this section.

7.2 *Carrier Strength*:

7.2.1 *Tensile (Grab)*— Carrier material shall be capable of a tensile (grab) of 1828 – 2037 N (411 – 458 lbf) in accordance with Fed Std 191/5100.

7.2.2 *Tongue Tear*— Carrier material shall be capable of tongue tear of 485 – 516 N (109 – 116 lbf) in accordance with Test Methods D 2261.

7.2.3 *Cold Flexure*— Carrier material shall be capable of a low cold crack of -40° C (-40° F) in accordance with Fed Std 191/5874-1978

TABLE 1 Bond Mat Conductor Size

Grid Pa Conductteorn	Grid, in.	Perimeter, in.	Class
1	1/4	1/4	B
2	1/4	1/2	B
3	1/4	3/4	B
4	1/2	1/2	B
5	1/2	3/4	B
6	3/4	3/4	B
7	1/4	1/4	A
8	1/4	1/2	A
9	1/4	3/4	A
10	1/2	1/2	A
11	1/2	3/4	A
12	3/4	3/4	A
13	1/4	1/4	A
14	1/4	1/2	A
15	1/4	3/4	A
16	1/2	1/2	A
17	1/2	3/4	A
18	3/4	3/4	A
19	1/4	1/4	A
20	1/4	1/2	A
21	1/4	3/4	A
22	1/2	1/2	A
23	1/2	3/4	A
24	3/4	3/4	A