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An American National Standard

# Standard Specification for Fully Cured Silicone Rubber-Coated Glass Fabric and Tapes for Electrical Insulation[1]

This standard is issued under the fixed designation D 1931; 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 specification covers fully cured silicone rubber-coated glass fabric in sheet form, full-width rolls, and tapes to be used as electrical insulation.

## 2. Referenced Documents

2.1 *ASTM Standards:* [2]

D 618 Practice for Conditioning Plastics for Testing

D 1458 Test Methods for Fully Cured Silicone Rubber-Coated Glass Fabric and Tapes for Electrical Insulation

D 1711 Terminology Relating to Electrical Insulation

## 3. Terminology

3.1 *Definitions*:

3.1.1 For definitions of terms used in this specification, refer to Terminology D 1711.

## 4. Ordering Information

4.1 Orders for material covered by this specification shall include the following information:

4.1.1 Form (see Section 1),

4.1.2 Desired nominal thickness, width, length, or weight,

4.1.3 Number of rolls per package,

4.1.4 Marking of packages, and,

4.1.5 Whether mica dusting is required or not.

## 5. Materials and Manufacture

5.1 The glass fabric and the silicone rubber shall be of good commercial quality and shall be such as to produce a product that will meet the requirements of this specification. The surface of the coated fabric shall be free of blisters, the coated fabric shall be free of wrinkles and creases, and the goods shall be free of any dust or dirt such as might be picked up due to a static charge during processing.

5.2 The material shall not be spliced unless agreed upon by the purchaser and the manufacturer. If necessary to splice, the following criteria may be used as a guide: in any given shipment, 90 % should have no splice; the remaining 10 % may have one splice and this should be flagged. The manner of splicing shall be agreed upon between the purchaser and the seller.

## 6. Dimensional Requirements (Finished Cloth)

6.1 *Width*—Full-width rolls and sheets shall be 91 ± 2 cm (36 ± 1 in.) in width, and shall be supplied trimmed to not less than 89 cm (35 in.) wide, unless otherwise specified. Individual measurements on tapes shall vary not more than 0.8 mm (1⁄32 in.) from the specified width for tapes 38 mm (1½ in.) or less in width, nor more than 1.6 mm (1⁄16 in.) for tapes over 38 mm in width.

6.2 *Length*—The nominal length or weight shall be as specified in the purchase order. The measured lengths of individual rolls or sheets shall be not less than that specified.

## 7. Test Methods

7.1 Appropriate sampling and test methods conforming to Test Methods D 1458 shall be used to determine the conformity of materials to this specification.

## 8. Physical and Electrical Requirements

8.1 The properties of the silicone rubber-coated glass fabric and tapes shall conform to those prescribed in Table 1.

## 9. Rejection and Rehearing

9.1 The purchaser reserves the right to reject any part of the shipment that does not conform to the requirements for packaging and marking as specified in Section 10.

9.2 The failure of 20 % or more of the sample rolls or sheets to conform to any one of the requirements given in Sections 5, 6, 7, and 8 shall constitute cause for rejection of the entire shipment without further tests.

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[1] This specification is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Flexible and Rigid Insulating Materials.

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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.

**TABLE 1 Physical and Electrical Requirements for Silicone Rubber-Coated Glass Fabric and Tapes**

| | | | | |
|---|---|---|---|---|
| Physical: | | | | |
| Nominal thickness, mm | 0.12 | 0.18 | 0.25 | 0.38 |
| in. | 0.005 | 0.007 | 0.010 | 0.015 |
| Thickness tolerance, mm | ±0.01 | ±0.03 | ±0.03 | ±0.03 |
| in. | ±0.0005 | ±0.001 | ±0.001 | ±0.001 |
| Nominal fabric thickness, mm | 0.08 | 0.10 | 0.10 | 0.18 |
| in. | 0.003 | 0.004 | 0.004 | 0.007 |
| Breaking strength (warp), min, avg: | | | | |
| kN/m | 12.3 | 21.9 | 21.9 | 43.8 |
| lbf/in. | 70 | 125 | 125 | 250 |
| Breaking strength (creased), min, avg: | | | | |
| kN/m | 3.5 | 15.8 | 15.8 | 35.0 |
| lbf/in. | 20 | 90 | 90 | 200 |
| Weight, kg/100 $m^2$ | 16 ± 1.6 | 26 ± 2.6 | 37 ± 3.7 | 49 ± 4.9 |
| lb/100 $yd^2$ | 30 ± 3 | 48 ± 4.8 | 68 ± 6.8 | 90 ± 9 |
| Electrical: | | | | |
| Dielectric strength, kV/mm (V/mil), min, avg: | | | | |
| Condition 96/23/50 | 36 (900) | 30 (750) | 34 (850) | 26 (650) |
| Condition 24/23/96 | | 19 (475) | 23 (575) | ... |
| Dissipation factor, 60 Hz, 2kV/mm (50 V/mil) max stress, avg: | | | | |
| at 23 °C (73 °F) | 0.015 | 0.015 | 0.015 | 0.015 |
| at 100 °C (21 2 °F) | 0.020 | 0.020 | 0.020 | 0.020 |
| Relative permittivity, 60 Hz, 2kV/mm (50 V/mil) max stress, avg at 23 °C (73 °F) | 4 | 4 | 4 | 4 |

9.3 The failure of a sample roll to conform to the requirements of one or more of the sections noted in 9.2 shall be counted as only one roll failure.

## 10. Packaging and Package Marking

10.1 *Packaging*—Rolls of silicone rubber-coated glass fabric, either in full—width rolls or slit tape form, shall be wrapped in such manner as to maintain the rolls in a firm and compact condition and to protect the contents of the package from mechanical damage, moisture, and contamination during shipment. Sheets shall be packaged with equal care for protection during shipment.

10.2 *Marking*—Shipping containers shall be marked with the name of the manufacturer, catalog number, lot number, color, thickness, width, yardage, or weight, and date of manufacture.

## 11. Keywords

11.1 electrical insulation; silicone rubber-coated glass fabric