



Designation: ~~D2686 – 06 (Reapproved 2012)~~ **D2686 – 19**

# Standard Specification for Polytetrafluoroethylene-Backed Pressure-Sensitive Electrical Insulating Tape<sup>1</sup>

This standard is issued under the fixed designation D2686; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

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

## 1. Scope\*

1.1 This specification covers electrical insulating tape consisting of a polytetrafluoroethylene (PTFE) film coated on one side with a pressure-sensitive adhesive.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

NOTE 1—This standard is similar to IEC 60454-3-14.

1.3 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:*<sup>2</sup>

[D1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications](#)

[D1711 Terminology Relating to Electrical Insulation](#)

2.2 *IEC Standard:*

[IEC 60454-3 Specifications for Pressure-Sensitive Adhesive Tapes for Electrical Insulation](#)<sup>3</sup>

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminology [D1711](#).

## 4. Classification

4.1 This specification covers two types of PTFE tape in various thicknesses, as follows:

4.1.1 *Type I*—Standard backing coated with a silicone adhesive:

4.1.1.1 *Grade A*—0.050 mm (0.002 in.) backing thickness, and

4.1.1.2 *Grade B*—0.125 mm (0.005 in.) backing thickness.

4.1.2 *Type II*—Bondable backing tape coated with a silicone adhesive:

4.1.2.1 *Grade A*—0.050 mm (0.002 in.) backing thickness, and

4.1.2.2 *Grade B*—0.125 mm (0.005 in.) backing thickness.

## 5. Materials and Manufacture

5.1 The tape shall comprise a backing consisting of a film of tetrafluoroethylene polymer on one side of which has been applied a pressure-sensitive adhesive. The backing shall be free of defects such as roughness and holes, and the adhesive layer shall not show defects such as lumps or gels and bare areas. The slit edge of the tape shall be free of defects such as nicks. The adhesive shall not transfer when the tape is unwound from the roll. The product may It is acceptable for the product to contain a release liner to assist the unwind and avoid transfer without affecting the adhesion of the tape.

<sup>1</sup> 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 Electrical Insulating Materials.

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<sup>2</sup> 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.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, [http://www.ansi.org](#).

\*A Summary of Changes section appears at the end of this standard

## 6. Requirements

6.1 All tapes shall meet the requirements given in **Table 1** for the grades specified.

## 7. Standard Rolls

7.1 The standard widths and lengths shall be selected from the following:

### 7.1.1 Widths:

mm	in.	mm	in.
6	1/4	22	7/8
9	3/8	25	1
12	1/2	30	1 1/4
15	5/8	38	1 1/2
19	3/4	50	2
<u>mm</u>	<u>in.</u>	<u>mm</u>	<u>in.</u>
<u>6</u>	<u>1/4</u>	<u>22</u>	<u>7/8</u>
<u>9</u>	<u>3/8</u>	<u>25</u>	<u>1</u>
<u>12</u>	<u>1/2</u>	<u>30</u>	<u>1 1/4</u>
<u>15</u>	<u>5/8</u>	<u>38</u>	<u>1 1/2</u>
<u>19</u>	<u>3/4</u>	<u>50</u>	<u>2</u>

Widths greater than 50 mm (2 in.) shall be agreed upon between the purchaser and the seller.

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**TABLE 1 Requirements for PTFE Pressure-Sensitive Adhesive Tapes**

Requirements	Grade A	Grade B
Nominal thickness of backing, mm (in.)	0.050 (0.002)	0.125 (0.005)
Total thickness, mm avg (in. avg)	0.100 ± 0.025 (0.004 ± 0.001)	0.180 ± 0.025 (0.007 ± 0.001)
Breaking strength, min, kN/m (lbf/in.) avg	1.7 (10)	3.5 (20)
Elongation, min, percent avg	75	150
Adhesion, min, N/m (ozf/in.) avg:		
Steel	164 (15)	219 (20)
Backing (Type II only)	164 (15)	164 (15)
Dielectric breakdown, min, V avg:		
Standard condition	6000	10 000
After water immersion	6000	10 000
High-humidity insulation resistance, min, median megohms resistance	2 × 10 <sup>5</sup>	2 × 10 <sup>5</sup>