



Designation: ~~D6585-05~~ Designation: D6585 - 11

Standard Specification for Unsintered Polytetrafluoroethylene (PTFE) Extruded Film or Tape¹

This standard is issued under the fixed designation D6585; 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 unsintered extruded films or tapes manufactured from virgin, unpigmented polytetrafluoroethylene, in nominal thickness from 0.025 to 0.51 mm [0.001 to 0.020 in.], and are > 97% PTFE in composition.~~

1.1 This specification covers unsintered extruded films or tapes manufactured from virgin, unpigmented polytetrafluoroethylene, in nominal thickness from 0.025 to 0.51 mm (0.001 to 0.020 in.), which are >99 % PTFE in composition.

NOTE 1—For unsintered pigmented products, refer to Specification D7193.

1.1.1 The use of recycled PTFE for production of unsintered extruded films or tapes has not been identified at this time. When commercial usable processes and materials are available, this specification will be revised to include recycled materials.

1.2 The values stated in SI units are detailed in IEEE/ASTM SI-10 are to be regarded as the standard. The values given in parentheses are for information only.

1.3 The following precautionary statement 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.*

NOTE 2—Although this specification and ISO/DIS 13000-1 and ISO/DIS 13000-2 differ in approach or detail, data obtained relating to specific properties, using either are technically equivalent.

2. Referenced Documents

2.1 ~~ASTM Standards:~~ ASTM Standards:²

D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

D150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation

D257 Test Methods for DC Resistance or Conductance of Insulating Materials

D618 Practice for Conditioning Plastics for Testing

~~D638 Test Method for Tensile Properties of Plastics~~ 882 Test Method for Tensile Properties of Thin Plastic Sheet

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

D1711 Terminology Relating to Electrical Insulation

D3892 Practice for Packaging/Packing of Plastics

D6040 Guide to Test Methods for Unsintered Polytetrafluoroethylene (PTFE) Extruded Film or Tape

D7193 Specification for Unsintered Pigmented Polytetrafluoroethylene (PTFE) Extruded Film or Tape

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

IEEE/ASTM SI-10 Standard for Use of the International System of Units (SI): The Modern Metric System

2.2 ISO Standard:³

ISO 13000-1 Plastics—Polytetrafluoroethylene (PTFE) Semi-Finished Products—Part 1: Requirements and Designation

ISO 13000-2 Plastics—Polytetrafluoroethylene (PTFE) Semi-Finished Products—Part 2: Preparation of Test Specimens and Determination of Properties Designation

2.3 GSA Standard:

¹ This specification is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials. Current edition approved April 1, 2005; 2011. Published June 2005; February 2011. Originally approved in 2000. Last previous edition approved in 2000 as D6585 - 005. DOI: 10.1520/D6585-05.10.1520/D6585-11.

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 (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

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

A-A-58092 Tape, Antiseize, Polytetrafluorethylene
A-A-58092 Tape, Anti-seize, Polytetrafluorethylene⁴

NOTE 23—Supersedes MIL-T-27730A (ASG) 7 January 1997.

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology D1711, Terminology D883, and Test Method D257 and abbreviated terms are in accordance with Terminology D1600, unless otherwise specified.

3.1.1 *lot, n*—one production run or a uniform blend of two or more production runs.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *film, n*—full width material received as finished film.

3.2.2 *tape, n*—material that has been slit from the finished film.

3.2.3 *tensile strength at yield, n*—from Test Methods D638, Fig. A2.3. D882.

4. Classification

4.1 This specification covers three types of unsintered extruded PTFE tapes:

4.1.1 *Type I*—Thread seal tape (T.S.T.) with an apparent density of 0.50 to 1.60 g/cm³.

4.1.2 *Type II*—Low density tape with an apparent density of 0.60 to 0.80 g/cm³. Note 3—Other low apparent density products that do not fall into this density range are available. The values vary on these products and must be agreed to between supplier and purchaser.

4.1.3 *Type III*—Wire and cable tape with an apparent density of 1.50 to 1.70 g/cm³.

4.2 Grades of tape are identified in Tables 1-3.

4.3 A line callout system is used to specify materials in this specification. The system uses pre-defined cells to refer to specific aspects of this specification, as illustrated below:

NOTE 4—Other products that do not fall into these density ranges are available. The values vary on these products and must be agreed to between supplier and purchaser.

4.3 A line callout system is used to specify materials in this specification. The system uses pre-defined cells to refer to specific aspects of this specification, as illustrated below:

Standard Number Block	Type	Specification Grade	Class	Special Notes
Example: ASTM D6585	III	2 mil	—	—

For this example, the line call-out would be: ASTM D6585, III, 2 mil, that would specify specifies an unsintered wire and cable tape, 2 mil thick, and would have having all of the properties listed for that type and grade in the appropriate specified properties, tables, or both, in the specification identified. properties tables. A comma is used as the separator between the standard number and the type. Separators are not needed between the type and grade because they are, in turn, romanRoman numerals and arabicArabic digits as provided in Section B8 of the *Form and Style for ASTM Standards*. Provision for “Special Notes” is included so that other information can be is provided when required. This example would be relates to wire and cable tape with no special or added requirements. When special notes are used, they shouldshall be preceded by a comma.

5. Performance Requirements

5.1 Basic requirements from the property tables are always in effect unless superseded by specific suffix requirements, which always take precedence.

⁴ A-A-58092 can be obtained from General Services Administration, Engineering and Commodity Management Division (9FTE-10), 400 15th St. SW, Auburn, WA 98001.

TABLE 1 Type I Thread Seal Tape with an Apparent Density of 0.50 to 1.60 g/cm³

NOTE 1—Where no property is listed there is no requirement.

Grade	Apparent Density, g/cm ³		Thickness			Tensile Strength at Yield		Elongation at Maximum Strength	
	min	max	mm	tolerance	in.	tolerance	MPa	psi	min, %
Economy Standard	0.50	0.90	0.076	...	0.0030	...	...	...	...
Standard	0.80	1.10	0.076	±0.0127	0.0030	±0.0005	...	...	50
Mil Spec., Mil Spec., A-A-58092	1.20	1.20	0.088	±0.0127	0.0030	±0.0005	...	...	50
A-A-58092	1.20	1.20	0.088	+0.0254, -0.0381	0.0035	+0.0010, -0.0015	...	...	40
Premium	1.20	1.60	0.076	±0.0127	0.0030	±0.0005	11.72	1700	75
Premium	1.20	1.60	0.076	±0.0127	0.0030	±0.0005	11.72	1700	75

TABLE 2 Type II Low Density Tape with an Apparent Density of 0.60 to 0.80 g/cm³

Grade	Apparent Density, g/cm ³		Thickness			Tensile Strength at Yield		Elongation at Maximum Strength	
	min	max	mm	tolerance	in.	tolerance	MPa	psi	min, %
4 mil	0.60	0.80	0.102	± 0.0076	0.004	± 0.0003	13.10	1900	40
4 mil	0.60	0.80	0.102	± 0.0076	0.004	± 0.0003	13.10	1900	40
5 mil	0.60	0.80	0.127	± 0.0102	0.005	± 0.0004	13.10	1900	40
5 mil	0.60	0.80	0.127	± 0.0102	0.005	± 0.0004	13.10	1900	40
10 mil	0.60	0.80	0.254	± 0.0127	0.010	± 0.0005	8.27	1200	40
10 mil	0.60	0.80	0.254	± 0.0127	0.010	± 0.0005	8.27	1200	40

TABLE 3 Type III Wire and Cable Tape with an Apparent Density of 1.50 to 1.70 g/cm³

NOTE 1—In cases where actual product thickness is between thickness values called out in this table, the actual thickness should be rounded to the nearest defined increment using guidelines found in Practice E29, and the corresponding requirements applied.

Grade	Apparent Density, g/cm ³		Thickness			Tensile Strength at Yield		Elongation at Maximum Strength	
	min	max	mm	tolerance	in.	tolerance	MPa	psi	min, %
2 mil	1.50	1.70	0.050	± 0.0076	0.002	± 0.0003	12.41	1800	30
2 mil	1.50	1.70	0.050	± 0.0076	0.002	± 0.0003	12.41	1800	30
3 mil	1.50	1.70	0.076	± 0.0076	0.003	± 0.0003	12.41	1800	30
3 mil	1.50	1.70	0.076	± 0.0076	0.003	± 0.0003	12.41	1800	30
4 mil	1.50	1.70	0.102	± 0.0076	0.004	± 0.0003	10.34	1500	30
4 mil	1.50	1.70	0.102	± 0.0076	0.004	± 0.0003	10.34	1500	30
5 mil	1.50	1.70	0.127	± 0.0076	0.005	± 0.0003	10.34	1500	30
5 mil	1.50	1.70	0.127	± 0.0076	0.005	± 0.0003	10.34	1500	30
6 mil	1.50	1.70	0.152	± 0.0102	0.006	± 0.0004	7.58	1100	30
6 mil	1.50	1.70	0.152	± 0.0102	0.006	± 0.0004	7.58	1100	30
7 mil	1.50	1.70	0.178	± 0.0102	0.007	± 0.0004	6.89	1000	30
7 mil	1.50	1.70	0.178	± 0.0102	0.007	± 0.0004	6.89	1000	30
8 mil	1.50	1.70	0.203	± 0.0102	0.008	± 0.0004	6.55	950	30
8 mil	1.50	1.70	0.203	± 0.0102	0.008	± 0.0004	6.55	950	30
9 mil	1.50	1.70	0.229	± 0.0102	0.009	± 0.0004	6.21	900	30
9 mil	1.50	1.70	0.229	± 0.0102	0.009	± 0.0004	6.21	900	30
10 mil	1.50	1.70	0.254	± 0.0127	0.010	± 0.0005	5.52	800	50
10 mil	1.50	1.70	0.254	± 0.0127	0.010	± 0.0005	5.52	800	50
11 mil	1.50	1.70	0.279	± 0.0152	0.011	± 0.0006	4.83	700	50
11 mil	1.50	1.70	0.279	± 0.0152	0.011	± 0.0006	4.83	700	50
12 mil	1.50	1.70	0.305	± 0.0229	0.012	± 0.0009	4.14	600	50
12 mil	1.50	1.70	0.305	± 0.0229	0.012	± 0.0009	4.14	600	50
13 mil	1.50	1.70	0.330	± 0.0279	0.013	± 0.0011	3.79	550	50
13 mil	1.50	1.70	0.330	± 0.0279	0.013	± 0.0011	3.79	550	50
14 mil	1.50	1.70	0.356	± 0.0330	0.014	± 0.0013	3.10	450	50
14 mil	1.50	1.70	0.356	± 0.0330	0.014	± 0.0013	3.10	450	50
15 mil	1.50	1.70	0.381	± 0.0381	0.015	± 0.0015	2.76	400	50
15 mil	1.50	1.70	0.381	± 0.0381	0.015	± 0.0015	2.76	400	50
16 mil	1.50	1.70	0.406	± 0.0406	0.016	± 0.0016	2.76	400	50
16 mil	1.50	1.70	0.406	± 0.0406	0.016	± 0.0016	2.76	400	50
17 mil	1.50	1.70	0.432	± 0.0432	0.017	± 0.0017	2.76	400	50
17 mil	1.50	1.70	0.432	± 0.0432	0.017	± 0.0017	2.76	400	50
18 mil	1.50	1.70	0.457	± 0.0457	0.018	± 0.0018	2.76	400	50
18 mil	1.50	1.70	0.457	± 0.0457	0.018	± 0.0018	2.76	400	50
19 mil	1.50	1.70	0.483	± 0.0483	0.019	± 0.0019	2.76	400	50
19 mil	1.50	1.70	0.483	± 0.0483	0.019	± 0.0019	2.76	400	50
20 mil	1.50	1.70	0.508	± 0.0508	0.020	± 0.0020	2.76	400	50
20 mil	1.50	1.70	0.508	± 0.0508	0.020	± 0.0020	2.76	400	50

5.2 The materials shall conform to the requirements in Tables 1-3 Tables 1-4 and suffix requirements as they apply.

TABLE 4 Width Tolerances

Width (mm)	Tolerance (mm)	Width (in.)	Tolerance (in.)
Below 6.35	± 0.38	Below ¼	± 0.015
Between 6.35 and 25.4	± 0.51	Between ¼ and 1	± 0.020
Between 25.4 and 50.8	± 0.64	Between 1 and 2	± 0.025
Between 50.8 and 76.2	± 0.89	Between 2 and 3	± 0.035
Between 76.2 and 152.4	± 1.91	Between 3 and 6	± 0.075
Between 152.4 and 304.8	± 3.18	Between 6 and 12	± 0.125
Greater than 304.8	± 6.35	Greater than 12	± 0.250