Designation: D3295 – 06

Standard Specification for
PTFE Tubing, Miniature Beading and Spiral Cut Tubing[1]

1. Scope*

1.1 This specification covers PTFE tubing, miniature beading and spiral cut tubing-manufactured from PTFE resin produced from dispersion specified in Specification D4895.

NOTE 1—PTFE tube and rod manufactured from resin specified in Specification D4894 are covered in Specification D1710.

1.2 The values stated in SI units are to be regarded as standard. The inch-pound units given in brackets are for information only.

1.3 The following hazard caveat 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.*

1.4 As PTFE resin produced from dispersion is not a true thermoplastic material, any reuse for the specification referenced above is impossible. However, markets do exist for non-virgin PTFE as additives and fillers.

NOTE 2—There is currently no published ISO standard relating to this specification.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D618 Practice for Conditioning Plastics for Testing
D638 Test Method for Tensile Properties of Plastics
D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics
D1675 Test Methods for Polytetrafluoroethylene Tubing
D1708 Test Method for Tensile Properties of Plastics by Use of Microtensile Specimens
D1710 Specification for Extruded Polytetrafluoroethylene (PTFE) Rod, Heavy Walled Tubing and Basic Shapes
D3892 Practice for Packaging/Packing of Plastics
D4894 Specification for Polytetrafluoroethylene (PTFE) Granular Molding and Ram Extrusion Materials
D4895 Specification for Polytetrafluoroethylene (PTFE) Resin Produced From Dispersion

3. Terminology

3.1 *Definitions:*

3.1.1 The terminology given in Terminologies D883 and D1600 is applicable to this specification.

3.2 *Description of Term Specific to This Standard:*

3.2.1 *lot*—a single production run, or a uniform blend of two or more production runs.

4. Classification

4.1 This specification provides for five groups of PTFE tubing, miniature beading and spiral cut tubing, differentiated by size and type. The groups are further subdivided into classes based on wall thickness.

4.1.1 *Group 01*—Tubing based upon the American Wire Gage (AWG) sizes.

4.1.2 *Group 02*—Tubing based upon fractional inch sizes.

4.1.3 *Group 03*—Tubing specified by inner diameter and wall thickness in Table 6 referred to as "Custom or Metric."

4.1.4 *Group 04*—Tubing cut to form spiral wrap as in Table 7.

4.1.5 *Group 05*—Miniature beading having diameters as listed in Table 8.

4.2 The types are further differentiated in accordance with increasing wall thickness as follows:

4.2.1 *Class 1*—Tubing having walls tabulated in Table 1 listed as light wall.

4.2.2 *Class 2*—Tubing having walls of greater thickness than Class 1 listed as thin wall.

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

TABLE 1 Dimensions and Tolerances for Group 01 PTFE Tubing, mm [in.] (Classes 1 and 2)

AWG Size Grade	Inside Diameter		Class 1		
			Light Wall		
	min	max	nom	min	max
30	0.25 [0.010]	0.38 [0.015]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
28	0.33 [0.013]	0.46 [0.018]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
26	0.41 [0.016]	0.53 [0.021]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
24	0.51 [0.020]	0.66 [0.026]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
22	0.64 [0.025]	0.81 [0.032]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
20	0.81 [0.032]	1.01 [0.040]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
19	0.91 [0.036]	1.12 [0.044]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
18	1.02 [0.040]	1.25 [0.049]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
17	1.14 [0.045]	1.37 [0.054]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
16	1.30 [0.051]	1.55 [0.061]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
15	1.45 [0.057]	1.70 [0.067]	0.15 [0.006]	0.10 [0.004]	0.20 [0.008]
14	1.65 [0.064]	1.88 [0.074]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
13	1.83 [0.072]	2.08 [0.082]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
12	2.06 [0.081]	2.31 [0.091]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
11	2.31 [0.091]	2.57 [0.101]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
10	2.59 [0.102]	2.85 [0.112]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
9	2.90 [0.114]	3.15 [0.124]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
8	3.28 [0.129]	3.58 [0.141]	0.20 [0.008]	0.15 [0.006]	0.25 [0.010]
7	3.66 [0.144]	4.01 [0.158]	0.20 [0.008]	0.15 [0.005]	0.25 [0.011]
6	4.12 [0.162]	4.52 [0.178]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
5	4.62 [0.182]	5.03 [0.198]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
4	5.18 [0.204]	5.69 [0.224]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
3	5.82 [0.229]	6.33 [0.249]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
2	6.55 [0.258]	7.06 [0.278]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
1	7.34 [0.289]	7.90 [0.311]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
0	8.26 [0.325]	8.81 [0.347]	0.25 [0.012]	0.22 [0.009]	0.38 [0.015]

AWG Size Grade	Inside Diameter		Class 2		
			Thin Wall		
	min	max	nom	min	max
30	0.25 [0.010]	0.38 [0.015]	0.23 [0.009]	0.19 [0.007]	0.28 [0.011]
28	0.33 [0.013]	0.48 [0.019]	0.23 [0.009]	0.18 [0.007]	0.28 [0.011]
26	0.41 [0.016]	0.56 [0.022]	0.23 [0.009]	0.18 [0.007]	0.28 [0.011]
24	0.51 [0.020]	0.69 [0.027]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
22	0.64 [0.025]	0.81 [0.032]	0.25 [0.010]	0.18 [0.007]	0.33 [0.013]
20	0.81 [0.032]	1.01 [0.040]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
19	0.91 [0.036]	1.11 [0.044]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
18	1.02 [0.040]	1.25 [0.049]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
17	1.14 [0.045]	1.38 [0.054]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
16	1.30 [0.051]	1.55 [0.061]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
15	1.45 [0.057]	1.70 [0.067]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
14	1.63 [0.064]	1.88 [0.074]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
13	1.83 [0.072]	2.08 [0.082]	0.31 [0.012]	0.23 [0.009]	0.38 [0.015]
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9	2.90 [0.114]	3.15 [0.124]	0.38 [0.015]	0.31 [0.012]	0.46 [0.018]
8	3.28 [0.129]	3.58 [0.141]	0.38 [0.015]	0.31 [0.012]	0.46 [0.018]
7	3.66 [0.144]	4.01 [0.158]	0.38 [0.015]	0.31 [0.012]	0.46 [0.018]
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4	5.18 [0.204]	5.69 [0.224]	0.38 [0.015]	0.35 [0.012]	0.46 [0.018]
3	5.82 [0.229]	6.33 [0.249]	0.38 [0.015]	0.35 [0.012]	0.46 [0.018]
2	6.55 [0.258]	7.06 [0.278]	0.38 [0.015]	0.35 [0.012]	0.46 [0.018]
1	7.34 [0.289]	7.90 [0.311]	0.38 [0.015]	0.35 [0.012]	0.46 [0.018]
0	8.26 [0.325]	8.81 [0.347]	0.38 [0.015]	0.35 [0.012]	0.46 [0.018]

4.2.3 *Class 3*—Tubing having walls tabulated in Table 2 listed as standard wall.

4.2.4 *Class 4*—Tubing having walls tabulated in Table 3 listed as chemical tubing.

4.2.5 *Class 5*—Tubing having walls tabulated in Table 2 and Table 3 listed as heavy wall.

4.3 A one-line system may be used to specify materials covered by this specification. The system uses predefined cells to refer to specific aspects of this specification, as illustrated below.