

COMMERCIAL STANDARD CS 252-63

**TFE-Fluorocarbon
(Polytetrafluoroethylene) Resin
Electrical Insulating Tubing**

A recorded
voluntary standard of the
trade published by
the U.S. Department
of Commerce



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U.S. DEPARTMENT OF COMMERCE

OFFICE OF TECHNICAL SERVICES

Commodity Standards Division

With the cooperation of the
National Bureau of Standards

EFFECTIVE DATE

Having been passed through the regular procedures of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U.S. Department of Commerce, effective March 1, 1963.

LUTHER H. HODGES, *Secretary.*

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Technical Services and with the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The division by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the division assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

SIMPLIFIED PRACTICE RECOMMENDATIONS

Under a similar procedure the Commodity Standards Division cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

The initial printing of CS252-63 was made possible through the cooperation of the Fluorocarbons Division of The Society of the Plastics Industry, Inc.

TFE-Fluorocarbon [Polytetrafluoroethylene] Resin Electrical Insulating Tubing

[Effective March 1, 1963]

1. PURPOSE

1.1 The purpose of the Commercial Standard is to establish a national standard of quality for the information and guidance of producers, distributors and users; to promote understanding between buyers and sellers; to provide a basis for fair competition among producers; to give the consumer confidence in the quality of the product; and to provide means for identifying tubing made from polytetrafluoroethylene (referred to herein as TFE-Fluorocarbon Resin).

2. SCOPE AND CLASSIFICATION

2.1 **Scope.**—This standard establishes requirements and methods of test for material, dimensions, workmanship, and the physical and electrical properties of electrical insulating tubing in sizes from 0.012" inside diameter by 0.009" wall thickness to 1.00" inside diameter by 0.085" wall thickness.

2.2 **Classification.**—This standard covers only one grade of extruded tubing.

3. REQUIREMENTS

3.1 **Material.**—The tubing shall be made of tetrafluoroethylene resin conforming to the requirements for Type III resin of ASTM Designation D1457-62T,¹ Tentative Specifications for Tetrafluoroethylene Resin Molding and Extrusion Materials, as free of foreign matter except pigment as commercially practicable.

3.2 **Color.**—Unless otherwise specified, the tubing shall be natural in color. Natural tubing may vary from water white to a straw yellow and range in transparency from translucent to opaque. Small gray, brown or black spots shall not in themselves be considered as cause for rejection. Spots of metallic impurities shall not exceed 0.001" in diameter.

3.3 **Finish.**—The material shall be as free as is commercially practicable from blisters, wrinkles, cracks, voids, foreign inclusions, and other defects that might affect its serviceability as electrical insulation.

¹ Later issues of the ASTM publications specified in this standard may be used providing the requirements are applicable and consistent with the issues designated. Copies of ASTM publications are obtainable from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa.

3.4 **Sizes, dimensions and tolerances.**—The size and dimensional tolerances of the tubing shall be in accordance with the requirements in Table I. The concentricity of the tubing shall be controlled by the wall tolerances in the same table. The tolerances apply to measurements made at 20°–30°C. (68°–86°F.).

TABLE I. *Sizes, dimensions, and tolerances of tubing*

Nominal size		Inside diameter		Wall thickness		Length
American wire gage	Fractional	Minimum	Maximum	Nominal	Tolerance (plus or minus)	Minimum
Number	Inch	Inch	Inch	Inch	Inch	Feet
30	-----	0.010	0.015	0.009	0.002	20
28	-----	.013	.019	.009	.002	20
26	-----	.016	.022	.009	.002	20
24	-----	.020	.027	.012	.003	20
22	-----	.025	.032	.012	.003	20
20	-----	.032	.040	.016	.003	20
19	-----	.036	.044	.016	.003	10
18	-----	.040	.049	.016	.003	10
17	-----	.045	.054	.016	.003	10
16	-----	.051	.061	.016	.003	10
15	-----	.057	.067	.016	.003	10
14	-----	.064	.074	.016	.003	10
13	-----	.072	.082	.016	.003	10
12	-----	.081	.091	.016	.003	10
11	-----	.091	.101	.016	.003	10
10	-----	.102	.112	.016	.003	10
9	-----	.114	.124	.020	.004	5
8	1/8	.120	.130	.020	.004	5
7	-----	.129	.141	.020	.004	5
6	-----	.144	.158	.020	.004	5
5	-----	.162	.178	.020	.004	5
4	-----	.182	.198	.020	.004	5
3	-----	.204	.224	.020	.004	5
2	1/4	.229	.249	.020	.004	5
1	-----	.250	.260	.020	.004	5
0	-----	.258	.278	.020	.004	5
	3/16	.289	.311	.020	.004	5
	-----	.313	.334	.020	.004	5
	-----	.325	.347	.025	.005	5
	3/8	.375	.399	.025	.005	5
	-----	.438	.464	.025	.005	5
	1/2	.500	.530	.025	.005	5
	-----	.625	.662	.030	.006	2
	5/8	.750	.795	.035	.007	2
	-----	.875	.927	.035	.007	2
	3/4	-----	-----	-----	-----	-----
	1	1.000	1.060	.035	.007	2

3.5 **Mechanical and electrical requirements.**—The TFE tubing covered by this standard shall meet the mechanical and electrical requirements specified in Table II and Table III respectively, and 3.5.1, when tested by the methods given in Section 4.

TABLE II. *Mechanical properties*

Melting ¹ point	Specific ² gravity	Strain ³ relief, maximum change in length	Tensile strength and elongation ⁴	
			Tensile strength (minimum)	Elongation (minimum)
° C. 327±10	2.14–2.23	Percent 1.0	P.s.i. 3,000	Percent 200

¹ See 4.3.3. ² See 4.3.4. ³ See 4.3.5. ⁴ See 4.3.1.

TABLE III. *Electrical properties*

Nominal wall thickness	Dielectric breakdown ¹ (minimum)
<i>Inch</i>	<i>Volts</i>
0.009	8,000
.012	10,000
.016	13,000
.020	16,000
.025	18,000
.030	20,000
.035	20,000

¹ See 4.3.2.

3.5.1 **Bend test.**—The tubing shall show no cracks or splits when tested in accordance with 4.3.6. White streaks are permissible.

4. TEST METHODS

4.1 **Conditioning.**—The samples shall be conditioned at a room temperature of not less than 20° C. (68° F.) for at least 2 hours. Tests shall be conducted at 23° C ± 2° C (73.4° F ± 3.6° F) unless otherwise specified in this standard.

4.2 Sampling for inspection and test.

4.2.1 **Sampling.**—Samples of the tubing sufficient to determine conformance of the material with this standard shall be taken at random from each lot of manufactured material. A lot of tubing shall consist of all tubing of the same size delivered at the same time. One set of test specimens as prescribed in the test methods shall be considered sufficient for testing each lot of manufactured tubing. The average result of the specimens tested shall conform to the requirements prescribed in this standard.

4.2.2 **Inspection.**—The tubing specimens shall be inspected for type of material, color, and finish to determine compliance with this standard. The dimensions of 3 specimens shall be determined in accordance with Method B of ASTM Designation D374-57T (see Note 1), Tentative Method of Test for Thickness of Solid Electrical Insulations, modified to include the use of “go” and “no go” pins for measurement of the inside diameter and the thickness of the wall.

4.3 Tests.

4.3.1 **Tensile strength and elongation.**—The ultimate tensile strength and elongation shall be determined in accordance with ASTM Designation D1708-59T, (see Note 1) Tentative Method of Test for Tensile Properties of Plastics by use of Microtensile Specimens, using a testing speed of 2.0 inches/minute and 5 specimens.

Tubing of fractional sizes 1" through 1/8" and AWC sizes 0 through 8: Tubing shall be slit lengthwise and flattened out prior to punching out specimens. Specimen shape shall be in the form of a dumbbell as per figure 1. When necessary, narrower tabs may be used.

Tubing of AWC sizes 9 through 14: Tubing shall be slit parallel to its axis, taking precautions that this cutting is straight to insure that the edges are parallel. The specimen shall then be sufficiently flattened out so that it can be readily held in the jaws of the tensile tester. Low values from jaw breaks are not to be included in the report.

NOTE: Care should be taken that the specimen is not distorted so that permanent damage occurs.

Tubing AWG sizes 15 through 30: Specimens shall be tested as filaments. Non-slip type loops shall be made in either end of the specimen such that there is $1\frac{3}{8}$ " between the knot of each loop. The loops shall be placed over the drum of a standard wire specimen holder in the tensile machine and pulled in this fashion (see figure 2).

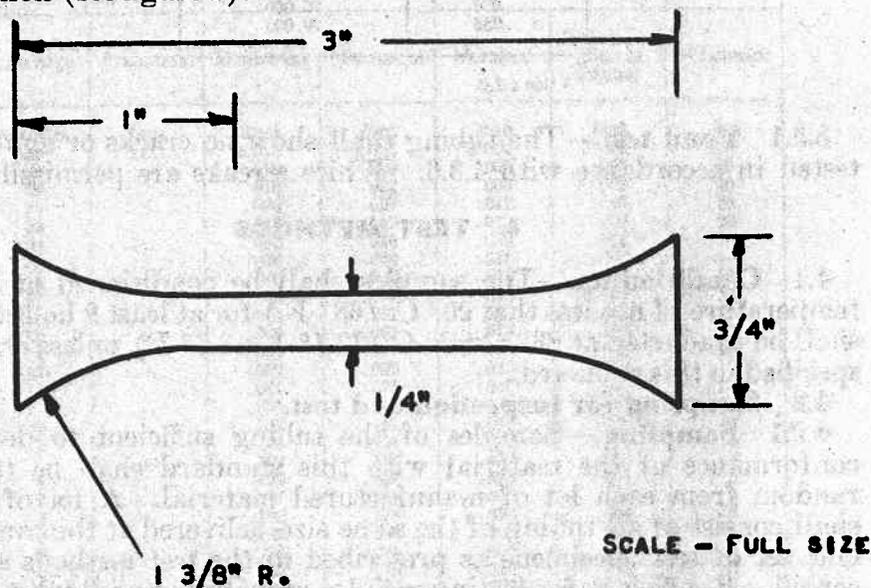


FIGURE 1.—Tensile specimen for tubing of fractional sizes $1/8$ " through $1/2$ " and AWG sizes 0 through 8.

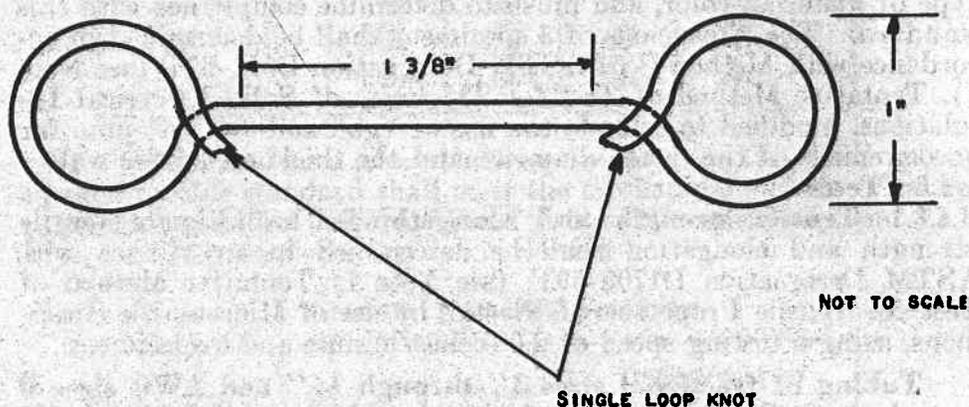


FIGURE 2.—Tensile specimen for tubing of AWG sizes 15 through 30.

4.3.2 Dielectric breakdown.—The short time dielectric breakdown shall be determined on 5 specimens in accordance with ASTM Designation D876-61, (see Note 1) Methods of Testing Nonrigid Vinyl Chloride Polymer Tubing, modified to include sizes AWG 22 through 30.

4.3.3 Melting point.—The melting point shall be determined on one specimen in accordance with ASTM Designation D1457-56T, (see

Note 1) Tentative Specification for Tetrafluoroethylene Resin Molding and Extrusion Materials.

4.3.4 **Specific gravity.**—The specific gravity shall be determined on two specimens in accordance with Method A of ASTM Designation D792-60T, (see Note 1) Tentative Methods of Test for Specific Gravity and Density of Plastics. Two drops of a wetting agent² (liquid detergent) shall be added to the water in order to reduce the surface tension and insure complete wetting of the specimen. The gradient tube method ASTM Designation D1505-60T, (see Note 1) Tentative Method of Test for Density of Plastics by the Density-Gradient Technique, may be used as an alternate, testing three specimens.

4.3.5 **Strain relief.**—The strain relief shall be determined in accordance with ASTM Designation D876-61, (see Note 1) Methods of Testing Nonrigid Vinyl Chloride Polymer Tubing, except that the test shall be performed at a temperature of 260°C (500°F) with a specimen unrestrained lying on a horizontal metal plate in an oven for two hours. Three specimens shall be tested.

4.3.6 **Mandrel bend.**—The tubing shall be hand-wrapped for a minimum of three turns around a mandrel of the diameter specified in Table IV. The tubing shall be unwound, rotated 90°, and the above procedure repeated. White streaks are permitted but no splits or cracks. Three specimens shall be tested.

TABLE IV. *Mandrel diameters for bend test*

Nominal size of tubing		Mandrel diameters
American wire gage	Fractional	
	<i>Inch</i>	<i>Inch</i>
30-10	1/4	1 1/2 times nominal I.D. of tubing.
9-6	5/16	2 times nominal I.D. of tubing.
5-0	3/8 to 1.0 inclusive	3 times nominal I.D. of tubing.
		5 times nominal I.D. of tubing.

5. PACKAGING

5.1 Packaging shall be accomplished in such a manner as to insure that the tubing, during shipment and storage, shall not be permanently distorted or damaged. It shall be protected against damage and exposure to weather and any handling hazard normally encountered in shipping. The package shall be so marked as to clearly identify the contents therein.

6. IDENTIFICATION AND MARKING

6.1 **Identification.**—In order that the purchaser may be assured that the TFE-fluorocarbon tubing purchased actually complies with all requirements of this Commercial Standard, it is recommended that manufacturers include the following statement in conjunction with their name and address on labels, invoices, sales literature, etc.: This TFE-fluorocarbon tubing meets the requirements of Commercial Standard CS252-63, as developed by the industry under the pro-

² "Joy", "Glim" or Triton X-100 (Rohm and Haas) have been found satisfactory for this purpose.

cedure of the Commodity Standards Division, and issued by the United States Department of Commerce.

or, more briefly—

Conforms to CS252-63, as developed by the industry and issued by the United States Department of Commerce.

HISTORY OF PROJECT

In a letter dated July 13, 1960, the Society of the Plastics Industry, Inc. requested the cooperation of the Commodity Standards Division in the establishment of a Commercial Standard for TFE-Fluorocarbon (Polytetrafluoroethylene) Resin Electrical Insulating Tubing, and submitted as a basis a tentative standard developed by the Fluorocarbons Division of that organization.

The Commodity Standards Division circulated copies of the Proposed Commercial Standard TS-5535 on June 8, 1961, to representative producers, distributors, users, laboratories, and Government agencies for constructive comment. All comments and suggestions received were carefully considered and adjustments were made to the proposal to satisfy the comment wherever practicable. The Recommended Commercial Standard, TS-5596, was circulated to the trade on November 13, 1962.

On January 28, 1963, the Commodity Standards Division announced that acceptances had been received representing a satisfactory majority of the industry and the Commercial Standard, to be designated CS252-63, would be considered effective March 1, 1963.

Project Manager: D. R. Stevenson, Commodity Standards Division, Office of Technical Services.

Technical Adviser: Dr. G. M. Kline, Chief, Organic and Fibrous Materials Division, National Bureau of Standards.

STANDING COMMITTEE

The following individuals comprise the membership of the Standing Committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Technical Services, U.S. Department of Commerce, which acts as secretary for the committee.

D. D. Carswell, The Polymer Corp. of Pennsylvania, Reading, Pa. (Chairman).

Paul D. Schuman, Resistoflex Corp., Woodland Road, Roseland, N.J.

C. V. Long, Jr., Engineered Plastics, Inc., Gibsonville, N.C.

A. H. Metz, Commercial Plastics and Supply Corp., 424 N. Craig St. Pittsburgh, Pa.

Roger W. Craddock, E. Jordan Brookes Co., Inc., 6601 Telegraph Rd., Los Angeles 22, Calif.

R. S. Hughes, R. S. Hughes Co., Inc., 4515 Alger St., Los Angeles 39, Calif.

Everett O. Richard, American Durafilm Co., Inc., 2300 Washington St., Newton Lower Falls 62, Mass.

Franklin R. Chaffin, W. S. Shamban & Co., 11617 W. Jefferson Blvd., P.O. Box 2767, Culver City, Calif.

James C. Daly, The Bendix Corp., Kansas City Division, Kansas City 41, Mo.

Joseph Witcowitz, Chemplast, Inc., 3 Central Ave., East Newark, N.J.

APPENDIX A

A 1.—The extruded tubing made from TFE-Fluorocarbon Resin as normally processed in the making of high quality insulation will

contain essentially no residual strains. This is indicated by the Strain Relief Test described in 4.3.5 in which there is less than 1.0% change in dimensions when the samples are heated for two hours at 500° F (260° C):

A 2.—The pigments normally used to match the colors listed in MIL STD 104 are inorganic and must withstand the melting point of the TFE-Fluorocarbon Resin. Normally under 2% of these additives are used for identification.

A 3.—The values given in Table A 1 are the typical properties of polytetrafluoroethylene other than those previously specified which are either inherent in the resin or can be expected from material fabricated to this standard. They are for engineering information only and are not a part of this standard.

TABLE A1.—*Typical properties*

Property	Value	Test method
		<i>ASTM designation</i>
Flexural strength, 77° F., p.s.i.-----	Does not break-----	D790-59T, Test for Flexural Properties of Plastics.
Stiffness, 77° F., (0.125")-----	40,000-170,000 p.s.i.-----	D747-58T, Test for Stiffness in Flexure of Plastics.
*Impact strength, Izod-----		D256-56, Test for Impact Resistance of Plastics and Electrical Insulating Materials.
-70° F-----	2.0 ft.-lbs./in. of notch-----	
77° F-----	3.0 ft.-lbs./in. of notch-----	
170° F-----	6.0 ft.-lbs./in. of notch-----	
Hardness, Durometer D-----	50-65-----	D676-58T Indentation Hardness of Rubber by means of a Durometer, using Type D Durometer.
*Compressive strength, 0.0% deformation.	400-700 p.s.i.-----	D695-54, Test for Compressive Properties of Rigid Plastics
*Heat distortion temperature, 66 p.s.i. load.	250° F-----	D648-56, Test for Deflection Temperature of Plastics.
Coefficient of linear thermal expansion per °F., 77-140° F.	5.5 x 10 ⁻⁵ -----	D696-44, Test for Coefficient of Linear Thermal Expansion of Plastics.
Thermal conductivity, 0.18 inch thickness.	1.7 b.t.u./hr./sq.ft./°F./in.-----	Cenco-Fitch apparatus.
Brittleness, temperature-----	-90° F-----	D746-57T, Test for Brittleness Temperature of Plastics and Elastomers by Impact.
Dissipation factor, 60, 10 ³ , and 10 ⁶ , cycles.	0.0001-0.0003-----	D150-54T, Test for A-C Capacitance Dielectric Constant, and Loss Characteristics of Electrical Insulating Materials.
Volume resistivity-----	10 ¹⁶ ohm cm-----	D257-58, Test for Electrical Resistance of Insulating Materials.
Dielectric constant, 60, 10 ³ , and 10 ⁶ , cycles.	2.1-----	D150-54T (see above).
Surface resistivity, 100% R. H.	3.6 x 10 ⁴ megohms-----	D257-58 (see above).
Flammability-----	Nonflammable-----	D635-58T, Test for Flammability of Rigid Plastics over 0.050 inch in thickness.
Water absorption-----	0.005%-----	
Resistance to weathering-----	Excellent-----	
Static and kinetic coefficient of friction.	0.04-----	Against polished steel.
Resistance to white fuming nitric acid.	Inert-----	30 days at room temperature.
Continuous upper service temperature.	500° F-----	
Chemical resistance-----	Inert to almost all chemicals and solvents.	(Slowly attacked by fluorine and other halogen gases at elevated temperatures and pressures.)

*These tests were performed on TFE sheet or moldings.

ACCEPTORS

The manufacturers, distributors, users and others listed below have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the standard as far as practicable, but reserve the

right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the standard and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grade mark, or label. Purchasers are encouraged to require such specific representation of compliance, which may be given by the manufacturer whether or not he is an acceptor.

- Acme Manufacturing & Gasket Co., Philadelphia, Pa.
 Aeromotive Specialties Corp., Detroit, Mich.
 Aero Gasket Corp., Inc., South Meriden, Conn.
 Allegheny Plastics, Inc., Coraopolis, Pa.
 Allis-Chalmers Manufacturing Co., Motor-Generator Dept., Milwaukee, Wis.
 American Durafilm Co., Inc., Newton Lower Falls, Mass.
 American Super-Temperature Wires, Inc., Winooski, Vt.
 Ampex Corp., Corporate Standards, Redwood City, Calif.
 Anaconda American Brass Co., Anaconda Metal Hose Div., Waterbury, Conn.
 Arco Electronics, Inc., Great Neck, N.Y.
 Autonetics, Industrial Products, Div. of North American Aviation, Inc., Long Beach, Calif.
 Avco Corp., Research & Advanced Development Div., Wilmington, Mass.
- Bendix Corp., Red Bank Div., Eatontown, N.J.
 Bendix Corp., Kansas City Div., Kansas City, Mo.
 Black & Webster Sales, Inc., Watertown, Mass.
 Boston Insulated Wire & Cable Co., Boston, Mass.
 Brand-Rex Division, American Enka Corp., Concord, Mass.
 Brookes, E. Jordan, Co., Inc., Los Angeles, Calif.
- Cadillac Plastic & Chemical Co., Div. of Dayco Corp., Cincinnati, Ohio
 California Testing Laboratories, Inc., Los Angeles, Calif.
 Chance Vought Corp., Aeronautics and Missiles Div., Dallas, Tex.
 Chase Sales Co., Hayward, Calif.
 Chemplast, Inc., East Newark, N.J.
 Chicago Allis Manufacturing Corp., Chicago, Ill.
 Cimco Wire & Cable Co., Allendale, N.J.
 Clark Brothers Co., Olean, N.Y.
 Commercial Plastics & Supply Corp., New York, N.Y.
 Corson Electric Manufacturing Corp., East Hampton, Conn.
- Dahl, George W. Co., Inc., Bristol, R.I.
 Davco Industries, Inc., Framingham, Mass.
 Dillectrix Corp., Farmingdale, N.Y.
 Dixon Corp., Bristol, R.I.
 Dodge Fibers Corp., Hoosick Falls, N.Y.
 Dodge Manufacturing Corp., Mishawaka, Ind.
 DuPont de Nemours, E. I., & Co., Wilmington, Del.
- Eastern Industries Div., Laboratory for Electronics, Inc., Hamden, Conn.
 ECO Engineering Co., Newark, N.J.
 Edgerton, Germeshausen & Grier, Inc., Boston, Mass.
 Eller Equipment Co., Minneapolis, Minn.
 Electric Hose & Rubber Co., Wilmington, Del.
 Electron Products, Div. of Marshall Industry, Monrovia, Calif.
 Enflo Corp., Maple Shade, N.J.
 Engineered Plastics, Inc., Gibsonville, N.C.
 Ethylene Corp., Murray Hill, N.J.
- Fairchild Camera & Instrument Corp., Allen B. DuMont Laboratories Div., Clifton, N.J.
 Fairchild Stratos Corp., Aircraft-Missiles Div., Hagerstown, Md.
 Fast, John E., & Co., Chicago, Ill.
 Film Capacitors, Inc., New York, N.Y.
 Fluorulon Laboratories, Inc., Parsippany, N.J.
 Fluoro-Plastics, Inc., Philadelphia, Pa.
 Flexrock Co., Philadelphia, Pa.
 Frequency Engineering Laboratories, Asbury Park, N.J.
 Froehling & Robertson, Inc., Richmond, Va.
 FXR, Div. of Amphenol-Borg Electronics Corp., Danbury, Conn.
- Garlock, Inc., U.S. Gasket Div., Camden, N.J.
 General Plastics Corp., Bloomfield, N.J.
 General Precision, Inc., GPL Div., Pleasantville, N.Y.
 Greene, Tweed & Co., North Wales, Pa.
 Gurley, W. & L. E., Troy, N.Y.
- Halogen Insulator & Seal Corp., Franklin Park, Ill.
 Hitemp Wires Co., Div. of Simplex Wire & Cable Co., Westbury, N.Y.
 Hoffman Electronics Corp., Military Products Div., Los Angeles, Calif.
 Hoke, Inc., Cresskill, N.J.
 Houdaille Industries, Inc., Buffalo Hydraulics Div., Buffalo, N.Y.
 Hughes, R. S., Co., Inc., Los Angeles, Calif.
- Instruments Div. of The Budd Co., Phoenixville, Pa.
 International Packings Corp., Bristol, N.H.
- Jamco-Western, Inc., Van Nuys, Calif. (General Support)
- Kollmorgen Corp., Northampton, Mass.
 Koppers Co., Inc., Baltimore, Md. (General Support)
- Librascope Division, General Precision, Inc., Glendale, Calif.
 Liquid Nitrogen Processing Corp., Malvern, Pa.
 Lockheed Georgia Co., Marietta, Ga. (General Support)
 Lorben Corp., Oceanside, L.I., N.Y.
- Mather Fluorotec, Inc., Milan, Mich.
 Minnesota Mining & Manufacturing Co., St. Paul, Minn.
 Modern Industrial Plastics, Div. of The Duriron Co., Inc., Dayton, Ohio
 Molecular Dielectrics, Inc., Clifton, N.J.
- National Connector Corp., Minneapolis, Minn.
 New York Testing Laboratories, Inc., Westbury, L.I., N.Y.
- Otis Elevator Co., Yonkers, N.Y.
- Packard Bell Electronics, Inc., Computer Div., Los Angeles, Calif.
 Packard Electric Div., General Motors Corp., Warren, Ohio
 Patzig Testing Laboratories, Des Moines, Iowa
 Pennsylvania Fluorocarbon Co., Inc., Clifton Heights, Pa.

Pittsburgh Testing Laboratory, Pittsburgh, Pa.
 Plastics Capacitors, Inc., Chicago, Ill.
 Polymer Corp., Reading, Pa.
 Polypenco, Inc., Reading, Pa.
 Raybestos-Manhattan, Inc., Plastic Products Div., Manheim, Pa.
 Read Plastics, Inc., Washington, D.C.
 Republic Aviation Corp., Farmingdale, N.Y.
 Resistoflex Corp., Roseland, N.J.
 Rockbestos Wire & Cable Co., Div. of Cerro Corp., New Haven, Conn.
 Sames USA, Inc., Palisades Park, N.J.
 Sangamo Electric Co., Springfield, Ill.
 Scranton Plastic Laminating Corp., Scranton, Pa.
 Sealectro Corp., Mamaroneck, N.Y.
 Sealol, Inc., Providence, R.I.
 Sealomatic Electronics Corp., Brooklyn, N.Y.
 Severna Plastics, Inc., East Orange, N.J. (General Support)
 Shamban, W. S., & Co., Culver City, Calif.
 Sparta Manufacturing Co., Div. of U.S. Ceramic Tile Co., Dover, Ohio
 Stokes Molded Products Div., Electric Storage Battery Co., Trenton, N.J.
 Sylvania Electronic Systems, Waltham, Mass.
 Tektronix, Inc., Beaverton, Ore.
 Tetrafluor, Inc., Inglewood, Calif.
 Thermatics, Inc., Elm City, N.C.
 Thermesh Engineering Corp., Anaheim, Calif.
 Thomson Electric Co., Inc., New York, N.Y.
 Timely Technical Products, Div. of the Fluorocarbon Co., Pine Brook, N.J.
 TITEFLEX, Div., of Atlas Corp., Springfield, Mass.
 Toefco Engineering, Inc., Niles, Mich.
 Twin City Testing & Engineering Laboratory, Inc., St. Paul, Minn.
 Westinghouse Electric Corp., Pittsburgh, Pa.
 Zenith Radio Corp., Chicago, Ill.

GOVERNMENT

Army, Dept. of the, Office of the Chief of Engineers, Washington, D.C. (General Support)
 Veterans Administration, Washington, D.C.

**ACCEPTANCE OF COMMERCIAL STANDARD
CS252-63 TFE-Fluorocarbon (Polytetrafluoroethylene)
Resin Electrical Insulating Tubing**

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date _____

Commodity Standards Division
Office of Technical Services
U. S. Department of Commerce
Washington 25, D. C.

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ testing¹
of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City, zone, and State _____

¹ Under score the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

(Cut on this line)

COMMERCIAL STANDARDS TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

DEPARTMENT OF COMMERCE
National Bureau of Standards
VOLUNTARY PRODUCT STANDARDS
Notice of Action on Proposed
Withdrawal

In accordance with the provisions of § 10.12 of the Department's published "Procedures for the Development of Voluntary Product Standards" (15 CFR Part 10, as amended; 35 F.R. 8349 dated May 28, 1970), notice is hereby given of the withdrawal of 66 standards identified below. Each of these standards, Commercial Standard (CS) and Simplified Practice Recommendation (SPR), has been found to be obsolete, no longer technically adequate, no longer acceptable to and used by the industry, or otherwise not in the public interest.

- CS 16-29 Wallpaper.
- CS 26-30 Aromatic Red Cedar Closet Lining.
- CS 27-36 Mirrors.
- CS 28-46 Cotton Fabric Tents, Tarpaulins, and Covers.
- CS 43-32 Grading of Sulphonated (Sulphated) Oils Saponifiable Types.
- CS 61-51 Venetian Blinds (Grade A Custom-Made).
- CS 73-61 Old Growth Douglas Fir, Sitka Spruce, and Western Hemlock Doors.
- CS 75-39 Hardwood Interior Trim and Molding.
- CS 78-40 Ground-and-Polished Lenses for Sun Glasses.
- CS 79-40 Blown, Drawn, and Dropped Lenses for Sun Glasses.
- CS 89-40 Hardwood Stair Treads and Risers.
- CS 92-41 Cedar, Cypress and Redwood Tank Stock Lumber.
- CS 119-45 Dial Indicators (For Linear Measurements).
- CS 133-46 Woven Wire Netting.
- CS 140-47 Testing and Rating Conveyors.
- CS 141-47 Sine Bars, Blocks, Plates and Fixtures.
- CS 159-49 Sun Glass Lenses Made of Ground and Polished Plate Glass Thereafter Thermally Curved.
- CS 160-49 Wood Fiber Blanket Insulation (For Building Construction.)
- CS 161-59 "Standard Grade" Hot Dipped Galvanized Ware (Coated After Fabrication).
- CS 162-49 Tufted Bedspreads.
- CS 167-50 Automotive and General Service Copper Tube.
- CS 168-50 Polystyrene Plastic Wall Tiles, and Adhesives for Their Application.
- CS 169-59 Galvanized Ware Fabricated from Pregalvanized Steel Sheets (For Standard Grade Items Only).
- CS 206-57 Solvent Welded (SWP Size) Cellulose-Acetate Butyrate Pipe.
- CS 225-59 Method of Rating Commercial and Industrial Type Vacuum Cleaners, Portable and Mobile Types.
- CS 232-60 Industrial Wire Cloth.
- CS 244-62 Roof Drainage Products.
- CS 252-63 TFE-Fluorocarbon (Polytetrafluoroethylene) Resin Electrical Insulating Tubing.

- CS 263-64 Aluminum Nails.
- CS 267-65 Steel Medicine Cabinets.
- SPR 11-36 Bed Blanket Sizes.
- SPR 22-40 Paper (Basic Sheet Sizes).
- SPR 31-63 Loaded Shot Shell.
- SPR 37-38 Commercial Forms (Invoice, Purchase Order and Inquiry).
- SPR 42-61 Grocers' Paper Bags.
- SPR 47-54 Cut Tacks and Small Cut Nails.
- SPR 51-29 Chasers for Self-Opening and Adjustable Die Heads.
- SPR 53-63 Steel Spirals for Reinforced Concrete Columns.
- SPR 62-63 Metallic Cartridges.
- SPR 76-40 Ash Handles.
- SPR 81-28 Binders' Board.
- SPR 90-62 Hack-Saw Blades.
- SPR 91-32 Glass Containers for Preserves, Jellies and Apple Butter.
- SPR 129-59 Merchandise Paper Bags.
- SPR 146-52 Corrugated and Solid-Fiber Boxes for Canned Fruits and Vegetables.
- SPR 150-34 Copper Wire Nails.
- SPR 155-49 Cans for Fruits and Vegetables (Names, Dimensions, Capacities and Designated Use).
- SPR 162-35 Packaging of Air Brake (Electric Railway) Parts.
- SPR 173-54 Stock Folding Boxes for Millinery.
- SPR 197-51 Glass Containers for Maraschino Cherries.
- SPR 208-55 Fluid-Milk Cans.
- SPR 213-45 Asphalt Roll Roofing and Asphalt and Tar-Saturated Felt Products.
- SPR 217-49 Copper Water Tube, and Copper and Brass Pipe.
- SPR 218-46 Paper Tubes for Packaging Milk Bottle Caps.
- SPR 223-47 Wire Nails and Staples.
- SPR 228-47 Pallets for Handling Groceries and Packaged Merchandise.
- SPR 235-48 Copper and Copper-Alloy Round Seamless Tube.
- SPR 241-50 Copper and Copper-Alloy Rod.
- SPR 246-51 Wooden Kegs for Nails.
- SPR 248-52 Packaging of Standard Malleable Iron Screwed Pipe Fittings, Black or Galvanized.
- SPR 250-53 Standard Drug Catalogs.
- SPR 251-54 Packaging of Gas Stop Cocks.
- SPR 254-54 Packaging of Steel Pipe Couplings.
- SPR 256-55 Steel Outlet Boxes, Zinc or Cadmium Coated.
- SPR 262-60 Acoustical Materials.
- SPR 263-60 Standard Shapes, Sizes, Grades and Designations of Cemented Carbide Products.

Public notice of the Department's intention to withdraw these standards was published in the FEDERAL REGISTER on March 3, 1972 (37 F.R. 4459), and a 45-day period was provided for the submission of comments or objections concerning the proposed withdrawal of any of these standards. No objections to the Department's intention of withdrawing any of these standards have been received by the National Bureau of Standards.

The effective date for the withdrawal of these standards will be 60 days after the publication of this notice. This withdrawal action terminates the authority to refer to these standards as Voluntary Product Standards developed under the Department of Commerce Procedures.

Dated: April 27, 1972.

LEWIS M. BRANSCOMB,
 Director.

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