AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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FLEXIBLE PLASTIC EXTRUSIONS
(Vinyl Chloride-Acetate)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM AND COLOR: This material shall be available as black, white, red, blue, green, yellow and colorless transparent extruded tubing, cord, tape, or shapes as ordered. Colorless transparent material is to be supplied, unless otherwise specified.

3. APPLICATION: The material shall be suitable for line typing and jacketing on wire, flexible conduit, bus bars, and similar applications.

4. QUALITY: (a) The material shall be homogeneous, free from seams, cracks, or inclusions; the surfaces shall not be sticky or tacky, and the material shall be difficult to tear by hand. It shall have high abrasion resistance, and shall not adversely affect aluminum, tinned copper, or silver-plated brass. It shall be unaffected by indoor aging.

(b) All details of manufacture shall be in accordance with best practice for aircraft material, and shall be free from all defects which would adversely affect its serviceability.

ϕ (c) The material shall not support the growth of mold or fungus.

5. REQUIREMENTS: (a) Physical Properties.- Tensile tests shall be conducted in accordance with ASTM D412-41. This material shall possess the following physical properties as received:

Tensile Strength, psi	1800 min
Elongation at Break, %	300 min
Specific Gravity 77° / 77°F	1.15 to 1.45

(b) Dielectric Strength.- Tests shall be conducted in accordance with ASTM D350-43, using a tubular specimen with 0.020 ± 0.003 inch wall thickness. The average dielectric strength shall be not less than 750 VPM.

(c) Brittleness.- Tests shall be conducted in accordance with ASTM D746-43T, except that the test specimens shall have a thickness of 0.020 ± 0.003 inch. The specimens shall not fail at -40°F.

(d) Oven Aging.- Tests shall be conducted in accordance with ASTM D573-42 for 70 hours at 212°F ± 2°. Test specimens shall be of the same dimensions as for the brittleness test. Oven-aged specimens when subjected to the brittleness test of paragraph 5(c), shall not fail at -10°F. Specimens oven-aged 150 hours at 185°F ± 2° shall not be tacky, nor show any appreciable loss of transparency.

(e) Flammability.- Tests shall be made in accordance with ASTM D635-44, except that the specimen shall be approximately 0.020 inch thick and shall be held in the flame at an angle of 60° with the horizontal. The specimen shall cease to burn in not more than 5 seconds.

(f) Water Absorption Test.- Three weighed specimens approximately 4 inches long with a thickness of 0.020 ± 0.003 inch shall be totally immersed vertically in distilled water for 24 hours at 77°F ± 2°. The specimens shall then be washed for 20 to 30 seconds in methanol, dried for 5 minutes at 212°F ± 2° in an air-oven as specified in ASTM D570-42, cooled to room temperature and re-weighed. At room temperature, the percentage change in weight shall be within the limits of ± 1.5%.

(g) Oil Aging.- Tests are to be conducted in accordance with ASTM D471-44T, except that the test samples shall have a thickness of 0.020 ± 0.003 inch. Test conditions shall be as follows:

Medium	Petroleum Base Lubricating Oil No. 3 Viscosity 155 ± 5 secs. at 100°F Aniline Point 157°F ± 2°
Temperature	212°F ± 2°
Time	8 hours

After aging, the surface shall neither be tacky nor show signs of decomposition. The aged specimen shall not crack when bent 180° around a 1/4 inch mandrel at a rate of approximately 60° per second at room temperature.

6. SAMPLES: Specimens for testing shall be representative of the lot of material under test. The size of the sample specimen shall be as indicated in the applicable test procedure.

7. DIMENSIONS AND TOLERANCES: (a) Dimensions shall be measured in accordance with ASTM D350-43.

(b) Unless otherwise specified on the drawing or purchase order, the following tolerances apply; all dimensions are in inches:

(1) Tubing.-

Inside Diameter	Tolerance
Under 0.030	± 0.002
0.030 to 0.148, incl.	± 0.003
0.149 to 0.195, incl.	± 0.004
0.196 to 0.294, incl.	± 0.008
0.295 to 0.625, incl.	± 0.010
0.626 to 1.000, incl.	± 0.012
1.001 to 1.500, incl.	± 0.015
1.501 to 2.500, incl.	± 0.018
2.501 to 3.500, incl.	± 0.020

Wall Thickness	Tolerance
Under 0.020	± 0.004
0.020 to 0.030, incl.	± 0.006
0.031 to 0.050, incl.	± 0.008
0.051 to 0.100, incl.	± 0.010
0.101 to 0.250, incl.	± 0.015

(2) Tape.-

Width	Tolerance
To 0.500, incl.	± 0.016
0.501 to 0.625, incl.	± 0.020
0.626 to 0.750, incl.	± 0.025
0.751 to 1.000, incl.	± 0.032
1.001 to 1.250, incl.	± 0.040
1.251 to 2.000, incl.	± 0.064

Thickness	Tolerance
To 0.019, incl.	± 0.005
0.020 to 0.031, incl.	± 0.008
0.032 and over	± 0.010

(3) Cord.-

Nominal Diameter	Tolerance
To 0.156, incl.	± 0.005
0.157 to 0.188, incl.	± 0.008
0.189 and over	± 0.010

8. REPORTS: Unless otherwise specified, the vendor shall furnish three copies of a notarized report of the results of tests to determine conformance to this specification. This report shall include the purchase order number, material specification number, vendor's compound number, percentages and specific types of plastic used, form and quantity.

9. IDENTIFICATION: The identification shall be as agreed between vendor and purchaser.

10. PACKAGING AND MARKING: (a) Unless otherwise specified, the material shall be delivered in standard commercial containers packed and secured in such a manner that no damage will be incurred during shipment or storage. Tubing sizes 1 inch I.D. and smaller shall be furnished in continuous lengths of 25 feet or over; larger than 1 inch, 4 feet or over. Tubing sizes 1/4 inch I.D. and smaller shall be coiled on a diameter of 15 to 18 inches; larger than 1/4 inch, the tubing shall be folded in 4 foot sections.