# AEROSPACE
# MATERIAL SPECIFICATIONS

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**AMS 3630C**

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## PLASTIC EXTRUSIONS, FLEXIBLE
## Polyvinyl Chloride



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

2. FORM: Extruded tubing, cord, tape, or shapes, as ordered.

3. APPLICATION: Primarily as sleeving on wire or as bus bar insulation, particularly where transparency of the sleeve is desired.

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Composition: Polyvinyl chloride or its co-polymers.

4.1.2 Appearance: Unless otherwise specified, a colorless transparent product shall be furnished. Colored transparent, translucent, or opaque material shall be ø furnished only when so specified. Material shall be considered colorless if the color identification of the wire inside the tubing is clearly legible and shall be considered transparent if other identification marking on the wire inside the tube is clearly legible.

4.1.3 Weathering: When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.

4.1.4 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.

4.2 Properties: Unless otherwise specified, the product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with listed ASTM methods, insofar as practicable.

4.2.1 As Received:

| | | | |
|---|---|---|---|
| 4.2.1.1 | Tensile Strength, psi, min | 1,800 | ASTM D876-60T |
| 4.2.1.2 | Elongation, %, min | 300 | ASTM D876-60T |
| 4.2.1.3 | Water Absorption (24 hr immersion), change in weight, %, max | 1.5 | ASTM D570-59aT |
| 4.2.1.4 | Flammability, time to cease burning, sec, max | 15 | ASTM D876-60T (See Note 1) |
| 4.2.1.5 ø | Dielectric Strength (short time test), Under 0.020 in. thick, v per mil, min | 750 | ASTM D876-60T (tubing) |
| | 0.020 in. thick and over, v, min | 15,000 | ASTM D149-59 (other forms) |






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| | | | |
|---|---|---|---|
| 4.2.2 Processing Oil Resistance: (Immediate Deteriorated Properties) | | ASTM D471-59T<br>Medium:<br>Temperature:<br>Time:<br>(See Note 2) | <br>ASTM Oil #3<br>212 F ± 2<br>8 hr |
| 4.2.2.1 Shrinkage, Lengthwise, %, max | 10 | | |
| 4.2.2.2 Bend, 180 deg around 0.25 in. diameter at approximately 60 deg per sec at room temperature | No cracking | | |
| 4.2.2.3 Decomposition | none | | |
| 4.2.2.4 Surface Tackiness | none | | |
| 4.2.3 Dry Heat Resistance: | | ASTM D573-53<br>Temperature:<br>Time:<br>(See Note 2) | <br>250 F ± 2<br>2 hr |
| 4.2.3.1 Shrinkage, Lengthwise, %, max | 10 | | |
| 4.2.3.2 Bend, 180 deg around 0.25 in. diameter at approximately 60 deg per sec at room temperature | No cracking | | |
| 4.2.3.3 Surface Tackiness | none | | |
| 4.2.3.4 Loss of Transparency | Negligible | | |
| 4.2.4 Brittleness: | | ASTM D746-57T<br>(See Note 3) | |
| 4.2.4.1 At -40 F, as received | pass | | |
| 4.2.4.2 At -10F, after oven aging in accordance with ASTM D573-53 for 70 hr at 212 F ± 2 | pass | | |

Note 1. When forms other than tubing are tested, the specimen shall be wrapped around the wire or otherwise held at the same angle as for tubing.

Note 2. Specimens shall be 6 in. long, and in the full section wherever possible. Tubing may be split if desired.

Note 3. Test specimens shall have thickness of 0.020 in. ± 0.003, except that samples which are too small to provide standard test specimens may be tested in the full section.

4.2.5 Mildew Resistance: Material shall be capable of passing the following fungus resistance test but shall contain no mercury compounds.

4.2.5.1 A mixed suspension prepared from viable cultures and containing a suitable wetting agent shall be sprayed over the test specimens supported on a non-nutrient agar medium. The test organisms shall be Aspergillis niger, Aspergillis flavus, Penicillium luteum, and Trichoderma T-1. A suitable control, such as untreated cotton twine, shall also be included. At the end of two weeks' incubation at 82 - 86 F not more than traces of growth on the specimens are permissible. The controls shall show abundant growth.

5. TOLERANCES: Unless otherwise specified, the following tolerances apply:

5.1 Tubing:

| Nominal ID Inches Ø (See Note 4) | ID, Inches min | ID, Inches max | Nominal Wall Thickness Inch | Wall Thickness Tolerance, Inch Plus and Minus |
|---|---|---|---|---|
| 0.022 | 0.020 | 0.027 | 0.012 | 0.002 |
| 0.027 | 0.025 | 0.032 | 0.012 | 0.002 |
| 0.034 | 0.032 | 0.039 | 0.016 | 0.003 |
| 0.042 | 0.040 | 0.049 | 0.016 | 0.003 |
| 0.053 | 0.051 | 0.061 | 0.016 | 0.003 |
| 0.066 | 0.064 | 0.072 | 0.016 | 0.003 |
| 0.085 | 0.081 | 0.089 | 0.016 | 0.003 |
| 0.095 | 0.091 | 0.101 | 0.016 | 0.003 |
| 0.106 | 0.102 | 0.112 | 0.016 | 0.003 |
| 0.118 | 0.114 | 0.124 | 0.020 | 0.003 |
| 0.133 | 0.129 | 0.141 | 0.020 | 0.003 |
| 0.148 | 0.144 | 0.158 | 0.020 | 0.003 |
| 0.166 | 0.162 | 0.178 | 0.020 | 0.003 |
| 0.186 | 0.182 | 0.198 | 0.020 | 0.003 |
| 0.208 | 0.204 | 0.224 | 0.020 | 0.003 |
| 0.234 | 0.229 | 0.249 | 0.020 | 0.003 |
| 0.263 | 0.258 | 0.278 | 0.020 | 0.003 |
| 0.294 | 0.289 | 0.311 | 0.020 | 0.003 |
| 0.330 | 0.325 | 0.347 | 0.020 | 0.003 |
| 5/16 | 0.3125 | 0.334 | 0.025 | 0.003 |
| 3/8 | 0.375 | 0.399 | 0.025 | 0.003 |
| 7/16 | 0.438 | 0.462 | 0.025 | 0.003 |
| 1/2 | 0.500 | 0.524 | 0.025 | 0.003 |
| 5/8 | 0.625 | 0.655 | 0.030 | 0.003 |
| 3/4 | 0.750 | 0.786 | 0.035 | 0.005 |
| 7/8 | 0.875 | 0.911 | 0.035 | 0.005 |
| 1 | 1.000 | 1.036 | 0.035 | 0.005 |
| 1-1/4 | 1.250 | 1.290 | 0.040 | 0.005 |
| 1-1/2 | 1.500 | 1.550 | 0.045 | 0.006 |
| 1-3/4 | 1.750 | 1.812 | 0.055 | 0.008 |
| 2 | 2.000 | 2.070 | 0.060 | 0.010 |
| 2-1/4 | 2.250 | 2.330 | 0.065 | 0.010 |
| 2-1/2 | 2.500 | 2.590 | 0.070 | 0.010 |

Note 4. For intermediate nominal ID, use the tolerance for the next larger size.

5.2 Tape:

5.2.1

| Nominal Width Inches | Tolerance, Inch Plus and Minus |
|---|---|
| 0.500 and under | 0.016 |
| Over 0.500 to 0.625, incl | 0.020 |
| Over 0.625 to 0.750, incl | 0.025 |
| Over 0.750 to 1.000, incl | 0.032 |
| Over 1.000 to 1.250, incl | 0.040 |
| Over 1.250 to 2.000, incl | 0.064 |

5.2.2

| Nominal Thickness Inch | Tolerance, Inch Plus and Minus |
|---|---|
| 0.019 and under | 0.005 |
| Over 0.019 to 0.031, incl | 0.008 |
| Over 0.031 | 0.010 |

5.3 Cord:

| Nominal Dimension Inch | Tolerance, Inch Plus and Minus |
|---|---|
| 0.156 and under | 0.005 |
| Over 0.156 to 0.188, incl | 0.008 |
| Over 0.188 | 0.010 |

6. QUALITY: The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or performance of parts.

7. REPORTS:

7.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the requirements of this specification. This report shall include the purchase order number, material specification number, vendor's compound number, form, size or part number, and quantity.

7.2 Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number, contractor or other direct supplier of material, supplier's compound number, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

8. PACKAGING:

8.1 Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted, and will be protected against damage from exposure to weather or any normal hazard.

8.2 Each package shall be permanently and legibly marked to give the following information:

PART NUMBER (OR SIZE)_____
COLOR_____
QUANTITY_____
PURCHASE ORDER NUMBER_____
MATERIAL SPECIFICATION AMS 3630C
MANUFACTURER'S IDENTIFICATION_____
DATE OF MANUFACTURE_____