

AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 3649

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

Issued 7-1-57

Revised

POLYTRIFLUOROCHLOROETHYLENE FILM Plasticized

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Film and film tape.
3. APPLICATION: Primarily for parts requiring chemical inertness up to 390 F and electrical insulating properties up to 325 F.

4. TECHNICAL REQUIREMENTS:

- 4.1 Properties: 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.

- | | | |
|--|----------------------|-------------------------|
| 4.1.1 Tensile Strength at 77 F $\pm$ 2, psi, min | 4500 | ASTM D882-54T, Method A |
| 4.1.2 Elongation at 77 F $\pm$ 2, %, min | 100 | ASTM D882-54T, Method A |
| 4.1.3 Volume Resistivity at 50% R.H. and 77 F $\pm$ 2, ohm-cm, min | 1.0×10^{14} | ASTM D257-54T |
| 4.1.4 Dielectric Strength (short time test), v per mil, min | See Note 1 | ASTM D149-55T |
| 4.1.5 Specific Gravity, min | 2.05 | ASTM D792-50, Method A |
| 4.1.6 ZST (Zero Strength Time) at 482 F $\pm$ 4, sec, min | 100 | See 4.1.6.1 |

- 4.1.6.1 Procedure: Press a test sheet to a thickness of 0.062 in. $\pm$ 0.003 as follows: About 20 g of polymer granules, powder, or fabricated items are placed in a 3 in. positive pressure compression mold provided with a thermometer well. The mold shall be placed under slight positive pressure between the heated platens of a press until the mold temperature is 212 F. Maximum press pressure shall then be applied for 5 minutes. The preform shall be removed from the mold immediately.

The preform shall be placed on a 0.040 in. thick chromium plated metal plate and covered by a similar plate. Spacers 0.075 in. $\pm$ 0.001 thick shall be placed between the plates at a distance such as not to interfere with the flow of material. The plates shall be placed between the platens of a press, the platens having a temperature of 500 F $\pm$ 10. The platens shall be closed and loaded to follow the rate of melting. The plates shall reach

4.1.6.1 Procedure (Continued)

the stops within 3 minutes. Full positive pressure sufficient to provide a sheet of the required thickness shall then be applied for 3 more minutes. Immediately upon completion of the press period, the load shall be removed and the plates and plastic sheet quenched in cold water (maximum 60 F). The 0.062 in. thick sheet shall then be stripped from the metal plates. Specimens shall be cut from this sheet in such a manner that the edge of the sheet is discarded.

Cut at least 2 test strips 2 in. long and 3/16 in. wide from the sheet and notch strips in center (1 in. from end) using a 3/64 in. notching tool. The cross section of the plastic at the notch shall be 0.047 in. $\pm$ 0.001 wide by 0.062 in. $\pm$ 0.003 thick.

Clip one end of the sample into a specimen holder at room temperature and to the other end clip a 7.5 g weight butting the ends of sample against the back of the clip.

The sample assembly shall be inserted into a furnace maintained at 482 F $\pm$ 4 and the average time in seconds for the samples to break shall be recorded as the ZST (Zero Strength Time).

Note 1. The following formula shall be used to calculate the minimum requirement.

$$E = \frac{4500}{\sqrt{t}} \quad \text{Where } t = \text{nominal thickness in mils}$$

5. **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.
6. **TOLERANCES:** Unless otherwise specified, the following tolerances apply when measured at 75 - 85 F.

Nominal Thickness Inch	Tolerance, Inch Plus and Minus
0.002 to 0.005, incl	0.0005
Over 0.005 to 0.010, incl	0.001

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 meets the requirements of this specification. This report shall include the purchase order number, material specification number, form or part number, and quantity.