



POLYESTER FILM

ESF-M3D69-A

1. SCOPE

The material defined by this specification is a thin, flexible, polyester film.

2. APPLICATION

This specification was released originally for material used as electrical insulation where flexibility, high dielectric strength and/or minimum thickness is required, such as flexible printed circuits for instrument clusters and slot insulation for alternators.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.4 DENSITY 1.37 - 1.40 g/cm³
(ASTM D 1505, CC14 and n-heptane)

3.5 MELT TEMPERATURE, min 240 °C

3.6 TENSILE STRENGTH, min 124 MPa
(ASTM D 882, Method A)

3.7 ELONGATION, min 85%
(ASTM D 882, Method A,
0.038 - 0.191 mm)

3.8 WATER ABSORPTION, max 0.80%
(ASTM D 570, 24 h immersion,
0.127 mm thick and above)

3.9 DIELECTRIC STRENGTH, min
(ASTM D 149, 500 V/s)

0.025 mm	3.6 kV
0.038 mm	5.0 kV
0.051 mm	7.0 kV
0.076 mm	9.0 kV
0.127 mm	12.15 kV
0.191 mm	15.75 kV
0.254 mm	17.10 kV
0.356 mm	17.50 kV

Date	Action	Revisions
2004 10 25	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.11 & 4
1989 08 22		3.9 Revised-added 0.356 mm thickness CE00E0010700031
1964 04 03	Released	F6-1305





3.10 FLAMMABILITY, max
(SAE J 369)

304 mm/minute

In addition, the test specimen shall not exhibit any flashing or sudden flaming on either surface in excess of the above maximum value.

5. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification.

5.1 DISSIPATION FACTOR
(ASTM D 150, 1 kHz,
0.05 - 0.25 mm film)

0.0055

5.2 DIELECTRIC CONSTANT
(ASTM D 150, 1 kHz,
0.013 - 0.36 mm film)

3.0 - 3.7

5.3 HIGH TEMPERATURE DURABILITY

20 out of 30 samples will survive 180° bend (after 30 min at 219 +/- 1 °C weighted with 7.9 kg/mm of thickness).