



ENGINEERING MATERIAL SPECIFICATION

PHENOLIC MOLDING COMPOUND, CELLULOSE FILLED

ESB-M3D16-A

1. SCOPE

The materials defined by this specification are cellulose filled, phenolic injection or compression molding compounds.

Type I - Compression Molding, Electrical Grade

Type II - Injection Molding, Electrical Grade

2. APPLICATION

Types I and II were released originally for applications such as 12 Volt starter motor relay assemblies, main lighting switch assemblies, and fuse blocks.

3. REQUIREMENTS

Typed designation is understood to be Type L.

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).

3.2 COLOR

Black or as otherwise specified on engineering drawing

3.3 SPECIFIC GRAVITY (ASTM D 792)

1.35 - 1.39

3.4 WATER ABSORPTION, max (ASTM D 570)

1.3%

3.5 IMPACT STRENGTH, min (ASTM D 256, notched)

0.50 ft lb/in (27 J/m)

3.6 FLEXURAL STRENGTH, min (ASTM D 790)

8,000 psi (55 MPa)

3.7 TENSILE STRENGTH, min (ASTM D 638)

5,500 psi (37.9 MPa)

3.8 COMPRESSIVE STRENGTH, min (ASTM D 695)

25,000 psi (172 MPa)

3.9 DEFLECTION TEMPERATURE, min (ASTM D 648, 1820 kPa)

149 °C

Date	Action	Revisions
2005 06 20	Revised	Inserted 3.0, Deleted 3.1, 3.12 & 4, Removed Inactive ESB-M3D17-A
1982 08 18		Revised MPE-82-8/CAM1-RD-500221-1
1963 06 05		Released ASI #915



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3.10	DIELECTRIC STRENGTH, min (ASTM D 149, short time)	300 V/mil (11.8 kV/mm)
3.11	VOLUME RESISTIVITY, min (ASTM D 257)	1×10^{11} ohms Ω cm

5. GENERAL INFORMATION

5.1	MOLDING SHRINKAGE (ASTM D 955)	
5.1.1	Type I - Compression Molded	0.004 - 0.007 mm/mm
5.1.2	Type II - Injection Molded	0.009 - 0.011 mm/mm