



**POLYPHENYLENE ETHER + POLYAMIDE BLEND (PPE+PA)
HEAT STABILIZED, 10% GLASS FIBER REINFORCED
MOLDING COMPOUND**

WSB-M4D658-A

1. SCOPE

The material defined by this specification is a glass fiber reinforced, heat stabilized molding compound based on polyphenylene ether and polyamide (PPE+PA) blend.

2. APPLICATION

This specification was released originally for material used for a right angle miniature bulb socket, modular and traditional lamp assemblies.

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 MOLDING COMPOUND

3.4.1 Melt Volume Rate 6.0 - 13.0 cc/10 minutes
(ISO 1133/ASTM D 1238,
280 +/- 0.5 °C, 5.0 kg)

The material shall be dried for 4 h minimum at 110 - 115 °C in a mechanical convection oven immediately preceding the test.

3.4.2 Glass Fiber Content 8.7 - 12.7%
(ISO 3451/1, Method A,
1 h at 750 +/- 50 °C)

3.5 MOLDED TEST SPECIMEN

3.5.1 Preparation of Test Specimens

Unless otherwise specified all tests shall be carried out on injection molded one-end gated test specimens.

The following dimensions are required:

- A. 150 min x 10 x 4.0 +/- 0.2 mm (Tensile Bar, ISO 3167)
- B. 120 x 10 x 4.0 +/- 0.2 mm

Date	Action	Revisions
2003 06 24	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.7, 3.8 and 4 deleted; para 3.4.1, 3.5.2, 3.5.3, 3.5.4, 3.5.7.2, 3.5.8 revised M. Myers
1995 11 10	Revised	Para 3.4.1 M. Trapp
1990 07 16	Activated	NB00110084162 M. A. Myers



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Specimens with shorter dimensions shall be cut from the center portion of the test specimen A and/or B. The specimens shall be prepared according to ISO 294. No annealing allowed.

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| 3.5.2 | Density
(ISO 1183, Method A/
ASTM D 792, Method A1) | 1.14 - 1.22 g/cm ³ |
| 3.5.3 | Tensile Strength at Max Load, min
(ISO R 527/ASTM D 638M, 150 min x
10 x 4.0 +/- 0.2 mm specimen,
5 mm/min test speed) | 73 MPa |
| 3.5.4 | Flexural Modulus, min
(ISO 178/ASTM D 790M, Method I,
Procedure A, 80 x 10 x 4.0 +/- 0.2 mm
specimen, 64 mm support span) | 3.2 GPa |
| 3.5.5 | Shear Modulus at 23 °C
(ASTM D 4065, forced constant
amplitude, fixed frequency of 1 Hz
+/- 15%, strain level below 1%.
Specimen approx. 60 x 10 x 4.0 +/-
0.2 mm cut from the center of specimen A.
Specimen length between clamps 35-40 mm.
Soak time at each temperature interval -
3 minutes minimum) | 830 - 1390 MPa |

Additionally, a Shear Modulus vs. Temperature curve shall be plotted for - 50 to + 250 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 5.

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| 3.5.6 | Impact Strength, Izod, min
(ISO 180, Method A/ASTM D 256, Method A,
63.5 x 10 x 4.0 +/- 0.2 mm specimen,
10 specimens for each test) | |
| 3.5.6.1 | At 23 +/- 2 °C | 4.7 kJ/m ² |
| 3.5.6.2 | At - 40 +/- 2 °C | 2.9 kJ/m ² |

The test specimens must be conditioned for minimum of 6 h at the above specified temperature prior to impact test. Low temperature testing shall be done within the cold box, if not possible, test can be conducted outside, but within 5 s.

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| 3.5.7 | Heat Deflection Temperature, min
(ISO 75/ASTM D 648, 120 x
10 x 4.0 +/- 0.2 mm specimen) | |
| 3.5.7.1 | At 1.82 Mpa | 180 °C |
| 3.5.7.2 | At 0.45 Mpa | 217 °C |