

**POLYAMIDE (PA6/66) 6/66 COPOLYMER, HEAT STABILIZED
13% GLASS FIBER REINFORCED MOLDING COMPOUND****WSS-M4D973-A****NOT TO BE USED FOR NEW DESIGN****1. SCOPE**

The material described by this specification is a heat stabilized, glass fiber reinforced polyamide 6/66 copolymer molding compound.

2. APPLICATION

This specification was released originally for material used for Corporate Keyless Entry Keypad.

NOTICE: This material absorbs and retains moisture. Part design and tolerances must accommodate changes in part dimensions and physical properties due to moisture absorption or loss in the service/assembly environment.

3. REQUIREMENTS

Material specification requirements are to be used for initial qualification of materials.

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 Glass Fiber Content 11 – 15%
(ASTM D 5630/ ISO 3451/4, 600 +/- 25 °C
test temperature)

3.4.2 Melt Temperature, min 230 – 240 °C
ISO 3146

3.5 MOLDED TEST SPECIMEN**3.5.1 Preparation of Test Specimens**

Unless otherwise specified all tests shall be carried out on injected 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 527)
- B. 120 x 10 x 4.0 +/- 0.2 mm

Date	Action	Revisions
2006 05 04	N-STATUS	Replaced by WSK-M4D653-A; Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.7, 3.8, 4 A. Reaume/M. Masserant
2000 10 25	Activated	J. Faunt



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.

3.5.2	Density (ISO 1183, Method A)	1.19 – 1.25 g/cm ³
3.5.3	Tensile Strength at Max Load, min (ISO 527, Specimen A, 5 mm/min test speed)	95 MPa
3.5.4	Flexural Modulus, min (ISO 178, 80 x 10 x 4.0 +/- 0.2 mm Specimen, 64 mm support span)	4600 MPa
3.5.5	Shear Modulus at 23 °C (ASTM D 4065, forced constant amplitude, fixed frequency of 1Hz +/- 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 – 3minutes min)	1275 – 1915 MPa

Additionally, a Shear Modulus vs. Temperature curve shall be plotted for -50 to 220 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 6.

3.5.6	Impact Strength, Izod, min (ISO 180, 63.5 x 10 x 4.0 +/- 0.2 mm specimen, 10 specimens for each test)	
3.5.6.1	At 23 +/- 2 °C	2.6 kJ/m ²
3.5.6.2	At -40 +/- 2 °C	2.4 kJ/m ²

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

3.5.7	Heat Deflection Temperature, min (ISO 75, 80 x 10 x 4.0 +/- 0.2 mm specimen, at 1.80 MPa)	195 °C
3.5.8	Heat Aging Performance (ISO 188, 150 +/- 50 air changes/h 1000 h at 110 +/- 2 °C. After heat aging test specimens are to be conditioned in a desiccator for 3 – 5 h at 23 +/- 2 °C. Unaged property values shall be determined at the time of the aged property determination)	
3.5.8.1	Impact Strength, Izod Change (Test Method per para 3.5.6.1, specimens notched before heat aging)	+/- 25%