

**POLYAMIDE 6 (PA6), IMPACT MODIFIED, HEAT
STABILIZED EXTRUSION MOLDING COMPOUND****WSS-M4D933-A1****1. SCOPE**

The material defined by this specification is an extrusion grade of a thermoplastic impact modified molding compound based on polyamide 6.

2. APPLICATION

This specification was released originally for material used for convoluted tubing. The material is designated for under-the-hood and exterior use only.

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**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).

3.1.1 All requirements of this specification, identified by symbol(s), shall be met with data representing 3 sigma values.

3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material and specimens with moisture content not exceeding 0.2% (test according to ISO 960, Method B).

All test materials immediately after processing have to be sealed in containers that are impermeable to water vapor. If the moisture content exceeds 0.2%, condition the material for a minimum of 16 h at 40 - 50 °C at a reduced pressure below 133 Pa.

Conduct tests in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5% relative humidity. Individual specimens shall not be removed from closed containers until immediately before testing.

3.4 MOLDING COMPOUND

(s) 3.4.1 Melt Temperature, min 210 °C
(ISO 3146, Method C,
10 °C/min heating rate)

Date	Action	Revisions
2006 07 19	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.7, 3.8 & 4
1995 06 07	Activated	

**Documents**

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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

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)	1.06 - 1.13 g/cm ³
(s)	3.5.3	Tensile Strength at Yield, min (ISO R 527, 150 minimum x 10 x 4.0 +/- 0.2 mm specimen, 50 mm/min test speed)	32 MPa
(s)	3.5.3.1	Elongation at Yield, min (Test Method according to para 3.5.3)	3.0%
(s)	3.5.4	Flexural Modulus, min (ISO 178, 80 x 10 x 4.0 +/- 0.2 mm specimen, 2 mm/min test speed, 64 mm support span)	0.50 - 2.50 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)	408 - 960 MPa

Additionally, a Shear Modulus versus Temperature curve shall be plotted for -50 to +240 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 5.