



POLYAMIDE 12 (PA12), RIGID, HIGH HEAT STABILIZED MOLDING COMPOUND

WSK-M4D739-A4

1. SCOPE

The material defined by this specification is a high heat stabilized extrusion type 12 polyamide molding compound.

2. APPLICATION

This specification was released originally for material used for corrugated crankcase vent hoses.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIAL

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.

3.4 MOLDING COMPOUND

(s) 3.4.1 Melt Temperature, min 175 - 185 °C
(ISO 3146, Method C,
10 °C/min heating rate)

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
2006 01 13	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.8, 3.9 & 4
1994 04 05	Released	EP00E10348585000



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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.

	3.5.2	Density (ISO 1183, Method A)	1.00 - 1.03 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,	45 MPa
(s)	3.5.3.1	Elongation at Yield, min (Test Method according to para 3.5.3)	4%
(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)	1.4 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).	495 - 745 MPa
	Additionally, a Shear Modulus versus Temperature curve shall be plotted for -50 to +140 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 5.		
(s)	3.5.6	Impact Strength, Izod, min (ISO 180/1A, 80 x 10 x 4.0 +/- 0.2 mm specimen, 10 specimens for each test)	
	3.5.6.1	At 23 +/- 2 °C	5 kJ/m ²
	3.5.6.2	At -40 +/- 1 °C	4 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.