

**POLYPROPYLENE (PP) HOMOPOLYMER, HEAT
STABILIZED, 33% TALC FILLED, 25% MIN
RECYCLED CONTENT MOLDING COMPOUND****WSS-M4D939-A1****1. SCOPE**

The material defined by this specification is a 33% talc filled injection molding compound based on 25% min recycled polypropylene homopolymer from post consumer sources.

2. APPLICATION

This specification was released originally for material used for air-conditioning and heater housing.

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.

3.4 MOLDING COMPOUND

(s) 3.4.2 Talc Content 30 - 36%
(ISO 3451/1, Method A, 30 minutes
at 550 +/- 50 °C, test portion 1 - 2 g)

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 1.10 - 1.17
(ISO 1183, Method A/ASTM D 792) g/cm³

Date	Action	Revisions
2010 03 25	Revised	Revised 3.4.1 Melt Flow Rate (increase the range of values of Melt Flow Rate) M. Souza, SA
2006 07 20	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.9, 3.10 & 4
1999 06 22	Activated	



(s)	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, 50 mm/minute test speed)	27 MPa
(s)	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)	3.0 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 approximately 60 x 10 x 4.0 +/- 0.2 mm cut from the center of specimen A.)	1000 Mpa
		Additionally, a Shear Modulus vs. Temperature curve shall be plotted for -50 to +160 °C temperature range, at 5 °C min intervals. The plotted curve must be within +/- 20% of the standard shown on page 4.	
(s)	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 specimen for each test)	
	3.5.6.1	At 23 +/- 2 °C	2.5 kJ/m ²
	3.5.6.2	At -40 +/- 2 °C	1.8 kJ/m ²
		The test specimens must be conditioned for min 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.	
(s)	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 1.80 MPa	67 °C
	3.5.7.2	At 0.45 MPa	118 °C
	3.5.8	Heat Aging Performance (ISO 188/ASTM D 573, 1000 h at 140 +/- 2 °C. Unaged property values shall be determined at the time of the aged properties determination)	
	3.5.8.1	Tensile Strength Change (Test Method per para 3.5.3)	+/- 15%