

**POLYPROPYLENE (PP) COPOLYMER, 10% MINERAL
FILLED MOLDING COMPOUND****WSK-M4D651-A2****1. SCOPE**

The material defined by this specification is a 10% mineral (talc) filled injection molding compound based on polypropylene copolymer with a high melt flow rate for general purpose use.

2. APPLICATION

This specification was released originally for material used for retainers, bumper to body.

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

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|-----|-------|--|----------------------|
| (s) | 3.4.1 | Melt Flow Rate
(ISO 1133, 230 °C, 2.16 kg) | 16 - 22 g/10 minutes |
| (s) | 3.4.2 | Filler Content
(ISO 3451/1, Method A, talc mineral
3 h at 650 +/- 25 °C, test portion
1 to 2 g) | 8 - 14% |

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.

Date	Action	Revisions
2009 01 20	Revised	Removed N-STATUS; Required for Fascia Brackets K. Mueller, FNA
2007 10 11	N-STATUS	Replaced by WSS-M4D556-A6
1994 07 21	Released	EP00E10426220000

**Documents**

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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)	0.96 - 1.00 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)	25 MPa
(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)	1.9 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)	0.60 - 1.10 GPa
Additionally, a Shear Modulus versus Temperature curve shall be plotted for -50 to +160 °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	2.7 kJ/m ²
	3.5.6.2	At -40 +/- 1 °C	1.6 kJ/m ²
	3.5.6.3	At 0 +/- 2 °C	2.0 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.