

**POLYPROPYLENE (PP) HOMOPOLYMER, 50% BARIUM SULFATE FILLED, 25% MINIMUM RECYCLED CONTENT MOLDING COMPOUND****WSS-M4D944-A1****1. SCOPE**

The material defined by this specification is a 50% Barium Sulfate (BaSu) filled, pigmented injection molding compound based on polypropylene homopolymer with 25% minimum recycled resin content.

2. APPLICATION

This specification was released originally for material used for air inlet duct 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).

3.4 MOLDING COMPOUND

(s) 3.4.1 Melt Flow Rate 7.0 - 12.0 g/10 minutes
(ISO 1133, 230 °C, 2.16 kg)

3.4.2 Mineral Content 47 - 53%
(ISO 3451/1, Method A, BaSu filler,
30 minutes at 800 +/- 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 1.48 - 1.55 g/cm³
(ISO 1183, Method A)

(s) 3.5.3 Tensile Strength at Yield, min 18.6 MPa
(ISO R 527, 150 minimum x 10 x
4.0 +/- 0.2 mm specimen, 50 mm/min
test speed)

Date	Action	Revisions
2006 07 20	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.8, 3.9 & 4
1999 12 14	Revised	Editorial – No technical change
1996 03 01	Activated	

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(s) 3.5.4 Flexural Modulus, min 1.28 GPa
(ISO 178/ASTM D 790M, Method I, Procedure A, 80 x 10 x 4.0 +/- 0.2 mm specimen, 64 mm support span)

3.5.5 Shear Modulus at 23 °C 960 MPa
(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)

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 4.

(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 1.5 kJ/m²

3.5.6.2 At -40 +/- 2 °C 0.8 kJ/m²

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, if not possible, test can be conducted outside, but within 5 s.

(s) 3.5.7 Heat Deflection Temperature, min
(ISO 75, 120 x 10 x 4.0 +/- 0.2 mm specimen, edgewise, 0.32 +/- 0.1 mm deflection)

3.5.7.1 At 1.80 MPa 46 °C

3.5.7.2 At 0.45 MPa 90 °C

3.5.8 Heat Aging Performance
(ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 1000 h at 120 +/- 2 °C. Unaged property values shall be determined at the time of the aged properties determination)

3.5.8.1 Tensile Strength at Yield Change +/- 15%
(Test Method per para 3.5.3)

3.5.8.2 Impact Strength, Izod Change, max -15%
(Test Method per para 3.5.6.1, specimens to be notched before heat aging)