



THERMOPLASTIC POLYOLEFIN ELASTOMER (TEO) 30% MINERAL FILLED, COLOR PIGMENTED, MOLDING COMPOUND, EXTERIOR

WSS-M4D954-A

1. SCOPE

The material defined by this specification is a 30% mineral filled rigid thermoplastic polyolefin elastomer (TEO) injection molding compound, color pigmented, with added UV stabilization for exterior use.

2. APPLICATION

This specification was released originally for material used for exterior parts which are exposed to sunlight such as cowl vent grilles.

3. REQUIREMENTS

Material specification requirements are to be used for initial qualification of materials.

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

3.4.1 Melt Flow Rate (ISO 1133, 240 °C, 2.16 kg) Report value

3.4.2 Mineral Filler Content (ISO 3451-1, Method A, talc filler, 30 minutes at 800 +/- 50 °C, test portion 1 to 2 g) 27 - 34%

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	Rev 03
2015 05 08	Revised	See Summary of Revisions	H. Santos, FSA
2013 08 23	Revised	See Summary of Revisions	L. Shen, APA
2009 01 06	Revised	Removed N-STATUS; Part of Cowl Top Grille Strategy	K. Mueller, FNA



The following dimensions are required:

- A. 150 minimum x 10 x 4.0 +/- 0.2 mm (ISO 3167, Type 1A)
- B. 120 x 10 x 4.0 +/- 0.2 mm (ISO/DIS 294-3)

Test specimen A shall be molded using molding conditions defined in ISO 294-1. Specimens with shorter dimensions shall be cut from the center of the specimen A. No annealing allowed.

3.5.2	Density (ISO 1183, Method A)	1.11 - 1.16 g/cm ³
3.5.3	Hardness, Durometer D (ISO 868, 15 s dwell)	63 - 73
3.5.4	Tensile Strength at Yield (ISO 527-1 & ISO 527-2, 150 minimum x 10 x 4.0 +/- 0.2 mm specimen, test speed: 50 mm/minute)	19 MPa min
3.5.5	Flexural Modulus (ISO 178, 80 x 10 x 4.0 +/- 0.2 mm specimen, 2 mm/min test speed, 64 mm support span)	2 GPa min
3.5.6	Shear Modulus at 23 °C (ASTM D 5279, 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)	1085 - 1815 MPa

Additionally, a shear modulus versus temperature curve shall be plotted for -50 to +150 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range granted on the original material approval and it shall constitute the reference standard for materials supplied to this specification and shall be kept on file at the designated material laboratory and be available on request.

3.5.7	Impact Strength, Izod (ISO 180/1A, 80 x 10 x 4.0 +/- 0.2 mm specimen, 10 specimens for each test)	
3.5.7.1	At 23 +/- 2 °C	7 kJ/m ² min
3.5.7.2	At -40 +/- 1 °C	2 kJ/m ² min

The test specimen must be conditioned for minimum of 6 hours at the above specified temperature prior to impact test. Low temperature testing shall be done within the cold chamber, if not possible, test may be conducted outside, but within 5 seconds.