



STYRENE MALEIC ANHYDRIDE (SMA) COPOLYMER RUBBER MODIFIED, 15% GLASS FIBER REINFORCED MOLDING COMPOUND

WSK-M4D857-A

1. SCOPE

The material defined by this specification is a molding compound based on 15% glass fiber reinforced, rubber modified styrene maleic anhydride copolymer blend. The glass fibers are coated with a non-PVA (polyvinyl acetate) binding agent.

2. APPLICATION

This specification was released originally for material used for instrument panel carrier.

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) 3.4.1 Melt Flow Rate 3.0 - 6.0 g/
ISO 1133/ASTM D 1238, 220 °C, 10 kg) 10 minutes

The material shall be dried for 2 h minimum at 80 – 85 °C in a mechanical convection oven immediately preceding the test.

- 3.4.2 Glass Fiber Content 13 - 17%
(ISO 3451/1, Method A, at 650 +/- 25 °C, test
portion 2.5 - 3.0 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.

Date	Action	Revisions
2006 05 16	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.8, 3.9, 4; Corrected numbering 5
1993 08 02	Released	EP00E10258823000



	3.5.2	Density (ISO 1183, Method A/ASTM D 792, Method A1)	1.13 - 1.19 g/cm ³
(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, 5 mm/min test speed)	48 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, 2 mm/min test speed, 64 mm support span, the radius of the loading nose 5.0 +/- 0.1 mm and of the supports 2.0 +/- 0.2 mm)	3.8 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).	0.92 - 1.55 GPa
	Additionally, a Shear Modulus vs. 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.		
	3.5.6	Impact Strength, Izod, min (ISO 180, Method A/ASTM D 256, Method A, 80 x 10 x 4.0 +/- 0.2 mm specimen, 10 specimens for each test)	
	3.5.6.1	At 23 +/- 2 °C	7.0 kJ/m ²
	3.5.6.2	At -40 +/- 2 °C	6.5 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, 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, at standard deflection of 0.32 +/- 0.01 mm. At 1.80 MPa)	115 °C
	3.5.8	Vicat Softening Temperature, min (ISO 306, 10 x 10 x 4.0 +/- 0.2 mm specimens. Bath - silicone oil, temp. raise 50 +/- 5 °C/h. Dial gage reset to '0' after addition of 5 kg weight. At 49.0 N load)	115 °C

All specimens dry as molded. If not tested immediately after molding, specimens must be stored in a sealed, moisture-proof container filled with silica gel.