ACETAL (POM) COPOLYMER, MELT FLOW RATE 5 - 11, INTERIOR **WSK-M4D840-A1**

ACETAL (POM) COPOLYMER, MELT FLOW RATE 11 - 16, INTERIOR **WSK-M4D840-A2**

ACETAL (POM) COPOLYMER, MELT FLOW RATE 29 - 35, INTERIOR **WSK-M4D840-A3**

1. SCOPE

The material defined by these specifications is thermoplastic acetal copolymers based on trioxane for interior use with melt flow rates from 5 to 35 g/10 minutes.

2. APPLICATION

These specifications were released originally for materials used for decorative and/or functional interior automotive applications such as loudspeaker grilles, etc.

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, g/10 minutes
(ISO 1133, 190 °C, 2.16 kg)

A1	A2	A3
5 – 11	11 – 16	29 - 35

Note: For individual melt flow rates of approved materials see Corporate Approved Source List.

Date	Action	Revisions
2006 11 22	Revised	Paragraph 3.6 & 3.8, 3.8.1 & 3.8.2; Added 3.8.3
2006 04 13	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.9, 3.10 & 4
1992 10 01	Released	EP00E10176308000 L. Rodigas

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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 (ISO 1183, Method A)	1.39 - 1.43 g/cm^3
3.5.3	Tensile Strength at Yield, min (ISO R 527, 150 minimum x 10 x 4.0 +/- 0.2 mm specimen, 50 mm/minute test speed)	60 MPa
3.5.4	Flexural Modulus, min (ISO 178, 80 x 10 x 4.0 +/- 0.2 mm specimen, 2 mm/minute test speed, 64 mm support span)	2.4 GPa
3.5.5	Shear Modulus at 23 °C, GPa (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 vs. Temperature curve shall be plotted for -50 to +150 °C temperature range, at 5 °C minimum intervals. The plotted curves must be within tolerance ranges shown on pages 6 (-A1), 7 (-A2), 8 (-A3).

A1	A2	A3
0.76 - 1.4	0.80 - 1.47	0.80 - 1.47

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3.5.6 Impact Strength, Izod, min
(ISO 180/1A, 80 x 10 x 4.0 +/- 0.1 mm specimen, 10 specimens for each test)

3.5.6.1	At 23 +/- 2 °C	3.0 kJ/m^2
3.5.6.2	At -40 +/- 2 °C	2.5 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.

3.5.7 Heat Deflection Temperature, min
(ISO 75, 120 x 10 x 4.0 +/- 0.2 mm specimen, edgewise, 0.32 +/- 0.01 mm deflection)

3.5.7.1	At 1.80 MPa	90 °C
3.5.7.2	At 0.45 MPa	140 °C

3.5.8 Heat Aging Performance
(ISO 188, except 150 +/- 50 air changes/h, 1000 h at 90 +/- 2 °C. After heat aging test specimens are to be conditioned in a desiccator for 3 - 5 h at 23 +/- 2 °C. Unaged property values shall be determined at the time of the aged properties determination)

3.5.8 1	Tensile Strength at Break Change (Test Method per para 3.5.3)	+/- 20%
3.5.8.2	Impact Strength, Izod Change, max (Test Method per para 3.5.6.1, specimens to be notched before heat aging)	+/- 35%

3.6 FOGGING
SAE J1756, 3 h at 100 °C heating, 21 °C cooling plate, post test conditioning 1 h and 16 h)

Fog Number, min 95

Formation of excessive amounts of clear film or droplets is cause for rejection

3.7 FLAMMABILITY
(ISO 3795)

Burn Rate, max 100 mm/minute

The specimen size required for material approval is 355 x 100 x 1.0 +/- 0.1 mm with a smooth surface.

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