ACETAL (POM) HOMOPOLYMER, MELT FLOW RATE 1 - 3 **WSK-M4D637-A1**

ACETAL (POM) HOMOPOLYMER, MELT FLOW RATE 11 - 17 **WSK-M4D637-A2**

ACETAL (POM) HOMOPOLYMER, MELT FLOW RATE 19 - 32 **WSK-M4D637-A3**

ACETAL (POM) HOMOPOLYMER, MELT FLOW RATE 34 - 44 **WSK-M4D637-A4**

1. SCOPE

The material defined by these specifications is a thermoplastic acetal homopolymer based on formaldehyde with melt flow rates from 1 to 44 g/10 minutes.

2. APPLICATION

These specifications were released originally for materials used for functional automotive applications.

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

A1	A2	A3	A4
1 - 3	11 - 17	19 - 32	34 - 44

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	
2005 09 23	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.8, 3.9 & 4	
1997 10 13	Revised	Revised para 3.5.8.2; Updated	L. Rodicas
1989 03 01	Released	SM/EQ2762 TP	M. Siewert

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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 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 - 1.44 g/cm^3

(s) 3.5.3 Tensile Strength at Yield, min (ISO R 527, 150 min x 10 x 4.0 +/- 0.2 mm specimen, 50 mm/minute test speed) — 62 MPa

(s) 3.5.3.1 Elongation at Break, %, min (Test Method according to para 3.5.3)

A1	A2	A3	A4
25	10	10	5

(s) 3.5.4 Flexural Modulus, GPa, min (ISO 178, 80 x 10 x 4.0 +/- 0.2 mm specimen, 2 mm/minute test speed 64 mm support span)

A1	A2	A3	A4
2.5	2.6	2.6	3.0

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 approximately 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 min)

Additionally, a Shear Modulus vs. Temperature curve shall be plotted for -50 to +150 °C temperature range, at 5 °C min intervals. The plotted curves must be within tolerance ranges shown on pages 5 (-A1), 6 (-A2), 7 (-A3), and 8 (-A4).

A1	A2	A3	A4
0.80 - 1.20	0.84 - 1.26	0.80 - 1.20	0.82 - 1.37

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(s) 3.5.6 Impact Strength, Izod, kJ/m^2, 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

A1	A2	A3	A4
7.0	5.5	4.5	4.5

3.5.6.2 At -40 +/- 2 °C

A1	A2	A3	A4
6.0	4.0	3.5	4.0

The test specimens must be conditioned for min of 6 h at the above specified temperature prior to impact test. Low temperature testing shall be done within the cold box.

(s) 3.5.7 Heat Deflection Temperature, °C, min (ISO 76, 120 x 10 x 4.0 +/- 0.2 mm specimen, 0.34 +/- 0.01 mm deflection)

3.5.7.1 At 1.80 MPa

A1	A2	A3	A4
100	100	100	92

3.5.7.2 At 0.45 MPa

A1	A2	A3	A4
150	160	160	150

3.5.8 Heat Aging Performance (A1 - A4) (ISO 188, except 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 Change, % (Test Method per para 3.5.3)

A1	A2	A3	A4
+/- 20	+/- 20	+/- 20	+/- 20

3.5.8.2 Impact Strength, Izod Change, % (Test Method per para 3.5.6.1, specimens to be notched before heat aging) +/- 60

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