



ACETAL (POM) COPOLYMER, MODIFIED, HIGH IMPACT GRADE

WSK-M4D618-A2

1. SCOPE

The material defined by this specification is a polyurethane modified thermoplastic acetal copolymer based on trioxane.

2. APPLICATION

This specification was released originally for materials used for fixing grommets.

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).

3.4 MOLDING COMPOUND

3.4.1 Melt Flow Rate 3.0 - 10.0 g/
(ISO 1133/ASTM D 1238, 190 °C, 2.16 kg) 10 minutes

NOTE: For individual melt flow rates of approved materials see the Approved Source List.

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	Rev. 3
2011 03 21	Revised	Changed Melt flow Rate	G. Kowalski, NA
2005 09 14	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.8, 3.9 & 4	
1989 07 03	SM/EQ24042 TP	Released	



3.5.2	Density (ISO 1183, Method A/ASTM D 792, Method A1)	1.34 - 1.39 g/cm ³
3.5.3	Tensile Strength at Yield (ISO R 527/ASTM D 638M, 150 min x 10 x 4.0 +/- 0.2 mm specimen, 50 mm/minute test speed)	37 MPa min
3.5.3.1	Elongation at Break (Test Method according to para 3.5.3)	25% min
3.5.4	Flexural Modulus (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 +/- 0.1 mm and of the supports 2.0 +/- 0.2 mm)	1.2 GPa min
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)	Report Value MPa
Additionally, a Shear Modulus vs. Temperature curve shall be plotted for -50 to +130 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 6.		
3.5.6	Impact Strength, Izod (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	6.5 kJ/m ² min
3.5.6.2	At -40 +/- 2 °C	3.5 kJ/m ² min
3.5.6.3	At -20 +/- 2 °C	5.0 kJ/m ² min
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.		
3.5.7	Heat Deflection Temperature (ISO 75/ASTM D 648, 120 x 10 x 4.0 +/- 0.2 mm specimen at standard deflection of 0.32 +/- 0.01 mm)	
3.5.7.1	At 1.80 MPa	66 °C min
3.5.7.2	At 0.45 MPa	130 °C min