

**POLYBUTYLENE TEREPHTHALATE (PBT)
EXTRUSION MOLDING COMPOUND****WSK-M4D639-A****1. SCOPE**

The material defined by this specification is a thermoplastic polyester extrusion molding compound based on polybutylene terephthalate (PBT) that has a high viscosity.

2. APPLICATION

This specification was released originally for material used for throttle cable.

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 7.5 - 16 g/
(ISO 1133/ASTM D 1238, 250 °C, 2.16 kg) 10 minutes

The material shall be dried for 4 h minimum at 130 - 135 °C in a mechanical convection oven immediately preceding the test.

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 1.28-1.33 g/cm³
(ISO 1183, Method A/ASTM D 792, Method A1)

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2010 09 27	Re-Activated	M. Gramlich, NA
2010 07 14	N-STATUS	No replacement A. Dan APA
1989 03 01		SM/EQ2762 TP P. Kuntze



- 3.5.3 Tensile Strength at Max Load, min 50 MPa
(ISO R 527/ASTM D 638M, 150 min x 10 x 4.0
+/- 0.2 mm specimen, 50 mm/min test speed)
- 3.5.3.1 Elongation at Break, min 100%
(Test Method according to
para 3.5.3)
- 3.5.4 Flexural Modulus, min 1.85 GPa
(ISO 178/ASTM D 790M, Method I, Procedure
A, 80 x 10 x 4.0 +/- 0.2 mm specimen,
64 mm support span)
- 3.5.5 Shear Modulus at 23 °C 700 - 1050 MPa
(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.)

Additionally, a Shear Modulus vs. Temperature curve shall be plotted for -50 to +220 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 4.

- 3.5.6 Impact Strength, Izod, min
(ISO 180, Method A/ASTM D 256, Method A,
63.5 x 10 x 4.0 +/-0.2 mm specimen,
10 specimens for each test)
- 3.5.6.1 At 23 +/- 2 °C 5 kJ/m²
- 3.5.6.2 At -40 +/- 2 °C 4 kJ/m²

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, min
(ISO 75/ASTM D 648, 120 x 10 x
4.0 +/- 0.2 mm specimen)
- 3.5.7.1 At 1.82 MPa 55 °C
- 3.5.8 Heat Aging Performance
(ISO 188/ASTM D 573, 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 +/- 25%
(Test Method per para 3.5.3)
- 3.5.8.2 Impact Strength, Izod Change +/- 35%
(Test Method per para 3.5.6.1,
specimens to be notched before
heat aging)