



PHENOLIC (PF), 40% WOOD FLOUR FILLED INJECTION MOLDING COMPOUND

WSK-M3D168-A1

1. SCOPE

The material defined by this specification is a thermosetting injection molding compound based on two stage cure phenolic resin, 40% or above wood flour filled, with phenolic resin content of 45% minimum.

2. APPLICATION

This specification was released originally for material used for ash trays.

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).

3.4 MOLDING COMPOUND

3.4.1 Ash Content (Inorganic Fillers Only) 5.5 - 7.5%
(ISO 3451/1, Method A, test portion:
10 - 20 g, 2 h at 850 +/- 2 °C)

3.5 MOLDED TEST SPECIMEN

3.5.1 Preparation of Test Specimens

Unless otherwise specified all tests shall be carried out on injection molded 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
- C. 25 x 13 x 13 mm (Compressive Strength Bar, ASTM D 695)

Specimens with shorter dimensions shall be cut from the center portion of the test specimen A and/or B. The specimens shall be prepared under optimum conditions as defined by the manufacturer of raw material. No annealing allowed.

3.5.2 Density 1.39 - 1.45 g/cm³
(ISO 1183, Method A/ASTM D 792, Method A1)

3.5.3 Tensile Strength at Max Load, min 55 MPa
(ISO R 527/ASTM D 638M, 150 min x 10 x
4.0 +/- 0.2 mm specimen, 5 mm/min test speed)

Date	Action	Revisions
2006 08 23	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.7, 3.8 & 4
1992 05 01	Released	EP00E10176267000





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| 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) | 8.0 GPa |
| 3.5.5 | Flexural Strength, min
(Test Method per para 3.5.4) | 80 MPa |
| 3.5.6 | Compressive Strength, min
(ASTM D 695, 25 x 13 x 13 mm specimen, 1.3 mm/minute test speed) | 200 MPa |
| 3.5.7 | 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) | 2.3 - 3.4 GPa |

Additionally, a Shear Modulus vs. Temperature curve shall be plotted for -50 to +280 °C temperature range, at 5 °C minimum intervals. The plotted curve must be within tolerance range shown on page 4.

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| 3.5.8 | 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) | |
| 3.5.8.1 | At 23 +/- 2 °C | 1.4 kJ/m ² |
| 3.5.8.2 | At -40 +/- 2 °C | 1.4 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.

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| 3.5.9 | 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) | 140 °C |
| 3.5.10 | Water Absorption, max
(ISO 62, 24 h/ASTM D 570, 24 h boiling water, compression molded specimen A, 150 min x 10 x 4.0 +/- 0.2 mm) | 5.7% |
| 3.5.11 | Heat Aging Performance
(ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 1000 h at 180 +/- 2 °C. Unaged property values shall be determined at the time of the aged properties determination) | |

