

**PHENOLIC (PF), COMPRESSION MOLDING COMPOUND
50% MINERAL/GLASS FIBER FILLED****WSK-M3D162-A****1. SCOPE**

The material defined by this specification is a thermosetting compression molding compound based on phenolic resin, 50% mineral/glass fiber filled.

2. APPLICATION

This specification was released originally for material used for fuel pump flanges.

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 (ISO 3451/1, Method A) (test portion: 10 - 20 g except: 6 h at 850 +/- 25 °C : 6 h at 550 +/- 25 °C)	39 - 43% 49 - 54%
-------	--	----------------------

3.5 MOLDED TEST SPECIMEN**3.5.1 Preparation of Test Specimens**

Unless otherwise specified all tests shall be carried out on compression molded test specimens (e.g. pocket molding).

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. 13 x 13 x 25 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 (ISO 1183, Method A/ASTM D 792, Method A1)	1.70 - 1.76 g/cm ³
3.5.3	Tensile Strength at Max Load, min (ISO R 527/ASTM D 638M, 150 min x 10 x 4.0 +/- 0.2 mm specimen, 5 mm/min test speed)	39 MPa

Date	Action	Revisions
2004 12 15	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.7, 3.8 & 4
1990 12 03	Released	EP00E01031542000

**Documents**P. Kuntze
Document Sharing Hub



- | | | |
|-------|--|---------------|
| 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, 64 mm support span) | 6.6 GPa |
| 3.5.5 | Flexural Strength, min
(ISO 178/ASTM D 790, Method I,
Procedure A, 80 x 10 x 4.0 +/- 0.2 mm
specimen, 64 mm support span) | 65 MPa |
| 3.5.6 | Compressive Strength, min
(ASTM D 695, 13 x 13 x 25 mm
specimen, 1.3 mm/min test speed) | 190 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) | 3.8 - 5.8 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 6.

- | | | |
|---------|--|-----------------------|
| 3.5.8 | 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 minimum) | |
| 3.5.8.1 | At 23 +/- 2 °C | 1.2 kJ/m ² |
| 3.5.8.2 | At -40 +/- 2 °C | 1.2 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.

- | | | |
|--------|--|--------|
| 3.5.9 | Heat Deflection Temperature, min
(ISO 75/ASTM D 648, 120 x 10 x 4.0 +/-
0.2 mm specimen. At 1.82 MPa) | 182 °C |
| 3.5.10 | Heat Aging Performance
(ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 1000 h at 170 +/- 2 °C. Unaged
property values shall be determined at the time of the aged properties determination) | |