



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

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

3.1 STATISTICAL PROCESS

Suppliers must conform to the requirements of Ford Quality System Standard Q-101. A mutually acceptable Control Plan as described therein is required for material/source approval. Appropriate statistical tools must be used to analyze process/product data so that variation in the final product is continuously reduced.

3.2 INFRARED SPECTROPHOTOMETRY, PYROLYTIC GAS CHROMATOGRAPHY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared, pyrolytic gas chromatography and/or thermal analysis of material/parts supplied to this specification. The IR, PGC spectra and thermograms established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce IR spectra and thermograms that correspond to the reference standard when tested under the same conditions.

3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

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)

Date	Release No.	Release/Revision
1992-05-01	EP00E10176267000	Released P. Kuntze

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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.

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| 3.5.2 | Density
(ISO 1183, Method A/ASTM D 792,
Method A1) | 1.39 - 1.45 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) | 55 MPa |
| 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 |