



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

POLYETHYLENE TEREPHTHALATE (PET), 30 % GLASS
FIBER REINFORCED MOLDING COMPOUND

WSK-M4D726-A1

1. SCOPE

The material defined by this specification is a 30 % glass fiber reinforced thermoplastic molding compound based on polyethylene terephthalate (PET).

2. APPLICATION

This specification was released originally for material used for non-visible body parts.

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 AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The IR 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 Melt Flow Rate 2.0 - 20 g/10 minutes
(ISO 1133/ASTM D 1238,
280 C, 2.16 kg)

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

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1992-08-03	EP00E10176303000	Released P. Kuntze

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- 3.4.2 Glass Fiber Content 28 - 32 %
(ISO 3451/2 test temperature
750 +/- 25 C, test portion
2.5 - 3.0 g)

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 1.52 - 1.60 g/cm³
(ISO 1183, Method A/ASTM D 792,
Method A1)
- 3.5.3 Tensile Strength at Max Load, min 134 MPa
(ISO R 527/ASTM D 638M, 150 min x
10 x 4.0 +/- 0.2 mm specimen,
5 mm/min test speed)
- 3.5.4 Flexural Modulus, min 8.1 GPa
(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)
- 3.5.5 Shear Modulus at 23 C 1.5 - 2.1 GPa
(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)

Additionally, a Shear Modulus vs. Temperature curve shall be plotted for - 50 to + 250 C temperature range, at 5 C minimum intervals. The plotted curve must be within tolerance range shown on page 6.