



70% POLYPROPYLENE COPOLYMER (PP), 30% SISAL FIBER CONTENT MOLDING COMPOUND, INTERIOR PARTS

WSS-M4D1004-A

1. SCOPE

The materials defined by this specification is a 30% sisal fiber filled injection thermoplastic molding compound based on 70% polypropylene copolymer prime.

2. APPLICATION

These specifications were released originally for materials used for non visible parts, interior painted parts and interior appearance parts.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements Ford Production Materials (WSS-M99P1111-A).

3.1.1 All requirements of this specification, identified by symbol (s), shall be met with data representing 3 sigma values.

3.2 SISAL FIBER

The sisal fiber length must be at least 3.0 mm. The material must be dried for 5 h at 90 - 95 °C minimum in a mechanical convection oven. The fiber humidity before the extrusion of the polypropylene compound must be less than 3%.

3.2.1 Drying Process

To achieve good results at the drying process (3%), we recommend:

- 1) Forced Air Circulation oven with dry air line (The distances between the trays at the oven must be 5cm or more. The maximum height allowed per tray is 5cm. To improve the efficiency of drying process is recommendable some small holes under the tray)

Or

- 2) Continuous drier turbulent hot air flow/fluidized bed drier

Date	Action	Revisions
2008 03 20	Activated	

 Documents
Marcos Rogério de Souza
Document Sharing Hub

**3.3 MOLDING COMPOUND**

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|-----|-------|---|--------------------|
| (s) | 3.3.1 | Melt Flow Rate
(ISO 1133/ASTM D 1238, 230 °C, 2.16 kg) | 3 - 15g/10 minutes |
| | 3.3.2 | Melt Temperature, min
(ISO 3146, Method C, 10 °C/min heating rate) | 160 °C |
| (s) | 3.3.3 | Sisal Fiber Content
(Thermogravimetric Analysis – TGA) | 28 - 32% |

3.4 MOLDED TEST SPECIMEN**3.4.1 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.

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|-----|---------|--|-------------------------------|
| | 3.4.2 | Density
(ISO 1183, Method A/ASTM D 792, Method A1) | 1.05 - 1.11 g/cm ³ |
| | 3.4.3 | Hardness Durometer D
(ISO 868/ASTM D 2240, 15 s dwell) | 45 - 60 |
| (s) | 3.4.4 | Tensile Strength at Yield, min
(ISO R 527/ASTM D 638M, 150 min x 10 x 4.0 +/- 0.2 mm specimen, 50 mm/minute test speed) | 21.5 MPa |
| (s) | 3.4.4.1 | Tensile Modulus, min
(Test Method according to para 3.6.4) | 2.4 GPa |
| (s) | 3.4.4.2 | Elongation at Break, min
(Test Method according to para 3.6.4) | 5% |
| (s) | 3.4.5 | Flexural Modulus, min
(ISO 178/ASTM D 790M, Method I, Procedure A, 80 x 10 x 4.0 +/- 0.2 mm specimen, 2 mm/minute 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) | 2.0 GPa |