



**POLYPROPYLENE (PP)
30% LONG GLASS FIBER REINFORCED,
STRUCTURAL, NON UV-STABLE, INTERIOR**

WSS-M4D865-B4

1. SCOPE

The material defined by this specification is an injection molding compound composed of a polypropylene matrix, with 30% by weight long glass fiber reinforcement with typical fiber length between 9-16 mm.

2. APPLICATION

This specification was released originally for material used for instrument panel structure and floor console structure.

2.1 LIMITATIONS

This material does not contain UV stabilizers, long term exposure to direct sunlight will cause chalking and loss of gloss.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

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

3.1.1 This specification is based on virgin materials, however materials with recycled content as defined by WRS-M99P42-A1 (post-consumer and/or post industrial recyclates and repolymerised recycled materials) should be used whenever technically feasible and following all materials and PV testing required by Ford Materials Engineering. The use of regrind is permitted, for economic/environmental reasons, with compliance as indicated in WSS-M99P1111-A.

3.1.2 Materials used in interior applications must meet the requirements outlined in WSS-M99P2222-C1/Latest, Performance, Vehicle Interior Environment Quality Material/Component Requirements. Data must be included in material submission package.

3.1.3 Performance Criteria:
Parts using this specification shall meet the appropriate performance specifications, WSS-M15P45-B/Latest or WSS-M15P4-F/Latest.

3.1.4 Processing Criteria:
Proper processing parameters and equipment should be used to preserve maximum fiber length in molded parts as specified and measured by the raw material supplier.

Raw material supplier must be involved upfront for mold flow, CAE, and tooling design and should be present at all molding trial.

Date	Action	Revisions	Rev 02
2013 05 13	Revised	Editorial - See Summary of Revisions	G. Eaton, NA
2012 11 21	Revised	See Summary of revisions	G. Eaton, NA
2012 03 15	Activated	Replaces WSS-M4D865-A4	G. Eaton, NA



WSS-M99D514-A1 is to be used for thermoplastic compounds using long glass fiber masterbatch pellets. WSS-M99D514-A2 is to be used for thermoplastic compounds using Direct Long glass Fiber Technology (DLFT) or Injection Molding Compounding (IMC).

3.2 SAMPLE PREPARATION

Unless otherwise specified all tests shall be carried out on injection molded, one-end gated test specimens. The test specimens A and D shall be molded using molding conditions defined in ISO 1873-2. No annealing is allowed. See Table 1 for the number of samples required.

Specimens shall be as follows:

Specimen A	150 minimum x 10 x 4.0 +/- 0.2 mm (ISO 527-2, Specimen Type 1A)
Specimen B	355 x 100 x 1.0 +/- 0.1 mm (ISO 3795)
Specimen C	145 x 60 x 3.2 +/- 0.2 mm
Specimen D	Center of Specimen A. 80 x 10 x 4.0 +/- 0.2 mm
Specimen E	100 mm diameter x 3.2 mm
Specimen F	80 mm diameter x 3.2 mm
Specimen G	90 mm x 200 mm
Specimen H	50 +/- 1 mm diameter x 3.2 +/- 0.2 mm
Specimen I	100 mm x 150 mm, min

3.3 MATERIAL PROPERTIES

3.3.1	Filler Content (ISO 3451-1, Method A, 1h at 650 +/- 25°C, test portion, 2 – 2.5g)	28% - 33%
3.3.2	Density (ISO 1183, Method A)	1.10 – 1.15 g/cm ³
3.3.3	Tensile Strength at Break (ISO 527-1 & ISO 527-2, Specimen A, test speed: 5 mm/minute)	79 MPa min
3.3.4	Tensile Modulus (ISO 527-1 & ISO 527-2, Specimen A, test speed 1 mm/min)	5.1 GPa min
3.3.5	Flexural Modulus (ISO 178, Specimen D, 2 mm/min test speed, 64 mm support span)	5.3 GPa min



3.3.6 Impact Strength, Notched Charpy
(ISO 179-1/2, Specimen D)

3.3.6.1 At 23 +/- 2 °C 18 kJ/m² min
Report Break Type

3.3.6.2 At -40 +/- 2 °C 19 kJ/m² min
Report Break Type

The test specimen must be conditioned for minimum of 6 hours at the above specified temperature prior to impact test. Low temperature testing shall be done within the cold chamber, if not possible, test may be conducted outside, but within 5 seconds.

3.3.7 Heat Deflection Temperature 154 °C min
(ISO 75-1 & ISO 75-2, Specimen D, flatwise,
0.34 +/- 0.1 mm deflection, at 1.80 MPa)

3.3.8 Heat Aging Performance
(ISO 188, 150 +/- 50 air
changes/h, 1000 h at 140 +/- 2 °C.
Unaged property values shall be
determined at the time of the aged
properties determination)

3.3.8.1 Tensile Strength at Break, Change +/- 25% max
(Test Method per para 3.3.3)

3.3.8.2 Impact Strength, Notched Charpy Change +/- 25% max
(Test Method per para 3.3.6.1,
specimens to be notched before
heat aging)

3.3.9 Odor Rating 3 max
(FLTM BO 131-03, Specimen G)

3.3.10 Fogging Photometric
(SAE J1756, Specimen F, 3 h at 100 °C heating,
21 °C cooling plate, post test conditioning 16 h)

Fog Number 70 min

Formation of clear film, droplets or crystals is cause for rejection.

3.3.11 Fogging Gravimetric 2.5 mg max
(SAE J 1756, Specimen F,
16h at 100 °C Heating, 21 °C cooling plate,
post conditioning 4 h)

3.3.12 Flammability
(ISO 3795/SAE J369,
Specimen B, smooth surface)

Burn Rate 100 mm/minute max