



POLYCARBONATE/ACRYLONITRILE BUTADIENE STYRENE BLEND (PC+ABS) MEDIUM IMPACT MOLDING COMPOUND, INTERIOR, ANTI-SQUEAK

WSS-M4D924-B2

1. SCOPE

The material defined by this specification is an enhanced anti-squeak performance based thermoplastic UV stabilized, medium impact molding compound based on a blend of polycarbonate (PC) and acrylonitrile butadiene styrene (ABS) for mold-in-color interior applications.

2. APPLICATION

This specification was released originally for material used air register applications requiring anti-squeak performance and UV stability.

2.1 LIMITATIONS

The use of HALS (Hindered Amine Light Stabilizers) is prohibited in PC+ABS materials.

3. REQUIREMENTS

3.1 APPROVED SOURCES

This specification requires the use of approved sources. Only the sources identified on the Ford Approved Source List (ASL) can be used when this specification is listed on the drawing, CAD file, or other documents. The list of approved sources is located within Ford at www.mats.ford.com or available externally through a Ford Materials Engineer.

3.2 CONDITIONING AND TEST CONDITIONS

All test values are based on material conditioned for not less than 24 h prior to testing in a controlled environment of 23 +/- 2 °C and 50 +/- 5% relative humidity. Testing of the material should occur in the conditioning environment or soon after removal.

3.3 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

- 3.3.1 Many 4D resin specifications prior to 2011, identified certain requirements with the symbol(s), which indicated that the mean and +/- 3 sigma values were to be reported. The specification minimum, maximum or range was established using 3 sigma data. For 2011 and beyond, refer to Table 1 for number of samples required for each test.
- 3.3.2 This specification is based on virgin material and does not allow the addition of recycled content (PIR/PCR).
- 3.3.3 Performance Criteria:
Parts using this specification shall meet the appropriate performance specifications: WSS-M15P4-G/Latest, for interior mold-in-color applications. Parts must fulfill applicable SDS/CDS requirements.

Date	Action	Revisions	Rev. 0
2016 07 20	Released		



3.4 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 2580-2. No annealing is allowed. See Table 1 and 2 for the number of specimens 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

3.5 APPEARANCE

3.5.1	Weathering Resistance (FLTM BO 116-01, 977.6 kJ/m ² exposure, Specimen C from smooth polished mold, ISO 105-A02 / AATCC Evaluation Procedure 1)	Rating 4 min
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After exposure the material shall show no fading or color change in excess of the specified AATCC rating. In addition, there shall be no cracking, crazing or other deterioration.

Use regional choice for initial approval and report the color house used. See Table 2 for additional color durability submission requirements.

*When setting machine for automatic shutoff, every 526.4 kJ/m² is recommended

3.6 MATERIAL PROPERTIES

3.6.1	Density (ISO 1183, Method A)	1.09 - 1.13 g/cm ³
3.6.2	Tensile Strength at Yield (ISO 527-1 & ISO 527-2, Specimen A, 50 mm/minute test speed)	39 MPa min
3.6.3	Elongation at Yield (ISO 527-1 & ISO 527-2, Specimen A, 50 mm/minute test speed)	4.5 % min
3.6.4	Tensile Modulus (ISO 527-1 & ISO 527-2, Specimen A, 1 mm/minute test speed)	1.8 GPa min
3.6.5	Flexural Modulus (ISO 178, Specimen D, 64 mm support span, 2 mm/minute test speed)	1.6 GPa min
3.6.6	Impact Strength, Notched Charpy (ISO 179-1/1eA, Specimen D)	



3.6.6.1 At 23 +/- 2 °C

31 kJ/m², min
Report Break Type

3.6.6.2 At -40 +/- 2 °C

10 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.

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

85 °C min

All specimens dry as molded. If not tested immediately after molding, specimens must be stored in a sealed, moisture-proof container filled with silica gel.

3.6.8 Vicat Softening Temperature
(ISO 306, Method B50, Specimen D,
Bath - silicone oil)

110 °C min

All specimens dry as molded. If not tested immediately after molding, specimens must be stored in a sealed, moisture-proof container filled with silica gel.

3.6.9 Heat Aging Performance
(ISO 188, 150 +/- 50 air changes/h, 1000 h at 90 +/- 2 °C.
After heat aging test specimens are to be conditioned in a desiccator for
3 - 5 h at 23 +/- 2 °C. Unaged property values shall be determined at the time
of the aged properties determination)

3.6.9.1 Tensile Strength at Yield, Change
(Test method per para 3.6.2)

+/- 25% max

3.6.9.2 Impact Strength, Notched Charpy, Change
(Test Method per para 3.6.6.1,
specimens to be notched before
heat aging)

+/- 25% max

3.6.10 Hydrolytic Stability
(ISO 188, humidity aging at 90 °C/70% RH for 500 h or 80 °C/70% RH for 1000 h
After humidity aging test specimens are to be conditioned for 24 h at 23 +/- 2 °C
50% RH. Unaged property values shall be determined at the time of the aged
properties determination.)

3.6.10.1 Impact Strength, Notched Charpy, Change
(Test Method per para 3.6.6.1,
specimens to be notched before
humidity aging)

+/- 50% max

3.6.11 Odor
(FLTM BO 131-03, Specimen G)

Condition 1
Condition 2
Condition 3

Rating 3 max
Rating 3 max
Rating 3 max