



POLYCARBONATE/ ACRYLONITRILE BUTADIENE
STYRENE BLEND (PC+ABS) HIGH IMPACT
MOLDING COMPOUND

WSS-M4D585-C1

POLYCARBONATE/ ACRYLONITRILE BUTADIENE
STYRENE BLEND (PC+ABS)
MOLDING COMPOUND, RECYCLED 100% PCR/PIR
RESIN CONTENT

WRS-M4D585-C2

1. SCOPE

The material defined by this specification is a high impact thermoplastic molding compound based on a blend of polycarbonate (PC) and acrylonitrile butadiene styrene (ABS) for non-visible or painted applications. High impact PC+ABS is defined as being minimum 80% ductile at -30°C.

2. APPLICATION

WSS-M4D585-C1 This specification was released originally for material used for taillamp housing, in-mold film or wrapped aluminum substrate top finish panel of floor console, or painted finished molding.

WRS-M4D585-C2 This specification was released originally for material used for non-visible interior applications.

2.1 LIMITATIONS

WSS-M4D585-C1

- This material is not UV stabilized and should not be used for mold in color visible applications.

WRS-M4D585-C2

- This material is defined by 100% recycled PC +ABS thermoplastic molding compound for non-visible applications and is not UV stable.
- This material is not suitable for tail lamp housings.
- When used in decorated interior applications this material may require additional in process testing. Contact Materials Engineering for these requirements.

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 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 to establish specification limits.

Date	Action	Revisions	Rev. 6
2017 07 24	Editorial	See Summary of Revisions	D. Stark, NA
2015 11 11	Editorial	See Summary of Revisions	D. Stark, NA
2011 05 05	Active		A. Pan



- 3.1.2 **WSS-M4D585-C1** This specification is based on virgin materials.
- 3.1.3 **WRS-M4D585-C2** This specification must contain 100% Post-Consumer Recycled (PCR) and/or Post-Industrial Recycled (PIR) content as defined by WRS-M99P42-A1 for polycarbonate (PC) and/or acrylonitrile butadiene styrene (ABS).
- 3.1.4 The use of regrind is permitted, for economic / environmental reasons, with compliance as indicated in Ford Engineering CAD and Drafting Standard E-4.
- 3.1.5 Materials used in interior applications must meet the requirements outlined in WSS-M99P2222-D1/Latest, *Performance, Vehicle Interior Environment Quality, Component and Allergen Requirements*. Data must be included in material submission package.
- 3.1.6 Performance Criteria:

WSS-M4D585-C1: Parts using this specification shall meet the appropriate performance specifications: WSK-M98P10-A/latest for exterior lighting application, WSS-M15P4-F/Latest, non-visible applications requirements only, WSS-M2P188-A1/Latest for painted interior applications, WSS-M15P45-B/Latest for wrapped instrument panel (IP) and soft interior components, and WSS-M15P34-D/Latest for interior trim components with appliques.

WRS-M4D585-C2: Parts using this specification shall meet the appropriate performance specifications: WSS-M15P4-F/Latest, non-visible applications requirements only.

- 3.1.7 As specified in WSS-M99P1111-A, paragraph 3.2, Ford Materials Engineering may request a Control Plan and Certificate of Analysis (CoA) containing lot testing requirements which must include, but are not limited to:

WSS-M4D585-C1:
Melt Flow Rate

WRS-M4D585-C2:
Impact Strength, Notched Charpy
Melt Flow Rate
Vicat Softening Temperature

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 2580-2. No annealing is allowed. See Table 1 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

3.3 MATERIAL PROPERTIES

3.3.1	Density (ISO 1183, Method A)	1.10 - 1.20 g/cm ³	
3.3.2	Tensile Strength at Yield (ISO 527-1 & ISO 527-2, Specimen A, 50 mm/minute test speed)	<u>C1</u> 48 MPa min	<u>C2</u> 37 MPa min
3.3.3	Elongation at Yield (ISO 527-1 & ISO 527-2, Specimen A, 50 mm/minute test speed)	3.0% min	
3.3.4	Tensile Modulus (ISO 527-1 & ISO 527-2, Specimen A, 1 mm/minute test speed)	2.0 GPa min	
3.3.5	Flexural Modulus (ISO 178, Specimen D, 64 mm support span, 2 mm/minute test speed)	1.9 GPa min	
3.3.6	Impact Strength, Notched Charpy (ISO 179-1/1eA, Specimen D)		
3.3.6.1	At 23 ± 2 °C	38 kJ/m ² min Report Break Type	
3.3.6.2	At -40 ± 2 °C	<u>C1</u> 13 kJ/m ² min Report Break Type	<u>C2</u> 5 kJ/m ² min Report Break Type

The test specimen must be conditioned for a 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 (ISO 75-1 & ISO 75-2 Specimen D, flatwise, 0.34 +/- 0.1 mm deflection at 1.80 MPa)	100°C min	94°C min
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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.