



ACRYLONITRILE STYRENE ACRYLATE (ASA), MOLDED IN COLOR, MOLDING COMPOUND, EXTERIOR, NON UV-STABLE, GENERIC BLACK

WSS-M4D833-B2

1. SCOPE

The material defined by this specification is a molding compound based on acrylonitrile-styrene-acrylate (ASA). This material is a generic black resin for parts that require good stiffness and low flexibility.

2. APPLICATION

This specification was released originally for material used for fascia brackets and other exterior molded applications, which are not visible in final assembly.

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). Note: 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 values. For 2011 and beyond, refer to Table 1 for number of samples required for each test.

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.

3.1.2 The use of regrind is permitted, for economic / environmental reasons, with compliance as indicated in Ford Engineering CAD and Drafting Standard E-4. Part manufacturers using this specification must complete DV and PV testing with the allowable amount of regrind and the maximum allowable regrind content must be specified on the engineering drawing. Any changes to what is specified on the drawing (no specification implies zero regrind) must be approved by Materials and PD Engineering through the formal Ford Motor process (SREA).

3.1.3 Performance Criteria: Parts must fulfill applicable SDS/CDS requirements.

3.2 SAMPLE PREPERATION

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 6402-02. No annealing is allowed. See Table 1 for the number of specimens required.

Date	Action	Revisions	Rev 0
2014 05 05	Released		



Documents

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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)	1.05 – 1.10 g/cm ³
3.3.2	Tensile Strength at Yield (ISO 527-1 & ISO 527-2, specimen A, 50 mm/minute test speed)	42 MPa min
3.3.3	Elongation at Yield (ISO 527-1 & ISO 527-2, specimen A, 50 mm/minute test speed)	2% min
3.3.4	Tensile Modulus (ISO 527-1 and 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)	2.0 GPa min
3.3.6	Impact Strength, Notched Charpy (ISO 179-1/1eA, Specimen D)	
3.3.6.1	At 23 +/- 2 °C	7.0 kJ/m ² min Report Break Type
3.3.6.2	At -40 +/- 2 °C	1.5 kJ/m ² min Report Break Type
3.3.6.3	At -20 +/- 2 °C	4.0 kJ/m ² 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 (ISO 75-1 and ISO 75-2 Specimen D, flatwise, 0.34 +/- 0.1 mm deflection. At 1.80 MPa)	77 °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.