

**THERMOPLASTIC POLYURETHANE ELASTOMER (TPU) MOLDING
COMPOUND, INTERIOR, MIC, 90 DUROMETER A HARDNESS****WSS-M2D197-A3****1. SCOPE**

The material defined by this specification is a thermoplastic polyurethane molding compound based on an aromatic polyester for mold in color black applications colored at the press.

2. APPLICATION

This specification was released originally for material used for the 2009 MKS interior console tambour door application as an overmold for PC/ABS.

2.1 LIMITATIONS

This is only for color-matched black applications (JA6A). Normally aromatic TPU substrates are top-coated, but black applications do not necessarily need topcoating.

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 All requirements of this specification, identified by symbol (s), shall be met with data representing 3 sigma values using latest ISO test methods.

3.1.2 This specification was developed using virgin material properties. The use of regrind is permitted, for economic / environmental reasons, with compliance as indicated in WSS-M99P1111-A.

3.1.3 Critical Process Parameters

At the request of Ford Materials Engineering the supplier shall be responsible to collect critical process control data on each lot of material produced. Testing required will be jointly developed between Ford Materials Engineering and the supplier based on CP and PFMEA review at the time of initial approval. Annually the supplier will review the in process data with Ford Materials Engineering to show that the process has remained under control. The data needs to be submitted in January for the previous calendar year. Data showing poor quality control measures or lack of submitted data may result in deletion from the Ford Approved Source List.

3.2 MOLDED TEST SPECIMEN

3.2.1 Density (ISO 1183, Method A) 1.19 - 1.21 g/cm³

3.2.2 Hardness, Durometer A (ISO 868, 15 s dwell) 87- 91

Date	Action	Revisions
2007 09 14	Activated	

**Documents**

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ENGINEERING MATERIAL SPECIFICATION

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(s)	3.2.3	Tensile Strength at Break, min (ISO 37, Type I, test speed: 500 mm/minute)	25 MPa
(s)	3.2.3.1	Elongation at break, min (Test Method according to para 3.2.3)	450%
(s)	3.2.3.2	Tensile Modulus at 100% Elongation, min (Test Method according to para 3.2.3)	5.5 MPa
(s)	3.2.4	Tear Strength, min (ISO 34, Method B, procedure A)	95 kN/m
(s)	3.2.5	Vicat Softening Temperature, min (ISO 306, 10N, 50 °C/h)	105 °C
	3.2.6	Heat Aging Performance (ISO 188, except 150 +/- 50 air changes/h, 1000 h at 100 +/- 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)	
	3.2.6.1	Tensile Strength at Break, Change (Test method per para 3.2.3)	+/- 25%
	3.2.6.2	Elongation at Break, Change (Test method per para 3.2.3)	+/- 25%
	3.2.6.3	Modulus at 100% Elongation, Change (Test method per para 3.2.3)	+/- 25%
	3.2.6.4	Hardness, Durometer A, pts Change (Test method per para 3.2.2)	+/- 5
3.3	ODOR, max (FLTM BO 131-01)		Rating 2
	or		
	(SAE J1351)		Rating 3
3.4	FOGGING (SAE J1756, 3 h at 100 °C heating, 21 °C cooling plate, post test conditioning 1 h and 16 h)		
	Fog Number, min		90
	Formation of clear film, droplets or crystals is cause for rejection.		
3.5	FLAMMABILITY (ISO 3795/SAE J369)		
	Burn Rate, max		100 mm/minute
	The specimen size required for material approval is 355 x 100 x 1.0 +/- 0.1 mm with a smooth surface.		