



THERMOPLASTIC ELASTOMER, OLEFINIC (TPV), EPDM RUBBER MODIFIED, HIGH FLOW, UV STABLE, 55 DUROMETER A HARDNESS, INTERIOR

WSS-M2D520-A1

1. SCOPE

The material defined by this specification is a thermoplastic elastomer based on high flow, UV stable, heat stabilized, vulcanized PP/EPDM.

2. APPLICATION

This specification was released originally for material used for seat belt crash locking tongue cover bumper applications.

2.1 LIMITATIONS

This material is not recommended for applications where oils, lubricants, solvents or similar hydrocarbons are encountered, temperatures greater than 100 °C nor for high compression applications under constant load because of creep deformation behavior.

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.

The approved source for this specification is Mitsubishi Chemical Performance Polymers Trexprene A55SNI-HF

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 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

IR spectra and thermograms from initial material approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. The material supplier shall ensure that all future material supplied to the specification shall produce IR spectra and thermograms that correspond to the reference standard when tested under the same conditions.

3.4 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

3.4.1 Reference Table 1 for number of samples required for each test.

Date	Action	Revisions	Rev. 00
2017 05 12	Released		

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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
Specimen C	145 x 60 x 3.2 +/- 0.2 mm
Specimen D	80 x 10 x 4.0 +/- 0.2 mm (may be cut from the center of Specimen A)
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

3.4.2 This specification is based on virgin material and does not allow the addition of recycled content (PIR/PCR).

3.4.3 Performance Criteria

Parts using this specification shall meet the following appropriate performance specification: Elastomeric Parts, Interior Performance, WSS-M9P8-C/Latest.

3.4.4 Ford Materials Engineering may request a Control Plan and Certificate of Analysis (C of A) containing lot testing requirements which must include, but are not limited to:

Hardness
Tensile Strength
Elongation

3.5 SAMPLE PREPARATION

Unless otherwise specified, all tests shall be conducted on specimens die cut from injection molded plaques, 150 x 100 x 2.0 +/- 0.2 mm. The plaques shall be molded according to ISO 294 and film gated along the upper 100 mm edge. No annealing allowed, unless specified otherwise.

These samples are anisotropic in nature, both directions of the material sample must be sampled for evaluations listed in Table 1.

3.6 APPEARANCE

3.6.1 Weathering Resistance Rating 4 min
(FLTM BO 116-01, 2406.4 kJ/m² exposure)
Use an ungrained test plaque, ISO 105-A02 / AATCC Evaluation Procedure 1)

Every week* remove the samples from the weatherometer and allow them to cool for one hour. Conduct a tactile evaluation and report any tackiness. Visually evaluate and report any spewing or other exudation.

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, chalking, wrinkling, crazing, iridescence, bloom, milkiness, separation, loss of adhesion (coating), or loss of embossment allowed (as defined in ASTM D1566).

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



- 3.6.2 Determining the Tackiness of Interior Materials Rating 4 min
(FLTM BO 061-01, Specimen C, ungrained, non-polished mold. Expose per para. 3.6.1)

Evaluate the test specimens every 526.4 until 2406.4 kJ/m².
If Rating falls below a Rating 4 at any interval this is cause for rejection.

- 3.6.3 Colorfastness To Burnt Gas Fumes Rating 4 min
(AATCC 23 or equivalent method, 168 hours at 60 °C, Specimen C, ISO 105-A02/AATCC Evaluation Procedure 1)

3.7 MATERIAL PROPERTIES

- 3.7.1 Density 0.90 – 0.92 g/cm³
(ISO 1183, Method A)
- 3.7.2 Hardness, Durometer Shore A 55+/- 5 points
(ISO 868 / ASTM D2240, 15 s dwell, 6 mm thick, piled up specimen)
- 3.7.3 Tensile Strength at Break 2.0 MPa, min
(ISO 37, Type 2 Specimen, 500 mm/minute test speed)
- 3.7.4 Elongation at Break 305%, min
(ISO 37, Type 2 Specimen, 500 mm/minute test speed)
- 3.7.5 Tensile Modulus at 100% Elongation 1.2 MPa, min
(ISO 37, Type 2 Specimen, 500 mm/minute test speed)
- 3.7.6 Tear Strength, Unnotched 12 kN/m, min
(ISO 34-01, Method B, Procedure A or ASTM D624, Die C)
- 3.7.7 Heat Aging Performance
(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)
- 3.7.7.1 Hardness, Durometer A, Change +/- 5 points
(Test Method per para 3.7.2)
- 3.7.7.2 Tensile Strength at Break, Change +/- 25% max
(Test Method per para 3.7.3)
- 3.7.7.3 Elongation at Break, Change +/- 25% max
(Test Method per para 3.7.4)
- 3.7.8 Low Temperature Brittleness No Cracking
(ISO 812, Type B Specimen, at -30 °C)