



FLEXIBLE COVERSTOCK, SLUSH MOLDABLE THERMOPLASTIC ELASTOMER (TPE), SEAMLESS INSTRUMENT PANEL

WSS-M2D519-A1

1. SCOPE

The material defined by this specification is a slush molded TPE skin that is UV stabilized, heat stabilized, and has excellent low temperature ductility used for seamless instrument panels or soft door systems.

2. APPLICATION

This specification was released originally for use as a flexible molded skin for the seamless instrument panel over foam and plastic substrates.

2.1 LIMITATIONS

- TPE is inherently incompatible with PVC. Interfaces where TPE and PVC come in contact need to be avoided.
- This material may require the use of an adhesion promotor or other special treatment to the skin surface for skin to foam adhesion.
- This material must be 100% bonded to a production assembly.
- No painting or two-toning allowed.
- No regrind is allowed.

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

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2018 06 13	Released		

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3.4.2 Performance Criteria:

Parts using this material must also meet the requirements in WSS-M15P45-C/Latest. Parts must fulfill applicable SDS/CDS requirements. If the plastic substrate is an olefin based material, the substrate must be pretreated with either adhesion promoter, flame, or plasma treatment and no slip agent should be present unless validated with the slip agent.

3.4.3 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:

Density
Hardness

3.5 SAMPLE PREPARATION

All tests shall be carried out on production materials manufactured from the production process unless correlation to a non-production process has been reviewed and approved by Ford Materials Engineering.

Unless otherwise specified, all tests shall be carried out on specimens die cut from unformed sheets per the Specimen dimensions below. Additional die cut specimens are required for some of the tests. No additional annealing is allowed. See Tables 1 and 2 for the number of samples required.

Specimens shall be as follows:

Specimen A	150 minimum x 10 x 4.0 +/- 0.2 mm (ISO 37, Specimen Type 1)
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

For appearance testing: Use an ungrained, non-polished, tool to prepare specimens for C through N gloss surfaces.

3.6 APPEARANCE

3.6.1 Color and Gloss

The color, patterns and gloss shall match the approved Corporate Design master sample.

3.6.2 Resistance to Interior Weathering Rating 4 min (FLTM BO 116-01, 3609.6kJ/m² exposure, Specimen C, AATCC Evaluation Procedure 1)

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.

3.6.2.1 Tackiness of Interior Materials after Weathering* (FLTM BO 061-01)

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



- 3.6.3 Resistance to Abrasion
(SAE J948, CS-10 wheels, 500g, 250 cycles)

The surface shall show no evidence of wear through. A slight change in gloss is acceptable and will be evaluated by Materials Engineering.

- 3.6.4 Resistance to Scuffing
(SAE J365, Scuff Head A, 250 cycles)

The surface shall show no evidence of wear through. A slight change in gloss is acceptable and will be evaluated by Materials Engineering.

- 3.6.5 Resistance to Migration Staining and Blocking Rating 5 min
(FLTM BN 103-01, AATCC Evaluation Procedure 1)

No evidence of exudation, adhesion (tackiness), separation, color transfer, staining, or flattening of the embossing when material is placed in the following positions:

Top surface to top surface
Top surface to back surface

- 3.6.6 Soiling and Cleanability Rating 3, min
(FLTM BN 112-08, AATCC Evaluation Procedure 1)

Test agents: Soil, coffee, and grease

- 3.6.7 Resistance to Window Cleaner Rating 4, min

Window cleaning solution must contain at least 1% butyl cellulose.

Test procedure: Prepare test samples by placing 2.0 ml of cleaner on the sample. A non-reactive washer may be used to control the location of the cleaner on the sample. Expose the sample at room temperature for 1 h, rinse with tap water, and dry carefully with a clean paper towel; do not rub spots. Evaluate per ISO 105-A02/AATCC Evaluation Procedure 1.

- 3.6.8 Pigment Color Change Rating 4, min
(40 hrs at 100 +/- 2 °C, AATCC Evaluation Procedure 1)

3.7 MATERIAL PROPERTIES

- 3.7.1 Density 0.85–0.95 g/cm³
(ISO 1183, Method A)

- 3.7.2 Hardness, Durometer A 70 +/- 10
(ISO 868, 15 s dwell)

- 3.7.3 Tensile Strength at Break 3.0 MPa, min
(ISO 37, Type 1, 500 mm/minute test speed)

- 3.7.3.1 Elongation at Break 300% min
(Test Method according to para 3.7.3)

- 3.7.4 Cold Flexibility at -40 °C No cracks
(180° bend over a 20 +/- 1 mm diameter mandrel, Specimen C)