



LAMINATE, THERMOPLASTIC OLEFIN (TPO) SKIN/ CROSS-LINKED POLYOLEFIN FOAM, NON-SCORE SEAMLESS PAB INSTRUMENT PANEL APPICATIONS

WSS-M98D39-A4

1. SCOPE

The materials defined by this specification are a formed assembly consisting of cross-linked polyolefin foam bonded to a TPO cover material.

2. APPLICATION

This specification was originally released for a non-score seamless PAB instrument panel application for the Eco Sport program. This laminate is positively vacuum formed and then adhesively bonded to a rigid substrate.

Parts using this specification shall meet the appropriate performance specification WSS-M15P45-C/Latest Instrument Panel and Soft Interior Components, Flexible Cover Skin Material Performance specification and the Craftmanship compression/deflection criteria per ARL 17-0229 for IP upper unless otherwise mutually agreed between Product Development and Materials Engineering.

2.1 LIMITATIONS

This material is not to be used for instrument panel applications where laser scoring of the skin is required for airbag deployment.

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 APPEARANCE

The color, pattern, finish, hand, gloss, grain, tactile effect and construction shall match the approved Corporate Design master sample.

3.3 FOAM/SKIN LAMINATE CONSTRUCTION PROPERTIES

3.3.1 Dimensions*

(Foam/skin laminate thickness)

TPO Skin	0.60 mm nominal
Cross-Linked Polyolefin Foam	2.50 mm nominal
Total	Report, mm

Date	Action	Revisions	Rev. 4
2017 05 23	Revised	See Summary of Revisions	S. Gatzek, NA
2012 08 30	Revised	See Summary of Revisions	Y. Bankowski, NA
2010 10 19	Activated		Y. Bankowski, NA

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* Skin and foam thickness may differ from the listed values based on program targets and part design; skin and foam thickness, tolerances for each layer and total thickness as specified on Engineering Document.

Measure the thickness of each layer and the total thickness of the composite at several points along the cut surface of a cross section.

3.3.2 Tensile Strength (ISO 37, Type 1/ASTM D 412, Die C, 25 mm bench marks, 5 specimens min, any direction)	1.3 MPa min
3.3.2.1 Elongation, (Test according to 3.3.2, use of an extensometer, laser or other vision system should be used to ensure accuracy)	300% min
3.3.3 Tear Strength (ISO 34, Method B, procedure (a)/ASTM D 1004, any direction)	12 N/mm min
3.3.4 Hardness, Durometer A - Skin (ISO 868 /ASTM D 2240, 15 s dwell; layer the skin specimens to a minimum thickness of 6 mm)	85 +/- 7 or as listed on the Ford ASL
3.3.5 Hardness, Durometer A – Bilaminate Composite* (ISO 868 /ASTM D 2240, 15 s dwell, test with film/foil side up; layer the composite samples to a minimum thickness of 6 mm)	Report
*Foam density will impact the overall composite hardness and may vary based on program targets and part design; composite hardness as specified on Engineering Document	
3.3.6 Peel Adhesion (Top Foil to Foam) (ISO 2411/FLTM BN 151-05, 180° peel, 300 mm/minute, any direction, test specimen must be 50 mm in width)	
3.3.6.1 Original	0.6 N/mm min or 100% foam tear
3.3.6.2 After 240 hours at 107 +/- 2 °C	0.6 N/mm min or 100% foam tear

3.4 COLOR AND APPEARANCE PROPERTIES

The following tests (para 3.4.1 – 3.4.5) need to be tested on a textured or grained top film:

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

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

- 3.4.2 Resistance to Scuffing
(SAE J365, 250 cycles)

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