



PERFORMANCE, HEADLINING, FORMED

WSS-M15P27-H

1. SCOPE

The material defined by this specification is a fully finished, unitized formed headlining assembly consisting of a face material (un-laminated or laminated with foam) and substrate layers.

2. APPLICATION

This unitized composite assembly is used as a headlining for all vehicles or as specified on the Engineering Drawing.

The following components used in the headlining system must meet the following requirements if present in the system:

- Interior Plastic Parts – WSS-M15P4-H/latest
- Integral Air Duct – WSB-M15P38-A/latest
- Label Performance – WSS-M99P41-A10/A72/latest
- Roof Systems Fabric Performance – WSS-M8P27-B1/latest
- Head Impact Countermeasures (HIC) Material:
 - Energy Absorbing Foam - WSS-M99P29-B/latest
 - Thermoformed Polypropylene – WSS-M4D1028-B/latest
- Interior NVH Material - WSS-M99P32-E1/latest
- Foam Stuffers – WSS-M99P48-A1/latest
- Wire Harness: See engineering drawing
- Washer Hose: See engineering drawing
- Electrical Modules: See engineering drawing

If the Headlining System is either being produced locally in the China market, or will end up being exported to the China market, the system must pass Interior VOC emissions as specified in the detail (DET020354-1, FSMS legacy RQT-011200-020354; IP-0163).

3. REQUIREMENTS

3.1 APPROVED SOURCES

This specification is performance based and does not have approved sources.

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.

Date	Action	Revisions	Rev. 0
2018 07 27	Released		



Documents

Rebideau, NA
Document Sharing Hub



3.3 DV/PV TEST PLAN

Specific tests may require the use of the lightest color per program PDL and all PIA (Part in Assembly) components to be included.

PEC/FEC/PV testing must be conducted in compliance with program milestones unless otherwise specified by Ford Engineering. Each substrate configuration must be tested including all fabric types as the requirement is form/shape dependent. (For example Steel Roof, M/R, Panoramic Roof, Fixed Glass Roof, etc.). If manufacturing localization occurs, each regional/global program must be tested (See table 2 for additional reference). See Table 2 for DV/PV testing.

3.4 FOGGING (PHOTOMETRIC)

(SAE J1756, 3 h at 100 °C heating, 21 °C
Cooling plate, post testing conditioning 16 h)

Fog Number 70 min

Formation of clear film, droplets or crystals is cause for rejection

For shipping, all materials or parts shall be sampled immediately after manufacture, then bagged in a zipper- or slide-sealed polyethylene (PE) bag, PE-coated aluminum bag or wrapped in aluminum foil prior to bagging. Test specimens shall be cut, then stored in a clean, open environment for 14-28 days. After 14-28 days of air exposure, the specimens shall be tested immediately or re-bagged until testing can be performed. Bagged materials or parts must be labelled on the outside of the bag with the following information, and included in the test report: supplier, contact information, product code/trade name or part number, manufacturing location, date of manufacture, shipping date, start and end dates of conditioning period and test date.

Sample shall be tested as part of a production assembly composite if it is, 100% bonded. If not 100% bonded, test each component separately. Parts for testing must be labelled with supplier and date of manufacture.

3.5 ODOR

(FLTM BO 131-03-Variant C)

Condition 1	Rating 3 max
Condition 2	Rating 3 max
Condition 3	Rating 3 max

Sample shall be tested as part of a production assembly composite if it is 100% bonded. If not 100% bonded, test each component separately.

3.6 FLAMMABILITY

(ISO 3795, Test 5 Samples)

Burn Rate 100 mm/minute max

Headliner substrate with fabric composite/non-woven shall be tested as one unit 100% fully bonded.

PIA (Part in Assembly) bolt on components must meet flammability requirements for their respective performance or material specification unless 100% bonded to the substrate, such as overhead consoles (OHC), finishers, etc.

3.7 CONSTRUCTION PROPERTIES

3.7.1 Transverse Strength MD and AMD

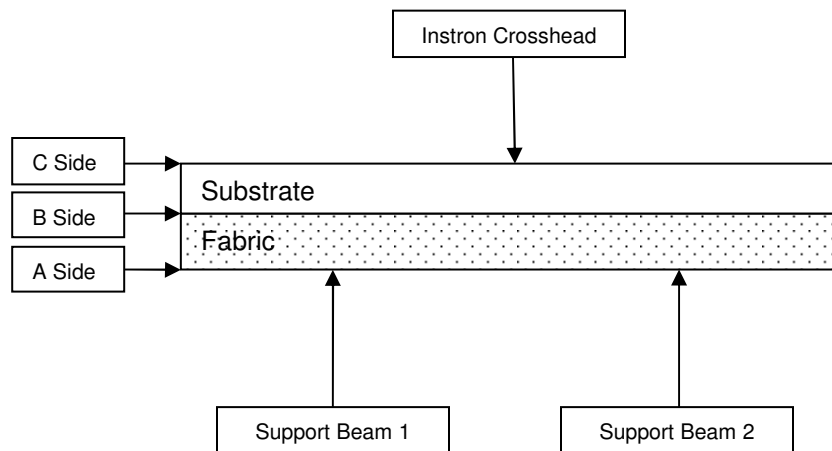
See Table 1

Use SAE J-949 for part sample and test preparation with the exception that the test is to be run until the part reaches ultimate yield. Report average of the maximum load on 5 samples in each headliner direction. Headliner substrate type, density and thickness must be reported.

Cut ten samples, five samples in the machine direction (typical, fore-aft) and 5 samples against machine direction (typical, cross car) as directed from Ford D&R engineering out of the flattest and thickest area of the formed substrate (Typically Center). More than one headliner unit may be used if needed to collect the required samples. Samples must be the same form/shape (part pedigree) and be manufactured concurrently from the same lot of material.

Samples are to be loaded C side up with the face fabric facing in the downward direction in the three point bend test fixture.

Figure 1: Specimen coupon in test fixture



Each substrate configuration must be tested including all fabric types as the requirement is form/shape dependent. (For example Steel Roof, moonroof, Panoramic Roof, Fixed Glass Roof, etc.) If manufacturing localization occurs, each regional/global program must be tested (see Table 2).

The load requirement is material dependent and will vary based on substrate type, density and thickness. The transverse strength values are per Table 1 and to be confirmed during PEC/FEC/PV testing. The value is a minimum and the nominal could be higher based on individual program requirements for Substrate Type/Process, part handling & shipping concerns, as well as installation to vehicle. The nominal value with UCL/LCL (Upper Control Limit / Lower Control Limit) capability shall be documented on the engineering drawing and SCCAF at (FEC).



Table 1

Substrate Type, Thickness and or Density	Transverse Strength		Flexural Modulus	
	F/A or MD (Fore Aft / Machine Direction)	C/C or AMD (Cross Car / Against Machine Direction)	F/A or MD	C/C or AMD
Wet PU (polyurethane) - 8mm - 25Kg ³ Foam	25 N +/-5	Report	Not Required	Not Required
PP GMT 800gsm	Report	Report	Report	Report
PP GMT 900gsm	16 N min	Report	Report	Report
PP GMT 1000gsm	17 N min	Report	Report	Report
PP GMT 1100gsm	18 N min	Report	Report	Report
PP GMT 1200gsm	20 N min	Report	Report	Report

3.7.2 Flexural Modulus

See Table 1

SAE J949, MD and AMD

Report average stiffness value on 5 samples in each direction

Headliner thickness must be reported. Run sample to ultimate yield and calculate the stiffness value based on the maximum force value. Provide the tensile curves and data points in excel to support the curves.

*PP/GMT (Polypropylene / Glass Mat Thermoplastic) type headliner only, not required for wet polyurethane substrates

3.7.3 Adhesion Strength

(FLTM BN 151-05, to be tested post environmental cycling and sag requirements testing (see section 3.8.2 for this test specification))

Each substrate configuration must be tested including all fabric types as the requirement is form dependent (for example Steel Roof, M/R, Panoramic Roof, Fixed Glass Roof, etc.). If manufacturing localization occurs each regional/global program must be tested.

Samples are to be extracted at various areas of the headliner, including the areas of grab handle pockets, coat hook pockets and the deepest draw of the headliner. Label test report accordingly by remarking the area specimens were extracted from and tested.

3.7.3.1 Cover Fabric (non-woven) directly to Substrate 6N min or Structural Failure*

3.7.3.2 Cover Fabric/Foam Composite to Substrate 6N min or Structural Failure*

3.7.3.3 Cover Fabric/Foam Composite/Backing Fabric to Substrate 6N min or Structural Failure*

3.7.3.4 Autoclave (No PP/GMT Only P/U Substrates are to be autoclaved) 1 cycle for 3 h at 105 °C. Applicable composite From 3.7.3.1 - 3.7.3.3 50% degradation from original state with a 6N min or Structural Failure*

