

PERFORMANCE, ROOF STIFFENING PAD ASSEMBLY

WSS-M15P53-A

1. SCOPE

The material defined by this specification is fully finished roof stiffening pad assembly consisting of a face material and substrate layers. Pad is sometimes referred to as a DVD pad.

2. APPLICATION

This composite assembly is used as a roof stiffening pad for passenger cars and trucks or as specified on the Engineering Drawing.

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).

3.2 PAD COMPOSITION

The roof stiffening pad composition is a sandwich construction, typically consisting of the following

- A. Polyethylene film
- B. Kraft paper
- C. Polyurethane adhesive
- D. Fiberglass
- E. Rigid polyurethane foam

Pad composition can differ from above but must be noted on product drawing, product drawing requirements take precedent over above.

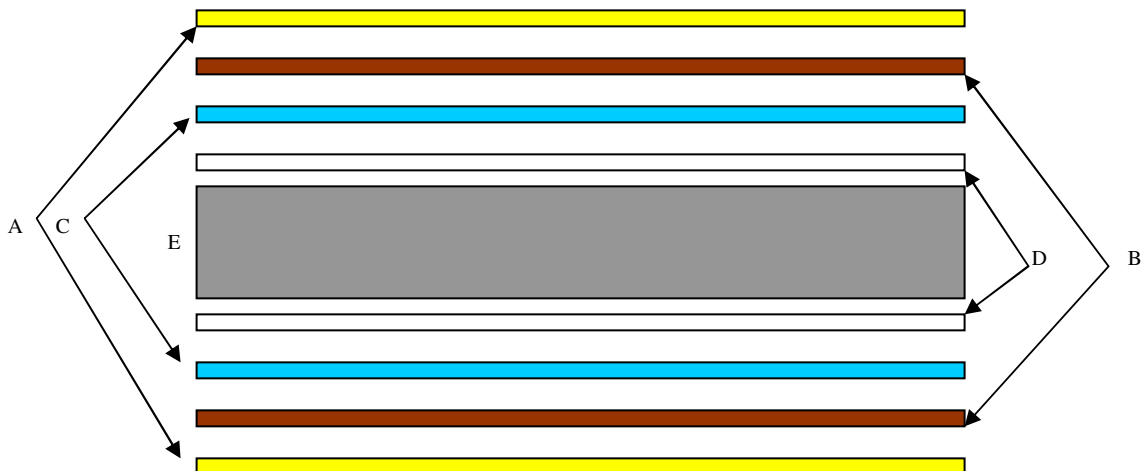


Figure 1

Date	Action	Revisions	Rev. 0
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Documents

S. Witkowski, NA

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3.3 RIGIDITY AND TEMPERATURE

3.3.1 Determination of flexural rigidity should be performed on the pad using a 3 point bending test. The test is done at room temperature, -40°C, and 110°C. Note dimensions of test fixture used, and dimensions of adhesive bead should be equal to product drawing.

Assembly stiffness	1.5 N/mm min
Assembly bonded to sheet metal stiffness	10 N/mm min

3.3.2 Lower the temperature of the pad to -40°C for 4 hours, and then raise the temperature to 110°C for 4 hours. After 24 hours at room temperature, measure the deformation of the pad.

Pad Deformation	1 mm max
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3.4 FLAMMABILITY (ISO 3795/SAE J369)

Burn Rate	100 mm/minute max
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3.5 PEEL/ADHESION

Min 350 N/m
or cohesive failure

Test Method:

Apply a 10 mm diameter bead of adhesive to a 25 x 380 mm section of reinforcing pad substrate. Immediately bond to the center of a 50 x 300 mm metal panel per substrates below and compress to 3 mm bondline thickness. Remove any excess adhesive with a spatula or other suitable tool. After complete material cure, expose the samples to the conditions indicated below. After the exposure period, condition the samples for 24 h at 23 +/- 2 °C (condition 3.5.1 does not require an additional 24 h). Clamp a 90 degree peel test fixture equipped with ball bearing track allowing for a continuous 90 degree peel angle into the jaw of a tensile testing machine. Place the test panel into the fixture. Insert the extended end of the headliner into cross head jaw. Initiate jaw separation at the rate of 50 mm/minute. Continue the test until all the pad assembly has been removed from the panel. Record the average peel force and mode of failure. Report failure mode, initial peel strength and continued peel strength.

Test 5 samples per exposure condition.

3.5.1 As received at 23 +/- 2 °C

3.5.2 Two weeks at 90 +/- 2 °C

3.5.3 Two weeks at 38 +/- 2 °C and 98 +/- 2 % relative humidity

3.5.4 Thermal cycle - 5 cycles. One cycle consists of:

4 h at 90 +/- 2 °C

4 h at 38 +/- 1 °C and 98 +/- 2 % relative humidity

16 h at - 30 +/- 1 °C

The above testing must be must be performed on the following substrate/pad combinations.

- 1) E-Coated Steel
- 2) Phosphated, non E-Coated steel, non-galvanized
- 3) Phosphated, non E-Coated steel, galvanized
- 4) Additional add on components to pad such as butyl foil pads, etc.