ENGINEERING MATERIAL SPECIFICATION

Material Name

POLYPROPYLENE (PP) FOAM, CLOSED CELL
55 kg/m3 DENSITY

Specification Number

WSK-M4D851-A

1. SCOPE

The material defined by this specification is a closed cell polypropylene foam with a nominal density of 55 kg/m3, produced by molding of expanded polypropylene beads.

2. APPLICATION

This specification was released originally for material used as headlining spacer.

3. REQUIREMENTS

3.1 STATISTICAL PROCESS

Suppliers must conform to the requirements of Ford Quality System Standard Q-101. A mutually acceptable Control Plan as described therein is required for material/source approval. Appropriate statistical tools must be used to analyze process/product data so that variation in the final product is continuously reduced.

3.2 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The IR spectra and thermograms established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce IR spectra and thermograms that correspond to the reference standard when tested under the same conditions.

3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 C and 50 +/- 5 % relative humidity for not less than 96 h prior to testing and tested under the same conditions unless otherwise specified.

3.4 APPEARANCE

The foam shall have a homogeneous medium sized cell structure with no large voids or solid spots which may impair the serviceability of the part.

Date	Release No.	Release/Revision
1992-10-01	EP00E10176308000	Revised Para 3.5.4; updated 3.7 K Gerhards
1992-08-03	EP00E10176303000	Released K Gerhards

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3.5 TEST SPECIMEN

3.5.1	Density (ISO 845/ASTM D 3574, Test A)	40 - 55 kg/m3
3.5.2	Tensile Strength, min (ISO 1798/ASTM D 3574, Test E, 50 mm bench marks, 5 specimen minimum)	350 kPa
3.5.2.1	Elongation at Break, min (Test acc. to 3.5.2)	8 %
3.5.3	Compression Set, max (ISO 1856, Method A/ASTM D 3574, Test D, ct calculation, 22 h at 23 C, 50 % deflection, 3 specimens, minimum)	46 %
3.5.4	Compression Deflection Stress (ISO 3386/1 at 40 % compression, specimen size 100 x 100 x 50 mm, test speed 100 +/- 20 mm/min)	220 - 330 kPa
3.5.5	Water Absorption, max (ASTM D 1056, subject specimen to a vacuum of 84 kPa)	30 %
3.5.6	Dimensional Stability, max	- 4 %

Test Method: A specimen approx. 300 x 300 mm in size shall be placed in a mechanical convection oven maintained at 100 +/- 2 C for 3 h. Dimensional changes shall be measured after cooling down to room temperature.

3.5.7 Resistance to Cold Impact

The material shall show no breaks, cracks or other failures.

Test Method: The specimen shall be aged for 24 h at 80 +/- 1 C and than stored for 16 h at - 30 +/- 1 C. Remove specimen from cold box, place in horizontal position and within 5 s after removal drop a steel ball of 225 +/- 5 g and approx. 38 mm in diameter onto the test specimen from a height of 300 mm. Evaluate after conditioning to room temperature.

3.5.8 Fogging (FLTM BO 116-03)

Fog Number, min	80

Formation of excessive amounts of clear film or droplets is cause for rejection.

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