



EXPANDED POLYPROPYLENE (PP) FOAM, HIGH STRENGTH, MEDIUM DENSITY CLOSED CELL, INTERIOR

WSS-M4D1041-A1

1. SCOPE

The material defined by this specification is closed cell polypropylene foam produced by compression molding of expanded polypropylene beads.

2. APPLICATION

This specification was originally released for use as a sun visor substrate.

2.1 LIMITATIONS

This does not contain UV stabilizers, long term exposure to direct sunlight will cause chalking and loss of gloss.

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 Many 4D resin specifications prior to 2011, identified certain requirements with the symbol (s), which indicated that the mean and +/- 3 sigma values were to be reported. The specification minimum, maximum or range was established using 3 sigma data. For 2011 and beyond, refer to Table 1 for number of samples required for each test.

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

Date	Action	Revisions	Rev. 00
2018 05 14	Released		



Documents

L. Rabideau, NA



- 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
Compressive Strength

3.5 SAMPLE PREPARATION

All test specimens shall be free from molded skin. Test specimen shall be cut to a thickness of 25 +/- 2 mm.

3.6 MATERIAL PROPERTIES

- | | | |
|---------|--|-------------------------|
| 3.6.1 | Density
(ISO 845/ASTM D3574,
Test A, Core density only,
50 x 50 x 25 mm specimen size minimum) | 51-60 kg/m ³ |
| 3.6.2 | Tensile Strength
(ISO 1926/ASTM D3574, Test E
50 mm bench marks,
Use ASTM D412A Die) | 1500 kPa min |
| 3.6.2.1 | Elongation at Break
(Test acc. to 3.6.2) | 2 % min |
| 3.6.2.2 | Tensile Strength after Heat Aging
(ISO 188/ASTM D573, Tensile test acc. to 3.6.2
1000 h at 80 +/- 2 °C) | +/- 25 % max |
| | After heat aging, test specimens are
to be conditioned in a desiccator for
3 - 5 h at 23 +/- 2 °C. Unaged property
values shall be determined at the time
of the aged properties | |
| 3.6.3 | Compressive Strength
(ISO 844/ASTM D 1621, 50 x 50 x 25 mm specimen) | |
| 3.6.3.1 | At 10% strain | 200 kPa min |
| 3.6.3.2 | At 25% strain | 300 kPa min |
| 3.6.3.3 | At 50% strain | 350 kPa min |
| 3.6.3.4 | At 75% strain | 700 kPa min |
| 3.6.4 | Dimensional Stability | 4 % max |

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

- 3.6.5 Short Term Environmental Cycling
(FLTM BO 040-01 Procedure A, 80 °C)