



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

INSULATOR, HEAT SHIELD, SILICONE FOAM, FIBERGLASS MAT

WSL-M99G163-A1

1. SCOPE

This specification covers a low density modified closed cell silicone foam cast directly onto silicone impregnated fiberglass mat without the use of adhesives. A second fiberglass mat may be applied to the cast foam as required. The material is self extinguishing, has low compression set and is suitable in static applications from - 55 C to 260 C.

2. APPLICATION

This specification was released originally for fuel tank heat shield applications.

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 24 h prior to testing and tested under the same conditions unless otherwise specified.

Date	Release No.	Release/Revision
1991 10 22	NL00E10054111	Revised 3.5.5, updated para 4  L. Gullen
1990 11 06	NL00E10054111	Released L. Gullen R. Fekete

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3.4 DYNAMIC MECHANICAL ANALYSIS (ASTM D 4065)

Ford Motor Company, at its option, may establish a shear modulus/damping vs. temperature curves plotted for - 50 to + 150 C temperature range for material/parts supplied to this specification. The shear modulus and damping curves established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce shear modulus and damping curves that correspond to the reference standard when tested under the same conditions.

3.5 REQUIREMENTS FOR SILICONE FOAM

3.5.1 Density, max 256 Kg/m³

Density shall be determined by cutting a 150 x 150 +/- 0.8 mm specimen and weighing it to 0.25 grams. Thickness shall be determined with a dial micrometre having minimum pressure foot diameters of 25 mm or similar averaging procedure. Density shall be calculated as follows:

$$\text{Density Kg/m}^3 = \frac{\text{weight (in grams)}}{(\text{thickness, in mm} \times 12.5)}$$

3.5.2 Tensile Strength, min 140 kPa
(ASTM D 412)

Elongation, min 60 %

3.5.3 Compression/Deflection, max 42 kPa
(25 % deflection at 2.5 mm/minute)

3.5.4 Compression Set, max 35 %
(ASTM D 395, 50 % for 22 h at 100 C)

3.5.5 Accelerated Aging Bend 180 deg, no cracks, surface
(ASTM D 573, 72 h at tackiness or charring
230 +/- 2 C)

3.5.6 Low Temperature Test, 10 %
max thickness change
(ASTM D 1056)

3.5.7 Flammability
(ISO 3795/SAE J369)

Burn Rate 100 mm/minute

3.5.8 Volatile Silicones, max 0.65 %
(FLTM AV 102-01)