



SEALANT, SILICONE RUBBER, ULTRAVIOLET AND MOISTURE CURED

WSF-M4G351-A

1. SCOPE

The material defined by this specification is a one component, self leveling silicone rubber sealant which will cure by exposure to ultraviolet radiation and moisture.

2. APPLICATION

This specification was released originally as a connector pin sealant.

3. REQUIREMENTS

3.1 QUALITY SYSTEM REQUIREMENTS

Material suppliers and part producers must conform to Quality System Requirements, QS-9000. Material specification requirements are to be used for initial qualification of materials. A Control Plan for ongoing production verification is required. This plan must be reviewed and approved by the relevant Ford Materials activity and/or Ford Supplier Technical Assistance (STA) prior to production parts submission. Appropriate statistical tools must be used to analyze process/product data and assure consistent processing of the materials.

Part producers using this material in their products, must use Ford approved materials and must conform to a process control plan which has been approved by STA and/or the relevant Materials Activity.

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.

3.4 COLOR

Translucent

3.5 DENSITY, range (ISO 1183, Method A/ASTM D 1475)

0.98 - 1.03 g/cm³

3.6 VISCOSITY, range (ASTM D 1084, Method B, Model RVT, Spindle 3, 10 rpm)

4000 - 7000 mPa.s

Date	Action	Revisions	Ver. 3
2008 08 21	Revised	Updated and revised para 3.7	G. Kowalski
1995 08 14	Revised	Updated and revised para 3.5 & 3.8	B. Gordon
1993 06 30	Released	NGA1E10269419005	B. Gordon



3.7 CURE RATE (ASTM C 679)

A 1 gram sample on a clean glass plate shall be tack free in a maximum of 12 to 20 minutes and completely cured in a maximum of 24 hours, at 23 +/- 2 C and 50 +/- 5 % relative humidity.

A 1 gram sample on a clean glass plate shall be tack free after a 5 to 20 second exposure of ultraviolet radiation (200 to 400 nm spectrum with a primary wavelength of 365 nm) at an intensity of 75 mW/cm², and completely cured after 24 h at 23 +/- 2 C and 50 +/- 5 % relative humidity.

3.8 MECHANICAL PROPERTIES

3.8.1 Sample Preparation

A cured sheet of silicone sealant shall be prepared by placing 37 +/- 0.5 grams of uncured silicone sealant in a ASTM flat sheet mold (152.4 x 152.4 x 3.18 mm) with a polyethylene lined glass sheet on either side. The assembly shall be clamped together with 4 number 1 spring clamps. Allow the assembly to rest for 10 minutes so that excess material can escape from the mold. The sample shall then be exposed to 75 mW/cm² of ultraviolet radiation (200 to 400 nm spectrum with a primary wavelength of 365 nm) for 60 seconds on each side. The silicone sheet shall then be removed from the mold and conditioned at 23 +/- 2 C and 50 +/- 5 % relative humidity for 72 h.

3.8.2 Tensile Strength, min (ISO 37/ASTM D 412, Die C)

. As cured	500 kPa
. After 24 h at 260 +/- 3 C	550 kPa

3.8.3 Elongation, min (ISO 37/ASTM D 412, Die C)

. As cured	75 %
. After 24 h at 260 +/- 3 C	10 %

3.8.4 Hardness, Durometer A, range (ISO 868/ASTM D 2240)

. As cured	28 - 38
. After 24 h at 260 +/- 3 C	36 - 42

3.9 TOTAL SILICONE VOLATILE, max (FLTM AV 102-01, report D4 through D 10 and L4 through L10)

0.5 %

3.10 SHEAR ADHESION, min (ISO 4587/ASTM D 1002)

200 kPa

The sealant shall fail cohesively when tested in lap shear. The sealant shall be bonded between brass strips which have 0.5 to 2.0 micrometers of mechanically wiped tin. The adhesive layer shall be 0.25 mm thick.