



ENGINEERING MATERIAL SPECIFICATION

SEALER, SILANE MODIFIED POLYMER, ONE COMPONENT, MOISTURE CURING, EXTERIOR

WSS-M4G450-A1

1. SCOPE

The material defined by this specification is a solvent free, one component, silane modified polymer sealer which cures at room temperature in the presence of moisture.

2. APPLICATION

This specification was released originally for sealing exterior joints of painted body panels e. g. side panels of Transit. The material is intended to be applied over freshly baked topcoat body panels.

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 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.

3.3	COLOR	Gray
3.4	SOLIDS (FLTM BV 150-10)	98 % min
3.5	ASH (FLTM BV 150-10)	60% max
3.6	WEIGHT PER VOLUME (ASTM D 816)	1.3-1.6 kg/L

The weight tolerance for any one supplier shall be +/- 0.05 kg/L, based on the recorded weight of their original approved production sample.

Date	Action	Revisions	Rev 1
2013 12 12	Revised	See Summary of Revisions	B. Witkowski, NA
2013 09 09	Released		B. Witkowski, NA

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**3.7 VISCOSITY at 23 °C**

(FLTM BV 103-01, 2 mm orifice, 2.8 bar)

3.7.1 As received

100 s max

Final approval of a specific material viscosity for production shipments shall be made by the affected manufacturing activity. In all cases, the viscosity shall be within process limits as identified on the material control plan. The viscosity tolerance for any one supplier shall be +/- 10%, based on the recorded viscosity of the original approved production sample.

**3.7.2 After aging
(14 d at 40 +/- 2 °C)**

150 s max

3.7.3 Rheology

Suppliers must submit flow characterization data to Ford Motor Company for flow modeling and process window determination. For a specified temperature range (15 to 50 °C), the requested properties include, but are not limited to, viscosity, yield stress, apparent activation energy for viscosity and apparent activation energy for yield stress. This data constitutes the referenced standard and shall be kept on file at the designated material laboratory.

3.8 FLOW RATE at 40 +/- 2 °C

(FLTM BV 153-01, Method A and B)

No sagging

Dispense material to painted panel, from cartridge using 8mm bead, do not use template, no pre-mixing required. Place in oven at 40 +/- 2 °C immediately after application and evaluate movement after tack free.

3.9 CURE RATE

- Apply a 150 x 6 mm diameter bead to production painted panel.
- Cure material at 23 +/- 2 °C and 50 +/- 5 % relative humidity.
- Test cure rate.

Tack free
Completely cured

0.5 h max
168 h max

3.10 CURED MATERIAL PROPERTIES

Apply sealer and allow to cure 168 hrs at 23 +/- 2 °C and 50 +/- 5 % relative humidity

**3.10.1 Shrinkage after curing
Test Method:**

5 % max

- Apply to a release paper two beads of material under test in dimensions of 50 x 8 x 5 mm and determine exact volume by water displacement method.
- Age test samples at 90 +/- 2 °C for 14 days.
- Determine exact volume of material under test once again and calculate volume shrinkage.