



PAINT, POWDERED, THERMOSETTING EPOXY

WSF-M70J10-A

1. SCOPE

This specification defines the performance requirements for a thermosetting epoxy powder applied by the electrostatic method to a metal part.

2. APPLICATION

This specification was released originally for coating the wiper motor. This coating does not possess the ultraviolet stability which would permit exterior decorative applications.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

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.

3.4 THERMOSETTING EPOXY POWDER CHARACTERISTICS

3.4.1 Hot Plate Gel at 160 °C 37 - 60 s

Place teaspoon of powder onto temperature controlled plate at 160 °C and begin timing. Constantly stroke the material in a back-and-forth motion with a metal spatula that was also preheated to 160 °C. Stop timer when the material becomes stiff and ceases to move. Repeat test with new sample, result must be within 10% of first test. Average of two tests must be within 37 - 60 s.

3.4.2 Glass Plate Flow 32 - 50 mm

Weigh out sample of powder equivalent to 0.55X the specific gravity of the material within 0.1 g. Press sample into solid pellet 12.7 +/- 0.05 mm in diameter by 6.00 +/- 0.13 mm high. Place glass plate of at least 75 mm long in oven, fixtured at 48° from horizontal. Preheat oven and glass plate to 150 +/- 2 °C. Open oven and place pellet at top of glass plate with enough force that pellet does not slide down plate. Allow material 10 minutes to flow, then remove plate from oven and allow to cool to room temperature. Measure distance material flowed down glass plate. Must be 32 to 50 mm. Perform test two times.

Date	Action	Revisions
2005 07 29	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.7 and 4
1998 02 17	Revised	Added para 3.4, Rev.3.5; Updated A-Vallabhanath
1993 08 31	Released	NGA1E10269519007 A-Vallabhanath



- 3.4.3 -80 Mesh Alpine Sieve, min 100%

Use appropriate U.S. Standard 200 mm diameter by 25 mm deep sieve and an Alpine Air-Jet sieve with differential pressure gauge. Measure empty sieve with cover and zero scale. Add 15.00 +/- 2.00 g of sample to sieve and place on Alpine Air-Jet sieve for 3.0 +/- 0.25 minutes with a differential pressure setting of 140 - 215 mm of water. Remove sieve and reweigh. Calculate fraction of material that passed through sieve according to: $1 - (\text{final weight} / \text{initial weight})$, convert to percentage. If percentage reading scale is available, percentage can be read directly from scale.

- 3.4.4 -140 Mesh Alpine Sieve, min 95%

Use procedure from para 3.3.3.

- 3.4.5 -325 Mesh Alpine Sieve 52 - 78%

Use procedure from para 3.3.3.

3.5 TEST PANELS

Low carbon steel panels with a light iron phosphate coating shall be electrostatically sprayed with epoxy powder and cured at 135 °C for 15 minutes.

- 3.5.1 Closed Anvil Impact Resistance

Using a Gardner Laboratory Impact Tester or equivalent, set up with a flat anvil and a 15.8 mm punch, drop a 1.81 kg weight from a height of 1.016 m onto the test panel for an impact value of 1.84 kg/m. The coating must not show any cracking or loss of adhesion.

- 3.5.2 Adhesion (FLTM BI 106-01, Method B) No flaking or chipping (Grade 0)

- 3.5.3 Salt Spray, min (FLTM BI 103-01) 240 h

- 3.5.4 Thermal Shock Resistance

Must pass the following: Place the test panel in a circulating air oven at 155 °C for 30 minutes. Remove and quench in cold water. Dry and immerse in an alcohol-dry ice solution at -75 °C for 10 minutes. Remove and inspect for signs of cracking, crazing, or loss of adhesion. Repeat above cycle 9 more times. At the end of the 10 cycles there must be no cracking, crazing, or signs of adhesion loss.

- 3.5.5 Thickness, min (ASTM D 1186) 30 micrometer

- 3.5.6 Cure

There must be no softening of coating or evidence of color rubbing off when a cloth dipped in MEK or acetone is rubbed over the surface of the resin.