

**Bureau of Materials and Physical Research**

Illinois Laboratory Test Procedure

Effective Date: January 1, 2007

**Resistance Tests of Cured Aluminum Epoxy Mastic**

**This test procedure applies to Article 1008.03(e) of the Standard Specifications for Road and Bridge Construction (January 1, 2007).**

**1.0 GENERAL**

- 1.1 This procedure covers the tests required to evaluate the fresh water resistance, salt water resistance, salt fog resistance, and weathering resistance of Aluminum Epoxy Mastic.

**2.0 REFERENCED DOCUMENTS**

- 2.1 ASTM D 609
- 2.2 ASTM B 117
- 2.3 ASTM D 1654
- 2.4 ASTM G 154
- 2.5 ASTM G 23-96, Type D
- 2.6 SSPC SP 5
- 2.7 SSPC SP 2

**3.0 SAMPLE PREPARATION**

- 3.1 Test Panel Requirements
  - 3.1.1 Test panels of steel meeting the requirements of ASTM D 609, having dimensions of 2 × 5 × 1/8 in. (50 × 125 × 3 mm).
- 3.2 Sandblast all surfaces of the test panels to a white metal finish according to SSPC -SP 5.
- 3.3 Expose the cleaned test panels to outdoor weather for 30 days or until uniform rusting occurs.
- 3.4 Hand clean the test panels with a wire brush according to SSPC-SP 2.
- 3.5 Apply one coat of aluminum epoxy mastic paint according to the manufacturer's current printed instructions.
  - 3.5.1 The dry film thickness shall be 150 microns (6 mils).
  - 3.5.2 Cure the paint as recommended by the manufacturer.
- 3.6 Test panels that must be scribed shall be prepared according to ASTM D 1654.

## 4.0 TEST PROCEDURE

4.1 Perform the following tests on one or more test panels.

4.1.1 Fresh Water Resistance.

4.1.1.1 Scribe panels down to base metal with an "X" of at least 2 in. (50 mm) legs.

4.1.1.2 Immerse in fresh tap water at  $75 \pm 5$  °F ( $24 \pm 3$  °C) for 30 days.

4.1.2 Salt Water Resistance.

4.1.2.1 Scribe panels down to base metal with an "X" of at least 2 in. (50 mm) legs.

4.1.2.2 Immerse in five percent sodium chloride at  $75 \pm 5$  °F ( $24 \pm 3$  °C).

4.1.2.3 Examine after 7, 14, and 30 days.

4.1.2.4 The sodium chloride solution shall be replaced with fresh solution after each examination.

4.1.3 Salt Fog Resistance.

4.1.3.1 Scribe panels down to base metal with an "X" of at least 2 in. (50 mm) legs.

4.1.3.2 Test panels according to ASTM B 117.

4.1.3.3 Evaluate after 1,000 hours of continuous exposure.

4.1.4 Weathering Resistance.

4.1.4.1 Test the panels in accelerated weathering according to ASTM G 154 or ASTM G 23-96.

4.1.4.1.1 ASTM G 154

4.1.4.1.1.1 Test the panels using the light and water exposure apparatus (fluorescent UV-condensation type) for 1,000 hours.

4.1.4.1.1.2 Each cycle shall consist of eight hours UV exposure at 140 °F (60 °C) followed by four hours of condensation at 104 °F (40 °C).

4.1.4.1.2 ASTM G 23-96

4.1.4.1.2.1 Type D weatherometer for 1,000 hours beginning the test at the start of the wet cycle.