

THROWING POWER TEST FOR ELECTROCOATING BATH
OF HIGH THROWING POWER

Application

This test is used to determine the ability of electrocoating materials to extend a protective film into recessed areas. The test is an extension of FLTM BI 020-02, Method "A", Throwing Power Test for Electrocoating Bath, and is applied to materials which show a throwing power of more than 80 % according to FLTM BI 020-02.

Apparatus Required

Shim Stock

Strip of .127 mm low carbon steel shim stock, Class 1 finish, phosphate coated to meet the requirements of Process Standard P 43, 367 x 13 mm. The center of a .794 mm hole is punched in 19 mm distance from one end of the strip.

Standard Gas Conduit

19 mm standard diameter, 354 mm long, the upper 19 mm of which are partly cut off to allow bolting to an electrode support (as shown in View A exploded, Figure 1) by means of an .794 mm hole, the center of which is in 13 mm distance from the upper end of the tube.

Electrode Holder

As shown in View A (exploded) Figure 1, consisting of a support rod which carries 31.75 mm square block of insulating material, which carries a 6.35 mm diameter screw, protruding on both sides of its insulating support.

Steel Test Panels

102 x 305 x .889 mm. They shall be made from cold rolled, low carbon steel body panels or equivalent, with Class 1 finish. Panels shall be phosphate coated to meet requirements of Process Standard P 43. Panels which have not been newly phosphated should be dried at 121 °C for 6 minutes prior to electrocoating to remove absorbed moisture.

Coating Tank

Cylindrical, approximately 165 x 381 mm, capacity approximately 3.78 liters.

Laboratory Stirrer

0 to 700 rpm, using 457 mm stirrer shaft with 51 mm square end single blade propeller.

Date	Action	Revisions
2001 03 13	Revised	Editorial – no technical change A. Cockman
1992 06 19		

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Power Source

A direct current power source which can be adjusted between 0 - 1000 Volt D.C. and 0 - 10 Amp.

Oven

Mechanical convection.

Plastic Panels

102 x 305 x 6.35 mm.

Adhesive Tape

38 mm wide, vinyl, electro plating, Permacel #291, New Brunswick, New Jersey or equivalent.

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.

Procedure

1. The steel strip is inserted into the steel tube and secured with a nut to the electrode holder. The lower end of the strip is cut flush with the end of the tube.
2. A test panel is secured to the other side of the electrode holder, and the electrode assembly together with a laboratory stirrer positioned in the coating tank according to Figure 1. The distance between the end of the steel pipe and the bottom of the coating tank being 25.40 mm.
3. The electrode assembly is circuited to one terminal of the power source, while the coating tank is connected with the other terminal and the desired electrical energy is applied.
4. The electrode assembly is lifted from the bath. The steel tube is cleaned in trichloroethylene and air dried for future use.
5. The test panel is finished in the desired manner and is tested for conformity with all applicable specifications for coatings of its type.
6. The steel strip is finished as required for electrocoating prime coats. The length of paint film on the steel strip is measured and recorded as throwing power (penetration).
7. The ends of the steel strip are affixed to a plastic panel by means of adhesive tape, so that not more than 6.35 mm on the upper and lower end of the strip are covered. The assembly is then subjected to a salt spray test (usually for 240^h) with the painted end of the strip up. The uncorroded length of the strip is measured in inches, from the fully coated end to the beginning of rust accumulation and recorded as corrosion protection.

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.