STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS OF TEST FOR METALLIC AND RELATED COATINGS

PART 3 — CORROSION AND RELATED PROPERTY TESTS

AS 2331.3.7—1981
CORRODKOTE TEST (CORR TEST)

1 SCOPE. This standard sets out the method for the corrodkote test for the assessment of metallic coatings on metallic substrates.

NOTES:
1. The method does not specify the type of test item, the number of cycles or the assessment criteria. Such details are normally specified in the relevant product standard or determined by agreement.
2. Results obtained from the test should not be regarded as having a direct correlation with all environments in which items may be exposed or the relative corrosion resistance of different coatings.

2 APPLICATION. The method is suitable for the testing of copper-nickel-chromium and nickel-chromium coatings on metallic substrates.

3 PRINCIPLE. A corrosive slurry is applied to test pieces and allowed to dry. Coated test pieces are then exposed to constant conditions of humidity and temperature for a specified time following which the slurry is removed and if corrosion is present test pieces are re-exposed to humidity to redevelop corrosion prior to assessment.

Corrosion or deterioration of the coating and/or of the substrate is used to assess the quality of the coating against the conditions of the test.

4 APPARATUS. The following apparatus is required:

(a) *Humidity cabinet.* The humidity cabinet and accessories shall be made of, or lined with material resistant to the test temperature and to corrosion by water.

Materials of construction shall not affect the results of the test.

The upper parts of the cabinet shall be so shaped that drops of condensed water do not drop onto test pieces.

(b) *Test piece supports.* Test piece supports shall be made of inert non-metallic material such as ceramic, glass, plastics, or suitably coated wood.

Materials used for suspending test pieces shall be made of synthetic fibre, cotton thread or other inert insulating material. Metallic supports shall not be used.

(c) *Humidity equipment.* The cabinet shall be equipped with means to maintain the relative humidity within the chamber at not less than 80 percent or greater than 90 percent at a temperature of 38 ±1°C.

The controlling element shall be placed either within the cabinet at a distance not less than 100 mm from the walls or within a water jacket surrounding the cabinet. The temperature within the cabinet shall be capable of being read from outside the cabinet.

The cabinet shall be fitted with wet and dry bulb controlling thermometers and air circulation so as to maintain the relative humidity at the specified level.

5 TEST REAGENT. The corrodkote slurry shall be prepared just before use by one of the following methods*:

(a) Dissolve 0.035 of cupric nitrate ($Cu(NO_3)_2.3H_2O$), 0.165 g of ferric chloride ($FeCl_3.6H_20$) and 1.0 g of ammonium chloride (NH_4Cl) in 50.0 mL of distilled water in a glass beaker.

Add 30 g of water-washed ceramic-grade kaolin slowly stirring continuously with a glass stirring rod.

Allow the slurry to stand for about 2 min prior to application to allow the kaolin to become saturated with the active reagents.

(b) Dissolve 2.5 g of cupric nitrate ($Cu(NO_3)_2.3H_2O$) in distilled water in a volumetric flask and make up to 500 mL.

Dissolve 2.50 g of ferric chloride ($FeCl_3.6H_2O$) in distilled water in a second volumetric flask and make up to 500 mL.

Dissolve 50.0 g of ammonium chloride (NH_4Cl) in distilled water in a third volumetric flask and make up to 500 mL.

Transfer 7.0 mL of cupric nitrate solution, 33.0 mL of ferric chloride solution and 10.0 mL of ammonium chloride solution to a glass beaker and add 30 g of water-washed ceramic-grade kaolin slowly, stirring continuously with a glass stirring rod.

Allow the slurry to stand for about 2 min prior to application to allow the kaolin to become saturated with active reagents.

NOTE: As ferric chloride solutions become unstable with time and sunlight, they should be stored in the dark and discarded when 2 weeks old.

6 PREPARATION OF TEST PIECES AND/OR TEST SPECIMENS.

6.1 General. The number and type of test pieces or test specimens, their shape and dimensions shall be selected according to the product standard.

NOTES:
1. When not specified, details concerning test pieces or test specimens are a matter for agreement between the purchaser and the supplier.

* Use only analytical grade reagents.