Transport Roads & Maritime Services

NSW GOVERNMENT

Test method T1016

Quality and uniformity of zinc coating

NOVEMBER 2012

Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		Reformatted and Revision Summary Added	D. Dash	June 2001
Ed 2/ Rev 0	All	Reformatted RMS template	J Friedrich	November 2012

Note that Roads and Maritime Services is hereafter referred to as 'RMS'.

The most recent revision to Test method T1016 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T1016

Quality and uniformity of zinc coating

1. Scope

This test method sets out the procedure for testing the quality and uniformity of zinc coating by the Preece Dip Method. The test method is identical with that set out in the British Standard 443:1969.

2. Reagents

(a) Copper Sulphate Solution. Dissolve approximately 36 g of crystalline copper sulphate ($CuSO_4 5H_2O$) in each 100 mL of distiled water. The water may be heated to aid solution of this crystal, but if heated the solution must be allowed to cool before neutralising.

(b) Shake the above solution with an excess of cupric hydroxide (approximately 1 g of cupric hydroxide per litre of the solution) and allow to stand for at least 24 hours before filtering or decanting the solution from the sediment. About 0.7 g of cupric oxide per litre of solution may be used as an alternative provided the solution is allowed to stand for 48 hours before filtering.

Note

(i) The density of the test solution should be 1.186 g/mL at 18oC and should be adjusted to this figure.

(ii) Discard the solution and replace with fresh solution after six samples have been tested.

3. Apparatus

A glass container of internal diameter not less than 50 mm for wires of 2.8 mm diameter and smaller, or 75 mm diameter for larger wires.

4. Test Pieces

(a) Select an undamaged test piece not less than 150 mm in length. The test piece may be hand straightened.

(b) Clean the test piece with a volatile organic solvent (trichloroethylene) and dry with a clean soft cloth.

5. Procedure

(a) Fill the container with neutralised solution at a temperature of 18ºC and maintain this temperature within the range of 18º ± 2ºC for the duration of the test.

(b) Place a maximum of three test pieces in the solution so that the pieces do not touch each other and are not disturbed. Do not agitate the solution.

(c) Subject the test pieces to successive dips of exactly one minute according to Table A. After each dip rinse immediately in clean cloth. If running water is not available change the rinse water frequently, to prevent visible contamination with copper sulphate.

(d) Dip for half a minute where specified in the Table A after the completion of all one minute dip.

6. Examination

After the specified number of dips, rinse and wipe each test piece dry. Examine each specimen for any adherence of bright metallic copper on the steel. Ignore any deposit of copper within 25 mm of the cut end.

7. Interpretation and Reporting

The wire surface should not show any bright adherent copper deposit after the number of dips specified in the Table A. Report the presence or absence of adherent copper a "Fail" or "Pass

TABLE A

Dipping of Samples to Determine
Quality and Uniformity of Zinc Coating

Diameter of Wire		Wire of tensile strength below 540 MPa			Wire of tensile strength 540 MPa and above		
Over	Up to and including	Mass of Coating g/m²	Number of Dips		Mass of Coating g/m²	Number of Dips	
			Minute	Half Minute		Minute	Half Minute
229 μm	330 μm	45.77	no test		45.77	no test	
330 μm	401 μm	61.03	no test		61.03	no test	
401 μm	457 μm	76.29	–	1	76.29	–	1
457 μm	533 μm	90.02	1	–	90.02	1	–
533 μm	630 μm	103.75	1	–	103.75	1	–
630 μm	749 μm	119.01	1	–	119.01	1	–
749 μm	851 μm	134.27	1	1	134.27	1	1
851 μm	950 μm	149.52	1	1	140.36	1	1
950 μm	1.059 mm	170.88	2	–	149.52	1	1
1.059 mm	1.181 mm	186.14	2	–	161.73	2	–
1.181 mm	1.321 mm	202.93	2	–	170.88	2	–
1.321 mm	1.549 mm	215.13	2	–	180.04	2	–
1.549 mm	1.803 mm	228.86	2	1	202.93	2	–
1.803 mm	2.235 mm	241.07	3	–	215.13	2	–
2.235 mm	2.794 mm	259.38	3	–	228.86	2	1
2.794 mm	3.150 mm	274.64	3	1	241.07	3	–
3.150 mm	3.599 mm	274.64	3	1	250.22	3	–
3.599 mm	4.242 mm	289.89	3	1	259.38	3	–
4.242 mm	5.004 mm	289.89	3	1	274.64	3	1
5.004 mm	8.001 mm	289.89	3	1	289.89	3	1
8.001 mm	10.008 mm	305.15	4	–	305.15	4	–