STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS FOR TESTING ANODIC OXIDATION COATINGS ON ALUMINIUM AND ALUMINIUM ALLOYS

PART 4—REFLECTIVITY TESTS

AS 2039.4.4

INFRARED REFLECTIVITY TEST OF ANODIC OXIDATION COATINGS

1 SCOPE. This standard describes the procedure for testing the reflectivity of anodic oxidation coatings on aluminium and aluminium alloys by means of radiated infrared heat.

2 PRINCIPLE. Heat is reflected from surfaces of anodic oxidation coatings. Measurement of radiation is used as a means of assessing reflectivity.

3 APPARATUS. The apparatus provides heating curves of the test piece with either the blackened or the unblackened side facing the radition source. These two curves are similar in shape (assuming Newton's Law of Cooling); and provided that the radiation intensity is the same for both their ordinates would everwhere be in the ratio of the absorption factors of the two sides of the test piece. Since that of the black side is known, that of the 'test' side can be calculated.

Determination of the complete curves would take a considerable time, and inaccuracies could arise due to extraneous thermal distrubrances and other effects. Therefore, the above system using a series of short time observations, has been selected on the grounds of simplicity, and for the general avoidance of several of the most frequent causes of error.

4 PREPARATION OF TEST PIECE. The test piece shall consist of a sample of flat sheet, preferably of thickness approximately 0.90 mm and size 25 mm to 75 mm square. On the face opposite to that to be tested a thermo-junction of fine wires of about 0.125 mm of copper and constantan (or other suitable materials) shall be attached with a suitable adhesive in the closest possible thermal contact with the test piece. The thermo-junction may be conveniently attached near one corner of the test piece. The face to which the junction is attached shall then be uniformly blackened with an optical

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