STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS FOR TESTING ANODIC OXIDATION COATINGS ON ALUMINIUM AND ALUMINIUM ALLOYS

PART 1—THICKNESS AND RELATED PROPERTY TESTS

AS 2039.1.2

LOCAL THICKNESS OF ANODIC OXIDATION COATINGS BY OPTICAL SPLIT-BEAM MICROSCOPE

1 SCOPE. This standard describes procedures for measuring the local thickness of anodic oxidation coatings on aluminium and aluminium alloys by means of an optical split-beam microscope.

2 APPLICATION. The method is suitable for the testing of flat, curved and irregularly shaped surfaces.

3 PRINCIPLE. A light beam is projected onto the surface of the anodic oxidation coating at an angle of 45 degrees, as shown in Fig. 1. Part of the beam is reflected from the surface of the anodic coating; the other part penetrates the coating and is reflected from the oxide/metal-substrate interface. The distance which separates the two images observed in the eyepiece of the microscope is proportional to the thickness of the anodic coating; it can be measured by means of a vernier screw which controls a calibrated graticule.

4 APPARATUS. A suitable split-beam microscope fitted with facilities for measurements within an accuracy of ± 1 percent.

5 PREPARATION OF TEST PIECES. Test pieces shall be free of foreign matter and if necessary shall be degreased in a solvent which does not attack the coating.

6 PROCEDURE. The local thickness shall be measured by one of the procedures given below:

(a) *For transparent or lightly dyed coatings.*

(i) Calibrate the instrument in accordance with the manufacturer's instructions.

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