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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 2106

SURFACE TREATMENT OF METALS

ANODISATION (ANODIC OXIDATION) OF ALUMINIUM AND ITS ALLOYS

MEASUREMENT OF THE MASS OF THE OXIDE COATINGS

GRAVIMETRIC METHOD

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 2106, *Surface treatment of metals – Anodisation (anodic oxidation) of aluminium and its alloys – Measurement of the mass of the oxide coatings – Gravimetric method,* was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys,* the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question led to the adoption of Draft ISO Recommendation No. 2106, which was circulated to all the ISO Member Bodies for enquiry in October 1970. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	Italy	Switzerland
Belgium	Netherlands	Thailand
Canada	New Zealand	Turkey
Finland	Norway	U.A.R.
France	Poland	United Kingdom
Germany	Portugal	U.S.A.
Hungary	South Africa, Rep. of	U.S.S.R.
India	Spain	
Israel	Sweden	

The following Member Body opposed the approval of the Draft :

Japan

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

ISO Recommendation | R 2106 | July 1971

SURFACE TREATMENT OF METALS

ANODISATION (ANODIC OXIDATION) OF ALUMINIUM AND ITS ALLOYS

MEASUREMENT OF THE MASS OF THE OXIDE COATINGS

GRAVIMETRIC METHOD

1. SCOPE

This ISO Recommendation describes a gravimetric method of measuring the mass of the oxide coatings obtained by anodisation (anodic oxidation) of aluminium and its alloys.

2. FIELD OF APPLICATION

This method is applicable to all oxide coatings formed by anodising aluminium and its alloys, either cast or wrought. This method is suitable for most aluminium alloys except those in which the copper content is greater than 6 %.

If the thickness is known with sufficient precision*, measurement of the mass of the coating enables its apparent density to be determined.

Inversely, if the conditions of application of the coating, or its density, are known, the determination of the mass can provide an approximate measurement of the thickness.

3. PRINCIPLE

Dissolution of the anodised coatings on the aluminium without significantly attacking the basis metal, using a mixture of phosphoric acid and chromium trioxide, the concentration of which is shown below.

Determination of the mass of the oxide coating by weighing the sample, before and after dissolution. This mass is related to the unit area covered by the coating and is generally expressed in milligrammes per square decimetre.

This is a destructive test.

4. REAGENTS

Phospho-chromic solution, prepared as follows :

(*a*) *Phosphoric acid* (ρ_{20} = 1.7 g/ml) : 35 ml

(*b*) *Crystallised chromium trioxide* : 20 g

(*c*) *Distilled water* : to make up to 1 litre.

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* Methods described in ISO Recommendation R 2128, *Surface treatment of metals – Anodisation (anodic oxidation) of aluminium and its alloys – Measurement of thickness of oxide coatings – Non-destructive measurement by light section microscope.*