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Anodizing of aluminium and its alloys — Check for continuity of thin anodic oxidation coatings — Copper sulfate test

Anodisation de l'aluminium et de ses alliages — Contrôle de la continuité des couches anodiques minces — Essai au sulfate de cuivre

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 2085 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 2, *Organic and anodic oxidation coatings on aluminium*.

This second edition cancels and replaces the first edition (ISO 2085:1976), which has been technically revised.

Anodizing of aluminium and its alloys — Check for continuity of thin anodic oxidation coatings — Copper sulfate test

1 Scope

This International Standard specifies a method for checking the continuity of thin anodic oxidation coatings on aluminium and its alloys by a copper sulfate contact test.

The use of this method is limited to anodic oxidation coatings of thickness less than 5 µm, or coatings that have been deformed.

NOTE The method described enables a rapid check to be made for the continuity of a thin coating of aluminium oxidation on aluminium and its alloys. In cases of doubt regarding a visible fault on the surface of a coating, the use of this method makes it possible to verify whether the fault corresponds to a local gap in the coating which exposes bare metal.

2 Principle

Drops of copper sulfate reagent are placed on surface areas of about 100 mm^2, chosen at will on the test pieces, avoiding the anodizing contact areas. If the area includes points where the metal is either bare or poorly covered, chemical deposition of copper takes place on the aluminium, accompanied by a release of gas. The drops of applied reagent can be examined immediately upon application, either with the naked eye or with a magnifying glass, for the release of gas from points where the metal is bare, which is almost instantaneous. After the test, black and/or dark reddish spots can be seen where the coating is not continuous.

3 Reagents

3.1 Copper sulfate solution, prepared as follows:

— copper(II) sulfate pentahydrate, ($CuSO_4 \cdot 5H_2O$): 20 g;

— hydrochloric acid (ρ_{20} = 1,18 g/ml): 20 ml;

— distilled water or deionized water: make up to 1 000 ml.

4 Procedure

Carry out the test at room temperature.

Remove all grease from the test piece. Mark out a test area of approximately 100 mm^2 on a horizontal part of the test piece, using a wax crayon or a rapidly drying lacquer to delineate the test area, leaving the test area itself unmasked.

Cover the test area with the reagent (3.1), using approximately four drops. Leave the reagent in contact with the surface for 5 min, noting any release of gas, then rinse the area with clean water. Examine the surface and count the number of black and/or dark reddish spots per 100 mm^2.

NOTE For a more quantitative measurement, the average diameter of the black and/or dark reddish spots can also be estimated.

5 Expression of results

Record the number of black and/or dark reddish spots per 100 mm^2 for each area examined and, if appropriate, their average diameter.

6 Test report

The test report shall include at least the following information:

a) a reference to this International Standard (ISO 2085:2010);

b) the type and identification of the product tested;

c) the results of the test (see Clause 5);

d) anything unusual noticed during the determination;

e) the date of the test.

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