
INTERNATIONAL STANDARD



2085

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Anodizing of aluminium and its alloys — Check of continuity of thin anodic oxide coatings — Copper sulphate test

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

First edition — 1976-11-01

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UDC 669.71 : 621.794.61 : 620.1

Ref. No. ISO 2085-1976 (E)

Descriptors : metal finishing, anodizing, anodic coatings, aluminium, aluminium alloys, tests, continuity tests.

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2085 was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*. It was submitted directly to the ISO Council, in accordance with clause 6.12.1 of the Directives for the technical work of ISO.

This International Standard cancels and replaces ISO Recommendation R 2085-1971, which had been approved by the Member Bodies of the following countries :

Belgium	Iran	South Africa, Rep. of
Canada	Israel	Spain
Czechoslovakia	Italy	Sweden
Denmark	Japan	Switzerland
Egypt, Arab Rep. of	Netherlands	Thailand
Finland	New Zealand	United Kingdom
France	Norway	U.S.A.
Germany	Poland	U.S.S.R.
Greece	Portugal	
India	Romania	

No Member Body had expressed disapproval of the document.

Anodizing of aluminium and its alloys – Check of continuity of thin anodic oxide coatings – Copper sulphate test

1 SCOPE

This International Standard specifies a method of checking, by the copper sulphate test, the continuity of thin anodic oxide coatings on aluminium and its alloys.

2 FIELD OF APPLICATION

The copper sulphate test enables a rapid check to be made of the continuity of a thin coating of aluminium oxide on aluminium and its alloys, i.e., in case of doubt regarding the presence of a visible fault on the surface of the coating, it makes it possible to verify whether such a fault corresponds to a local gap in the coating (revealing bare metal).

The use of this method is limited to thin oxide coatings (less than 5 μm thickness).

3 PRINCIPLE

The check is carried out on surface areas of about 100 mm², chosen at will on the pieces, apart from the points of feed-in of the current. If the area includes points where the metal is either bare or poorly covered, chemical displacement of the copper takes place on the aluminium, accompanied by a release of gas. After the test, therefore, black spots can be seen where the coating is not continuous.

It is possible to examine the drop of the reagent which is applied, either with the naked eye or with a magnifying glass, immediately upon its application; the release of gas is almost instantaneous from points where the metal is bare.

4 REAGENT

Use a reagent of the following composition :

- | | |
|---|----------|
| – copper(II) sulphate pentahydrate
($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) : | 20 g |
| – hydrochloric acid, ρ 1,18 g/ml : | 20 ml |
| – distilled water : | 1 000 ml |

5 PROCEDURE

Remove all grease from the test pieces, by vapour degreasing. Mark out an area of about 100 mm² on a horizontal part using a wax crayon. Alternatively, use a rapidly drying lacquer to delineate the test area, leaving the test area itself unlacquered. Cover the area thus defined with four drops of the reagent. Leave the solution in contact with the surface for 5 min.

The room temperature shall be 20 ± 5 °C.

6 EXPRESSION OF RESULTS

After contact for 5 min, examine the surface and count the number of black spots per 100 mm². For a more quantitative measurement, the average diameter of the black spots can also be estimated.