



Anodizing of aluminium and its alloys — Assessment of sealing quality by measurement of the loss of mass after immersion in acid solution

Anodisation de l'aluminium et de ses alliages — Contrôle du colmatage par mesurage de la perte de masse après immersion en solution acide

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To be withdrawn

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 2932 was developed by Technical Committee ISO/TC 79, *Light metals and their alloys*, and was circulated to the member bodies in April 1978.

It has been approved by the member bodies of the following countries :

Australia	Italy	Sweden
Austria	Japan	Switzerland
Canada	Mexico	Turkey
Czechoslovakia	Norway	United Kingdom
Egypt, Arab Rep. of	Poland	USSR
France	Romania	Yugoslavia
Germany, F.R.	South Africa, Rep. of	
India	Spain	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Netherlands
USA

This second edition cancels and replaces the first edition (i.e. ISO 2932-1973).

Anodizing of aluminium and its alloys — Assessment of sealing quality by measurement of the loss of mass after immersion in acid solution

1 Scope

This International Standard specifies two methods for assessing the sealing quality of anodic oxide coatings on aluminium and aluminium alloys by measurement of the loss of mass after immersion in sodium acetate/acetic acid solution or in acidified sodium sulphite solution.

2 Field of application

The methods are applicable to anodic coatings intended for exposure to the weather, or for protective purposes in corrosive media, or where resistance to staining is important.

The methods are not applicable to :

- unsealed coatings serving as a key for impregnating processes, paints or lacquers;
- hard anodic coatings used mainly in engineering applications and normally not sealed;
- anodic coatings that have undergone a treatment to render them hydrophobic (for example lacquering);
- anodic coatings treated in dichromate solutions only.

3 References

ISO 2143, *Anodizing of aluminium and its alloys — Estimation of loss of absorptive power — Dye spot test with prior acid treatment.*¹⁾

ISO 2931, *Anodizing of aluminium and its alloys — Assessment of quality of sealed anodic oxide coatings by measurement of admittance or impedance.*

ISO 3210, *Anodizing of aluminium and its alloys — Assessment of sealing quality by measurement of the loss of mass after immersion in phosphoric-chromic acid solution.*

4 Principle

The test is based on the observation that an unsealed anodic coating of aluminium oxide is rapidly dissolved in the specified acid media, whereas a well sealed coating of aluminium oxide withstands long immersion without significant attack.

The methods are destructive and may serve as reference methods in cases of doubt or dispute concerning the results of the test of loss for absorptive power (see ISO 2143) and the measurement of admittance or impedance (see ISO 2931).

The reproducibility is improved by the use of a nitric acid predip.

5 Reagents

The reagents used shall be of recognized analytical grade, and, unless otherwise specified, the water used shall be distilled water or water of equivalent purity.

5.1 Nitric acid, 50 % (V/V) solution

Dilute concentrated nitric acid, $\rho_{20} = 1,42$ g/ml, with an approximately equal volume of water.

5.2 Sodium acetate/acetic acid solution, of pH 2,3 to 2,5

Dissolve 0,5 g of sodium acetate in 100 ml of glacial acetic acid and dilute to 1 000 ml with water. It is recommended that this solution is renewed after each test.

5.3 Acidified sodium sulphite solution, of pH 2,5

Dissolve 10 g of anhydrous sodium sulphite in water and dilute to 1 000 ml. Add glacial acetic acid until the pH is between 3,6 and 3,8 then add 25 % (m/m) sulphuric acid solution until the pH is 2,5 at room temperature. It is recommended that this solution is renewed after each test.

1) At present at the stage of draft. (Revision of ISO/R 2143-1971.)