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

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FOREWORD

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It has been approved by the Member Bodies of the following countries :

Australia	Hungary	Switzerland
Austria	India	Thailand
Belgium	Japan	Turkey
Canada	Poland	United Kingdom
Czechoslovakia	Romania	U.S.A.
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France	Spain	
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No Member Body expressed disapproval of the document.

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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 a method for assessing the sealing quality of anodic oxide coatings on aluminium and aluminium alloys by measurement of the loss of mass after immersion in acid solution.

2 FIELD OF APPLICATION

The method is applicable to oxide coatings intended for exposure to the weather, or used as a protection in acid medium.

The method is not applicable to :

— unsealed coatings serving as a key for impregnating processes, paints or lacquers;

— coatings which have undergone special finishing (impregnation, lacquering, etc.), in particular, sealing in a bichromate solution of concentration greater than 10 g/l.

3 REFERENCE

ISO/R 2143, *Surface treatment of metals — Anodization of aluminium and its alloys — Estimation of the loss of absorptive power by colorant drop test with prior acid treatment.*

4 PRINCIPLE

The tests are based on the observation that an unsealed coating of aluminium oxide is rapidly dissolved in an acid medium, whereas a perfectly sealed coating of aluminium oxide withstands long immersion without appreciable attack, due to the characteristics of the film of aluminium oxide monohydrate formed during the sealing process.

The method is destructive and can serve as a reference method in case of dispute regarding the results of the tests of loss of absorptive power (see ISO/R 2143).

5 PROCEDURE

5.1 Using a boiling acetic acid solution

Carry out the test in the following solution :

— glacial acetic acid :	100 ml
— sodium acetate :	0,5 g
— distilled or deionized water :	to make up to 1 l
— pH :	2,3 to 2,5 (the acetate acts as a buffer).

It is recommended that the solution be renewed after each test.

The surface area of the immersed sample shall not exceed 3 dm^2 per litre of solution.

Measure the total surface area of the anodized sample, without taking into account the cut edges or any other areas which are not anodized. The solution attacks bare metal only slightly, and this loss of mass does not exceed 0,05 mg/cm^2 under the conditions of test. Therefore no account is taken of bare areas when these do not exceed 5 % of the total surface area of the sample.

If possible, provide a surface area of 1 dm^2 or approaching this.

Remove any finger-prints from the specimen to be tested by rubbing with a dry cloth. (If samples are heavily finger-marked or at all greasy, wipe them over with a suitable organic solvent.)

Weigh the sample to the nearest 1 mg.

Immerse the sample for 15 min in the above-mentioned solution, maintained at boiling point.

Rinse the sample in distilled or deionized water, dry and reweigh.