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First edition
1995-10-15

Corrosion of metals and alloys — Determination of resistance to intergranular corrosion of solution heat-treatable aluminium alloys

*Corrosion des métaux et alliages — Détermination de la résistance à la
corrosion intergranulaire des alliages d'aluminium aptes au traitement
thermique de mise en solution*



Reference number
ISO 11846:1995(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

International Standard ISO 11846 was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

Annex A of this International Standard is for information only.

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International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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Corrosion of metals and alloys — Determination of resistance to intergranular corrosion of solution heat-treatable aluminium alloys

1 Scope

1.1 This International Standard specifies the methods of intergranular corrosion testing for solution heat-treatable aluminium alloys without protective coatings.

The sensitivity of solution heat-treatable aluminium alloys to intergranular corrosion is a function of the alloy chemical composition, method of manufacturing, solution heat treatment, quench treatment and artificial precipitation hardening (ageing) treatment.

In the naturally aged condition, the sensitivity of solution heat-treatable aluminium alloys to intergranular corrosion is a function primarily of the rate of cooling during quenching over a critical temperature range.

1.2 This International Standard is applicable to cast and wrought heat-treatable aluminium alloys in the form of castings, forgings, plates, sheets, extrusions and semi-finished or finished parts, in order to carry out comparative assessment of alloys of different grades and thickness depending on their chemical composition and other factors, and also to check the thermal processing quality of the tested materials.

The test results provide information to determine the intergranular corrosion resistance and thermal processing quality of the tested materials.

1.3 The test results cannot be regarded as absolute, because they are not applicable to all environments that can be met in service. They are best used in a relative manner, to compare the intergranular corrosion resistance of various heats of solution heat-treatable aluminium alloys.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*.

ISO 8044:1989, *Corrosion of metals and alloys — Vocabulary*.

ISO 8407:1991, *Corrosion of metals and alloys — Removal of corrosion products from corrosion test specimens*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 8044 apply.

4 Test specimens

4.1 Sampling

Sampling should be carried out in such a manner as to provide specimens from the most typical areas of the material or the part being tested.

When controlling solution heat treatment, samples are taken from that part of the semi-finished product where cooling rates during quenching are the lowest.