
**Aerospace — Anodic treatment
of titanium and titanium alloys —
Sulfuric acid process**

*Aéronautique et espace — Traitement anodique du titane et de ses
alliages — Traitement à l'acide sulfurique*



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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 18, *Materials*.

This second edition cancels and replaces the first edition (ISO 8080:1985), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the solution temperature has been changed from $(21 \pm 2)^\circ\text{C}$ to $(20 \pm 5)^\circ\text{C}$ (see [4.1.3](#));
- the use of alternative chemical products for the pickling solution has been allowed (see [4.1.7](#));
- higher duration for etching has been allowed (see [4.2.5](#));
- an alternative mechanical activation has been allowed (see [4.2.6](#));
- voltage cycle has been provided only as a recommendation (see [4.3.1](#)).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Aerospace — Anodic treatment of titanium and titanium alloys — Sulfuric acid process

1 Scope

This document specifies the requirements for producing and testing an unsealed anodic coating on titanium and titanium alloys. The anodic coating is produced by the sulfuric acid process.

The coating is used with solid film lubricants for protection of titanium fasteners against galling, for limited protection of less noble metals against galvanic corrosion when in contact with titanium or for other approved uses.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Technical requirements

4.1 Process details

4.1.1 The anodizing solution shall consist of technical grade sulfuric acid in water with a nominal composition in the range from 200 g/l to 400 g/l of H_2SO_4 . The solution shall be maintained at a composition within $\pm 10\%$ of the nominal composition chosen. The chloride content, measured as NaCl, shall not exceed 0,2 g/l. Provided agreement is obtained from the purchaser, the chemical composition of the solution may be changed if the coating obtained meets all other requirements of this document.

4.1.2 The dissolved metal content of the solution, calculated as titanium, shall not exceed 20 g/l.

4.1.3 The solution shall be used at a temperature of $(20 \pm 5)^\circ\text{C}$. The temperature control equipment shall be capable of maintaining the solution temperature within $\pm 5^\circ\text{C}$ of the control set point.

4.1.4 The solution shall be contained either in a corrosion resistant steel tank or a steel tank lined with a suitable acid resistant material. Except in cases where tanks are lead-lined, lined tanks require auxiliary cathode plates made from a material which will not contaminate the solution.

4.1.5 A variable direct current (v.d.c.) power source and associated controls and instrumentation for reading applied voltage and current are required.

4.1.6 All fixtures, such as wire, hooks, clamps and racks used to suspend the parts, shall be made from titanium or titanium alloy.