
International Standard



8081

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Aerospace process — Chemical conversion coating for aluminium alloys — General purpose

Procédés de traitement dans l'industrie aéronautique — Revêtement par conversion chimique des alliages d'aluminium — Utilisation courante

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Foreword

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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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8081 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

Aerospace process — Chemical conversion coating for aluminium alloys — General purpose

1 Scope and field of application

This International Standard specifies the requirements for producing and testing a general purpose chemical conversion coating on aluminium alloys.

The chemical conversion coating specified in this International Standard is used in the manufacture of aerospace products in order to improve paint adhesion and resistance to corrosion. This process may also be used for touch-up of anodic coatings.

2 References

ISO 1519, *Paints and varnishes — Bend test (cylindrical mandrel)*.

ISO 3768, *Metallic coatings — Neutral salt spray test (NSS test)*.

ISO 3892, *Conversion coatings on metallic materials — Determination of coating mass per unit area — Gravimetric methods*.

ISO 8076, *Aerospace process — Anodic treatment of aluminium alloys — Chromic acid process 40 V DC, undyed coating*.

3 Technical requirements

3.1 Material to be coated

All aluminium alloys, including casting alloys, may be coated providing the colour of the coating (see 4.7.1.1), is acceptable.

3.2 Coating materials

For aerospace products, by far the most widely used chemical conversion coatings are chromates. However, ingredients may be used to produce other chemical conversion coatings provided that they meet the requirements of this International Standard without adverse effects on the base material.

3.3 Process requirements

3.3.1 The process shall consistently produce coatings to the requirements of this International Standard.

3.3.2 The process shall permit adequate solution control by recognized methods of chemical analysis.

3.3.3 It shall be the responsibility of the vendor of proprietary processing chemicals to supply the processor, in writing, with methods of analysis and directions for the maintenance of the solution.

3.4 Preparation of aluminium material to be coated

3.4.1 All fabrication and thermal treatment processes, insofar as is practicable, shall be completed before the conversion coating is applied.

3.4.2 Corrosion, mill marks and identification markings shall be removed before chemical treatment. The parts shall have clean surfaces with no water breaks and be free from pits, scratches and mechanical damage. Final cleaning by a process to give a slightly etched surface is preferred.

3.5 Process details

3.5.1 Water characteristics

The make-up water and the rinse water used after the coating process shall be such that the total dissolved solids shall not be greater than 75 ppm (mg/kg) with chloride ion and sulfate ion being not greater than 15 and 25 ppm (mg/kg), respectively. The pH range should be 5,5 to 7,5. Tap water may be used for the rinsing following the cleaning (see 3.5.3) and the deoxidizing (see 3.5.4) processes.

3.5.2 Chemical conversion solution

The chemical conversion solution shall be prepared using water complying with 3.5.1. The proprietary processing chemicals shall be added in such quantities as to provide conversion coatings capable of meeting the requirements of this International Standard. The pH value of the solution shall be maintained between 1,3 and 2,5 at a temperature of $20 \pm 2^\circ\text{C}$. Nitric acid or sodium hydroxide may be used to maintain the required pH level.