SLOVENSKI STANDARD
SIST EN 2334:2001

01-januar-2001

Aerospace series - Chromic-sulphuric acid pickle of aluminium and aluminium alloys

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Luft- und Raumfahrt - Beizen von Aluminium und Aluminiumlegierungen in Chromschwefelsäure

Série aérospatiale - Décapage sulfochromique de l'aluminium et des alliages d'aluminium

Ta slovenski standard je istoveten z: **EN 2334:1997**

ICS:

49.025.20	Aluminij	Aluminium
49.040	Prevleke in z njimi povezani postopki, ki se uporabljajo v letalski in vesoljski industriji	Coatings and related processes used in aerospace industry

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English version

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This European Standard was approved by CEN on 1996-08-04. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1998, and conflicting national standards shall be withdrawn at the latest by January 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the acid chromate pickling of aluminium and aluminium alloys except those with a silicon content in excess of 2 % or a copper content in excess of 5 %.

It is applicable whenever referenced.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 2000 Aerospace series - Quality assurance EN aerospace products - Approval of the quality system of manufacturers

3 Purpose of process

3.1 Reference surface treatment, e.g. prior to adhesive bonding or primer application to test specimens used for qualification and acceptance tests on adhesives, paints, sealants (treatment A)

3.2 Final treatment for parts prior to adhesive bonding or primer application (treatment B)

3.3 Pre-treatment prior to anodizing for adhesive bonding (treatment C)

3.4 Pre-treatment (treatment D) for :

- anodizing for other applications than adhesive bonding ;
- other chemical treatments.

4 Information for the processor

- Designation, see 13
- Number of the material standard and metallurgical condition of the latter
- Sequence of operations
- Areas to be processed
- Treatment

5 Condition of parts prior to processing

Fabrication of the parts shall have been completed before pickling.

6 Process schedule

The pickling process shall be performed according to table 1.

Table 1

Process schedule	Application, see treatment			
	A	B	C	D
Pre-treatments	7.1	7.2	7.2	7.2
Pickling	8	8	8	8
Post-treatments	9.1 9.2 9.3	9.1 9.2 9.3	9.1	9.1

7 Pre-treatments

7.1 Cleaning for treatment A (see 3.1)

7.1.1 Vapour degreasing, solvent cleaning or alkaline cleaning with a non-etching, non-silicated hot alkaline solution

7.1.2 Water rinsing and check for water break, repeat cleaning if break occurs

7.2 Cleaning for treatments B, C, D (see 3.2, 3.3 and 3.4)

7.2.1 Heavily soiled parts shall be emulsion cleaned, vapour degreased or solvent cleaned.

7.2.2 If there is a natural oxide film, carry out abrasive blasting or chemical deoxidizing.

When pickling does not follow immediately after these operations, the parts shall be vapour degreased or cleaned with a hot alkaline solution.

7.2.3 If there is no significant natural oxide film, parts shall be cleaned with a hot alkaline solution.

The alkaline solution shall be corrosion inhibited and preferably of a non-silicated type.

For the parts to be bonded a non-silicated alkaline solution is mandatory.

After alkaline cleaning, the parts shall be thoroughly water rinsed and inspected for water break. Cleaning shall be repeated if break occurs.

8 Treatment

Immediately after final cleaning, the parts shall be pickled in one of the solutions specified in annex A.

To ensure a well pickled surface, the following shall be observed :

- excessive bath loading and shielding of parts by each other shall be avoided ;
- to ensure satisfactory adhesion and durability properties for treatments A and B or to obtain a satisfactory metal removal rate, pure aluminium and certain aluminium alloys with a very low copper content at the surface (clad aluminium alloys, Al-Mg alloys) require additional provisions. The parts in these materials shall be either suspended on supporting jigs which shall be more noble (cathodic) relative to the materials to be treated, e.g. unclad Al-Cu alloy, or coupled to auxiliary cathodes.

The position of the parts (anodes) relative to the cathodic areas and the cathodic to anodic area ratio shall be chosen carefully. Electrical contacts at several points shall be provided.

9 Post-treatments

9.1 Rinsing

It shall be carried out as quickly as possible after pickling in running water with a temperature not exceeding 40 °C. The water used for final rinsing shall have a conductivity not more than 70 µS/cm.

9.2 Drying

The parts shall be dried except for those submitted for subsequent chemical or anodic treatment. The temperature shall be ≤ 65 °C. The dry parts shall be protected against contamination.

9.3 Treatment after drying

As the adhesives and primers shall be applied within 16 h of drying for treatment B and within 4 h for treatment A, necessary measures shall be taken. Moreover, it shall be ensured that the treated parts are stored under clean, dry conditions.

10 Required characteristics and inspection

10.1 Parts

10.1.1 Cleanliness

No water break shall be observed when the surface is wetted with clean water (max. temperature 35 °C) by immersion or spray. This operation has to be carried out after final rinsing.

10.1.2 Appearance

When subjected to visual inspection, the pickled surfaces shall be of a homogeneous appearance and free from pitting, stains and contamination.

10.2 Process

10.2.1 Air used for drying or other operations shall be dry and free from oil.

10.2.2 Mercury or mercury compounds shall not be present in any of the materials used.

10.2.3 Chemical analyses of the pickling solutions shall be carried out at regular intervals to determine the content of Cr^{6+}, free acid, chloride, iron, copper, aluminium and, when requested, the Cr^{3+} content to ensure that the composition is maintained within the limits specified in annex A.

10.2.4 The purity of the rinsing water shall be determined by conductivity measurements.

10.2.5 When required for adhesive bonding, the test to the relevant bonding standard shall be carried out to ensure that the process has been correctly applied.

11 Quality assurance

11.1 Approval of the processor

See EN 2000.

11.2 Process approval

The processor shall carry out :

- pickling on a series of test pieces or pre-production parts agreed between the purchaser and processor ;
- the tests specified in this standard, unless otherwise agreed between the purchaser and processor.

When the test results have been accepted as satisfactory by the purchaser, he shall give his written approval to start production.

The procedure shall not be changed without previous agreement from the purchaser.

11.3 Acceptance

After pickling, the parts shall have the required characteristics according to 10.

The frequency and nature of the inspection shall be specified in the design documents or agreed between processor and purchaser.

Parts not meeting the requirements shall be rejected.

Parts which develop water break shall be reprocessed.

12 Health, safety and environmental aspects

The locally applicable regulations and laws shall be observed.

13 Designation

EXAMPLE :