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**Aeronavtika - Barve in laki - Vrsta in metode priprave površine preskušancev v aluminijevih zlitinah**

Aerospace series - Paints and varnishes - Nature and methods for surface preparation of test pieces in aluminium alloys

Luft- und Raumfahrt - Beschichtungsstoffe - Oberflächenvorbereitungstyp und -methoden für Proben aus Aluminiumlegierungen

Série aérospatiale - Peintures et vernis - Nature et méthodes de préparation de surface des éprouvettes en alliages d'aluminium

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**Ta slovenski standard je istoveten z: EN 3837:2019**

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**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
87.040	Barve in laki	Paints and varnishes

**SIST EN 3837:2019**

**en,fr,de**

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EUROPEAN STANDARD

EN 3837

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2019

ICS 49.040

English Version

## Aerospace series - Paints and varnishes - Nature and method for surface preparation of test pieces in aluminium alloys

Série aérospatiale - Peintures et vernis - Nature et méthodes de préparation de surface des éprouvettes en alliages d'aluminium

Luft- und Raumfahrt - Beschichtungsstoffe - Oberflächenvorbereitungstyp und -methoden für Proben aus Aluminiumlegierungen

This European Standard was approved by CEN on 12 May 2019.

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 CEN-CENELEC Management Centre or to any CEN member.

**iTeh STANDARD PREVIEW**

This European Standard exists 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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 3837:2019) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries 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 ASD, 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 February 2020, and conflicting national standards shall be withdrawn at the latest by February 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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**EN 3837:2019 (E)****1 Scope**

This document defines the nature of and the surface preparation method for test pieces in aluminium alloys intended for testing paints and varnishes used for aerospace applications.

**2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2090, *Aerospace series — Aluminium alloy AL-P2024- — T3 — Clad sheet and strip —  $0,3 \text{ mm} \leq a \leq 6 \text{ mm}$*

EN 2092, *Aerospace series — Aluminium alloy AL-P7075- — T6 or T62 — Clad sheet and strip —  $0,4 \text{ mm} \leq a \leq 6 \text{ mm}$*

EN 2101, *Aerospace series — Chromic acid anodizing of aluminium and wrought aluminium alloys*

EN 2284, *Aerospace series — Sulphuric acid anodizing of aluminium and wrought aluminium alloys*

EN 2334, *Aerospace series — Chromic-sulphuric acid pickle of aluminium and aluminium alloys*

EN 2437, *Aerospace series — Chromate conversion coatings (yellow) for aluminium and aluminium alloys*

EN 2696, *Aerospace series — Aluminium alloy AL-P7075- — T6 or T62 — Sheet and strip —  $0,4 \text{ mm} \leq a \leq 6 \text{ mm}$*

EN 2709, *Aerospace series — Aluminium alloy 2024-T3510 — Bar and section —  $1,2 \leq (a \text{ or } D) \leq 150 \text{ mm}$  — With peripheral coarse grain control <sup>1)</sup>*

EN 4704, *Aerospace series — Tartaric-Sulphuric-Acid anodizing of aluminium and aluminium wrought alloys for corrosion protection and paint pre-treatment (TSA)*

EN 4707, *Aerospace series — Acid pickling of aluminum and aluminum alloy without hexavalent chromium*

EN 4729, *Aerospace series — Trivalent chromium based chemical conversion coatings for aluminium and aluminium alloys*

ISO 3270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

**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:

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

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1) Published as ASD-STAN Standard at the date of publication of this standard by AeroSpace and Defence industries Association of Europe - Standardization (ASD-STAN) (<http://www.asd-stan.org/>)

## 4 Nature and size of test pieces

Unless specifically defined, test pieces in aluminium alloys are described in Table 1. Unless otherwise specified in the test or product standard, dimensions of the test pieces shall be:

- length: 125 mm;
- width: 80 mm.

## 5 Method of preparing the surface

The following surface treatments are applicable to aluminium alloys used in aeronautics:

- process A: sulfochromic pickling in accordance with EN 2334;
- process B: chromic acid anodizing, sealed or not, in accordance with EN 2101;
- process C: chemical chromate (hexavalent chrome) conversion in accordance with EN 2437;
- process D: tartaric-sulphuric-acid anodizing in accordance with EN 4704;
- process E: acid pickling without hexavalent chromium in accordance with EN 4707;
- process F: chemical hexavalent-chrome-free conversion coating in accordance with EN 4729;
- Process G: sulphuric acid anodizing, in accordance with EN 2284.

Each standard gives the order and the nature of the different operations to be carried out (treatment, rinsing, stoving). Annex A and Annex B give the degreasing procedures before treatment.

The choice of the treatment, processes A to G, is the result of an agreement between the interested parties or is imposed by the product specification.

## 6 Application of coating

Coating shall be applied within 16 h after the end of the treatment and in conformity with the product specification and the supplier's instructions.

After applying the paint and prior to testing, the test pieces shall be kept in a room in conformity with ISO 3270 for the time specified in the material standard.

Table 1 — Synoptic table of test pieces

Reference of test piece	Nature			Dimensions <sup>a</sup>
	Semi-finished product	Material (material standard)	Heat treatment	
A <sub>1</sub>	Sheet	2024	T3	Thickness 0,8 mm to 1,6 mm
A <sub>2</sub>	Sheet	2024 clad (EN 2090)	T3	Thickness 0,8 mm to 1,6 mm
A <sub>3</sub>	Sheet	7075 (EN 2696)	T6	Thickness 0,8 mm to 1,6 mm
A <sub>4</sub>	Sheet	7075 clad (EN 2092)	T6	Thickness 0,8 mm to 1,6 mm
A <sub>5</sub>	Sheet	2024	T3	Thickness 0,4 mm to 0,8 mm
A <sub>6</sub>	Sheet	2024 clad (EN 2090)	T3	Thickness 0,4 mm to 0,8 mm
A <sub>7</sub>	Sheet	7075 (EN 2696)	T6	Thickness 0,4 mm to 0,8 mm
A <sub>8</sub>	Sheet	7075 clad (EN 2092)	T6	Thickness 0,4 mm to 0,8 mm
A <sub>9</sub>	L-section	2024	Susceptibility to inter-granular corrosion: maintain 1 h at (495 ± 2) °C + dip in boiling water	Minimum length 125 mm Minimum width 40 mm Minimum thickness 4 mm
A <sub>10</sub>	Plate derived from L-section <sup>b</sup>	2024 (EN 2709)	Susceptibility to inter-granular corrosion: maintain 1 h at (495 ± 2) °C + dip in boiling water	Minimum length 125 mm Minimum width 50 mm Minimum thickness 3 mm

<sup>a</sup> See Clause 4.

<sup>b</sup> Each L-section is:

- sensitized to corrosion;
- cut-out;
- machined on both sides (Ra = 0,40 μm to 0,50 μm).

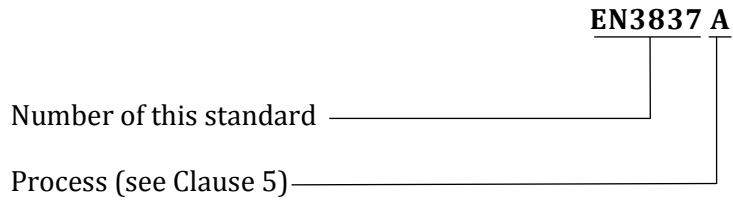


## 7 Healthy, safety and environmental aspects

The locally applicable regulations and laws shall be observed.

## 8 Designation

EXAMPLE



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