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**Aeronavtika - Barve in laki - Dvokomponentni poliuretanski končni premaz, ki se suši pri sobni temperaturi - 002. del: Visoka kemijska odpornost**

Aerospace series - Paints and varnishes - Two component cold curing polyurethane finish - Part 002: High chemical resistance

Luft- und Raumfahrt - Beschichtungsstoffe - Zweikomponenten, Polyurethan-Decklack, Kalthärtend - Teil 002: Hohe Beständigkeit gegen Chemikalien

Série aérospatiale - Peintures et vernis - Peinture de finition polyuréthane, à deux composants polymérisant à température ambiante - Partie 002: Tenue chimiques aux fluides

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**Ta slovenski standard je istoveten z: EN 2434-002:2010**

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**ICS:**

|        |  |   |
|--------|--|---|
| 49.040 | Preveleke in z njimi povezani postopki, ki se uporabljajo v letalski in vesoljski industriji | Coatings and related processes used in aerospace industry |
|--------|--|---|

**SIST EN 2434-002:2010**

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EUROPEAN STANDARD

EN 2434-002

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2010

ICS 49.040

English Version

## Aerospace series - Paints and varnishes - Two component cold curing polyurethane finish - Part 002: High chemical resistance

Série aérospatiale - Peintures et vernis - Peinture de finition polyuréthane, à deux composants polymérisant à température ambiante - Partie 002: Tenue chimiques aux fluides

Luft- und Raumfahrt - Beschichtungsstoffe - Zweikomponenten- Polyurethan-Decklack, kalthärtend - Teil 002: Hohe Beständigkeit gegen Chemikalien

This European Standard was approved by CEN on 6 February 2010.

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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 Management Centre has the same status as the official versions.

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## Foreword

This document (EN 2434-002:2010) 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 March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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**EN 2434-002:2010 (E)****Introduction**

This European Standard is part of a series of EN non-metallic materials standards for aerospace applications.

The general organisation of this series is described in EN 4385.

This European Standard is a level 3 document as defined in EN 4385.

Definition of subcase numbering in Table 2 to Table 5 is given in EN 7000-9.

**1 Scope**

This European Standard specifies the requirements for a two component polyurethane finish to be applied over a primer for interior and exterior aerospace applications, where maximum resistance to normal operational fluids is required.

The properties specified in this European Standard are obtained on defined aluminium alloy test pieces prepared in accordance with EN 3837 Procedure A and EN 23270 and painted with primer to EN 2435-002. The ability of the material to be used for a specific application (e.g. alternative substrate, alternative primer, specific drying conditions etc.) shall be determined by supplementary tests to confirm that the requirements of this standard are met.

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**2 Normative references**

[SIST EN 2434-002:2010](https://standards.iteh.ai/catalog/standards/sist/3fc308fd-b4df-4d40-ba4f-99161e1c241e0)

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The following referenced documents are indispensable for the application 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 2334, *Aerospace series — Chromic-sulphuric acid pickle of aluminium and aluminium alloys*

EN 2379, *Aerospace series — Fluids for assessment of non-metallic materials* <sup>1)</sup>

EN 2435-002, *Aerospace series — Paints and varnishes — Corrosion resistant chromated two component cold curing primer — Part 002: High corrosion resistance*

EN 3837, *Aerospace series — Paints and varnishes — Nature and method for surface preparation of test pieces in aluminium alloys* <sup>1)</sup>

EN 3840, *Aerospace series — Paints and varnishes — Technical specification*

EN 4385, *Aerospace series — Non-metallic materials — General organisation of standardisation — Links between types of standards* <sup>1)</sup>

EN 7000-9, *Aerospace series — Non-metallic materials — Rules for the drafting and presentation of material standards — Part 9: Paints and varnishes* <sup>1)</sup>

EN ISO 1513, *Paints and varnishes — Examination and preparation of samples for testing (ISO 1513:1992)*

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<sup>1)</sup> Published as ASD-STAN Prestandard at the date of publication of this standard

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

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **Gloss finish**

≥ 80 units measured at 60° according to EN 3840 test 27

### 4 Classification

Not applicable.

### 5 Batch release and qualification testing

#### 5.1 Batch release testing

For batch acceptance the tests marked with an \* in Table 1 to Table 5 shall be performed.

#### 5.2 Qualification tests

For product qualification, all tests mentioned in this European Standard, in the Table 1 to Table 5, shall be performed.

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Table 1 – General Requirements

|       |                               |   |
|-------|-------------------------------|---|
| 1.001 | Material description          | Two component cold curing polyurethane coating  |
| 1.002 | Formulation                   | Base – a base containing an hydroxyl functional resin, solvents and pigments.<br>Activator – a polyisocyanate activator solution<br>Thinner – if required |
| 1.003 | Form and method of production | These components shall be mixed in simple whole number proportions, by volume or by weight, in accordance with the manufacturer's instructions.           |
| 1.004 | Technical specification       | See EN 3840   |
| 1.009 | Application and use           | Dry film thickness of $(50 \pm 5) \mu\text{m}$  |
| 1.010 | Storage stability             | See EN 3840   |
| 1.011 | Shelf life                    | See EN 3840   |
| 1.013 | Processing conditions         | ISO 3270 for 7 d before testing unless otherwise specified.<br>Finish is applied to the primer following drying of the primer for 4 h to 16 h.            |
| 1.093 | Quality assurance             | See EN 3840   |
| 1.094 | Designation                   | Polyurethane Finish<br>EN 2434-02   |
| 1.095 | Packaging                     | See EN 3840   |
| 1.096 | Identification marking        | See EN 3840   |
| 1.097 | Flash point                   | See EN 3840   |
| 1.098 | Health and safety             | See EN 3840   |

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Table 2 – Physical and chemical characteristics

|       |                                   |   |  |  |
|-------|-----------------------------------|---|--|--|
| 2.014 | Condition                         |   | SIST EN 2434-002:2010  |  |
|       |                                   | 1 | EN ISO 1513  |  |
|       |                                   | 6 | As received in original container  |  |
|       |                                   | 7 | Shall be free from extraneous matter and show no skinning, gelling, hard settlement or other defect which will prevent satisfactory application to produce a defect free film. |  |
| 2.011 | Application properties and finish |   |  |  |
|       |                                   | 1 | None   |  |
|       |                                   | 3 | EN 3837 – A <sub>2</sub>   | 2024-T3 clad                               |
|       |                                   | 4 | <b>EN 3837 Process A</b>   | EN 2334 Pickle                             |
|       |                                   | 5 | EN 2435-02 primer + finish to this standard  |  |
|       |                                   | 7 | <b>Paint film shall show an opaque even finish, free from runs, sags, wrinkling, pinholing or other defect.</b>  |  |
| 2.034 | Sedimentation rating              |   | EN 3840  |  |
|       |                                   | 1 | Test 5   |  |
|       |                                   | 6 | base + activator + thinner   |  |
|       |                                   | 7 | ml   | V = ≤ 30 after 4 h                         |
| 2.012 | Pot life                          |   | EN 3840  |  |
|       |                                   | 1 | Test 20 followed by Test 8 <sup>a</sup> or Test 9 <sup>a</sup>   |  |
|       |                                   | 6 | base + activator + thinner   |  |
|       |                                   | 7 | s or Pa s  | ≤ 2 x initial value after 4 h              |
| 2.035 | Fineness of grind                 |   | EN 3840  |  |
|       |                                   | 1 | Test 10  |  |
|       |                                   | 6 | base + activator   |  |
|       |                                   | 7 | μm   | Gloss finish ≤ 15, other gloss levels ≤ 30 |

(continued)



Table 2 – Physical and chemical characteristics (concluded)

|       |   |   |   |                                   |                                |                                |
|-------|---|---|---|-----------------------------------|--------------------------------|--------------------------------|
| 2.029 | Viscosity                               |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 8 <sup>1</sup> or Test 9 <sup>1</sup>  |                                   |                                |                                |
|       |   | 6   | base + activator + thinner                  |                                   |                                |                                |
|       |   | 7   | s or Pa s                                   | ± 10 % <sup>1, 2</sup>            |                                |                                |
| 2.027 | Non volatile matter                     |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 1                                      |                                   |                                |                                |
|       |   | 7   |   | base                              | activator                      |                                |
|       |   |   | %   | ± 2 <sup>2, 3</sup>               | ± 2 <sup>2, 3</sup>            |                                |
| 2.027 | Volatile organic compound (VOC) content |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 49                                     |                                   |                                |                                |
|       |   | 6   | base + activator + thinner                  |                                   |                                |                                |
|       |   | 7   | g/l   | ≤ reference value <sup>2, 3</sup> |                                |                                |
| 2.057 | Density                                 |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 3                                      |                                   |                                |                                |
|       |   | 6   | base  |                                   |                                |                                |
|       |   | 7   | g/cm <sup>3</sup>                           | ± 2 <sup>2, 3, 5</sup>            |                                |                                |
| 2.057 | Density hydrometer                      |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 4                                      |                                   |                                |                                |
|       |   | 6   | activator + thinner                         |                                   |                                |                                |
|       |   | 7   |   | activator                         | thinner                        |                                |
|       | g/cm <sup>3</sup>                       | ± 2 <sup>2, 3</sup>   | ± 2 <sup>2, 3</sup>                         |                                   |                                |                                |
| 2.036 | Flash point                             |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 7                                      |                                   |                                |                                |
|       |   | 7   |   | base                              | activator                      | thinner                        |
|       |   |   | °C  | ≥ reference value <sup>3</sup>    | ≥ reference value <sup>3</sup> | ≥ reference value <sup>3</sup> |
| 2.041 | Surface dry time                        |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 21                                     |                                   |                                |                                |
|       |   | 3   | EN 3837 – A <sub>2</sub>                    | 2024-T3 clad                      |                                |                                |
|       |   | 4   | <b>EN 3837 Process A</b>                    | EN 2334 Pickle                    |                                |                                |
|       |   | 5   | EN 2435-02 primer + finish to this standard |                                   |                                |                                |
|       |   | 6   | EN 23270                                    |                                   |                                |                                |
|       |   | 7   | h   | ≤ 1 <sup>4</sup>                  |                                |                                |
|       |   |   |   |                                   |                                |                                |
| 2.041 | Drying time print-free                  |   | EN 3840                                     |                                   |                                |                                |
|       |   | 1   | Test 22                                     |                                   |                                |                                |
|       |   | 3   | EN 3837 – A <sub>2</sub>                    | 2024-T3 clad                      |                                |                                |
|       |   | 4   | EN 3837 Process A                           | EN 2334 Pickle                    |                                |                                |
|       |   | 5   | EN 2435-02 primer + finish to this standard |                                   |                                |                                |
|       |   | 6   | EN 23270                                    |                                   |                                |                                |
|       |   | 7   | h   | ≤ 6                               |                                |                                |
|       |   |   |   |                                   |                                |                                |
| 2.041 | Through dry time                        |   | <b>EN 3840</b>                              |                                   |                                |                                |
|       |   | 1   | Test 23                                     |                                   |                                |                                |
|       |   | 3   | EN 3837 – A <sub>2</sub>                    | 2024-T3 clad                      |                                |                                |
|       |   | 4   | <b>EN 3837 Process A</b>                    | EN 2334 Pickle                    |                                |                                |
|       |   | 5   | EN 2435-02 primer + finish to this standard |                                   |                                |                                |
|       |   | 6   | EN 23270                                    |                                   |                                |                                |
|       |   | 7   | h   | ≤ 16                              |                                |                                |
|       |   |   |   |                                   |                                |                                |
| 2.999 | Notes                                   | <sup>1</sup> Test 8 shall be used for non-thixotropic paints and test 9 for thixotropic paints.<br><sup>2</sup> The deviation is that compared to the reference value.<br><sup>3</sup> The reference value is that established during qualification.<br><sup>4</sup> Unless otherwise specified.<br><sup>5</sup> Test could also be used for activator and thinner if required. |   |                                   |                                |                                |