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Aerospace series - Paints and varnishes - Two component cold curing polyurethane finish - Part 005: High flexibility and chemical agent resistance for military application

Luft- und Raumfahrt - Beschichtungsstoffe - Zweikomponenten Polyurethan-Decklack kalthärtend - Teil 005: Hohe Elastizität und Beständigkeit gegen Chemikalien für militärische Anwendung

Série aérospatiale - Peintures et vernis - Peinture de finition polyuréthane, à deux composants polymérisant à température ambiante - Partie 005 : Haute flexibilité et résistance aux substances chimiques pour applications militaires

**Ta slovenski standard je istoveten z: EN 2434-005:2006**

**ICS:**

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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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 2434-005**

June 2006

ICS 49.040

English Version

**Aerospace series - Paints and varnishes - Two component cold curing polyurethane finish - Part 005: High flexibility and chemical agent resistance for military application**

Série aérospatiale - Peintures et vernis - Peinture de finition polyuréthane, à deux composants polymérisant à température ambiante - Partie 005 : Haute flexibilité et résistance aux substances chimiques pour applications militaires

Luft- und Raumfahrt - Anstrichstoffe - Zweikomponenten Polyurethan-Decklack kalthärtend - Teil 005: Hohe Elastizität und Beständigkeit gegen Chemikalien für militärische Anwendung

This European Standard was approved by CEN on 3 February 2006.

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.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, 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 United Kingdom.



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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This European Standard (EN 2434-005:2006) has been prepared by the AeroSpace and Defense 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 December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006.

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, 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 2434-005:2006 (E)****1 Scope**

This standard specifies the requirements for a two component flexible polyurethane topcoat to be applied over EN 2435-005 or EN 2436-006 primer mainly for exterior aerospace applications.

The primer and the finish tested to this specification will be from the same manufacturer applied in accordance with (i.a.w.) their instruction/Table 1.

**2 Normative references**

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 amendments) applies.

ISO 1513, *Paints and varnishes – Examination and preparation of samples for testing*

ISO 1517, *Paints and varnishes – Surface-drying test – Ballotini method*

ISO 1518, *Paints and varnishes – Scratch test*

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

ISO 1520, *Paints and varnishes – Cupping test*

ISO 1524, *Paints, varnishes and printing inks – Determination of fineness of grind*

ISO 2409, *Paints and varnishes – Cross-cut test*

ISO 2431, *Paints and varnishes – Determination of flow time by use of flow cups*

ISO 2811-1, *Paints and varnishes – Determination of density – Part 1: Pycnometer method*

ISO 2811-2, *Paints and varnishes – Determination of density – Part 2: Immersed body (plummet) method*

ISO 2811-3, *Paints and varnishes – Determination of density – Part 3: Oscillation method*

ISO 2811-4, *Paints and varnishes – Determination of density – Part 4: Pressure cup method*

ISO 2812-1, *Paints and varnishes – Determination of resistance to liquids – Part 1: General methods*

ISO 2812-2, *Paints and varnishes – Determination of resistance to liquids – Part 2: Water immersion method*

ISO 2813, *Paints and varnishes – Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°*

ISO 3251, *Paints, varnishes and plastics – Determination of non-volatile-matter content*

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

ISO 3675, *Crude petroleum and liquid petroleum products – Laboratory determination of density – Hydrometer method*

ISO 3678, *Paints and varnishes – Print-free test*

ISO 3679, *Determination of flash point – Rapid equilibrium closed cup method*

ISO 3680, *Determination of flash/no flash – Rapid equilibrium closed cup method*

ISO 4623-2, *Paints and varnishes – Determination of resistance to filiform corrosion – Part 2: Aluminium substrates*

ISO 4628-2, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2: Assessment of degree of blistering*

ISO 4628-8, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 8: Evaluation of corrosion around the scribe*

ISO 4628-10, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 10: Assessment of degree of filiform corrosion*

ISO 6270-1, *Paints and varnishes – Determination of resistance to humidity – Part 1: Continuous condensation*

ISO 7253, *Paints and varnishes – Determination of resistance to neutral salt spray (fog)*

ISO 7724-1, *Paints and varnishes – Colorimetry – Part 1: Principles*

ISO 7724-2, *Paints and varnishes – Colorimetry – Part 2: Colour measurement*

ISO 7724-3, *Paints and varnishes – Colorimetry – Part 3: Calculation of colour differences*

ISO 9117, *Paints and varnishes – Determination of through-dry state and through-dry time – Method of test*

ISO 9514, *Paints and varnishes – Determination of the pot-life of liquid systems – Preparation and conditioning of samples and guidelines for testing*

ISO 11341, *Paints and varnishes – Artificial weathering and exposure to artificial radiation – Exposure to filtered xenon-arc radiation*

ISO 11890-1, *Paints and varnishes – Determination of volatile organic compound (VOC) content – Part 1: Difference method*

ISO 11890-2, *Paints and varnishes – Determination of volatile organic compound (VOC) content – Part 2: Gas-chromatographic method*

ISO 11909, *Binders for paints and varnishes – Polyisocyanate resins – General methods of test*

ISO 15710, *Paints and varnishes – Corrosion testing by alternate immersion in and removal from a buffered sodium chloride solution*

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**EN 2434-005:2006 (E)**

EN 2435-005, *Aerospace series – Paints and varnishes – Corrosion resistant chromated two component cold curing epoxy primer – Part 005: High corrosion resistance for military application* <sup>1)</sup>

EN 2436-006, *Aerospace series – Paints and varnishes – Corrosion resistant chromate-free two component cold curing epoxy primer – Part 006: High corrosion resistance for military application* <sup>1)</sup>

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* <sup>1)</sup>

EN 3847, *Aerospace series – Paints and varnishes – Determination of sedimentation rating* <sup>1)</sup>

EN 4160, *Aerospace series – Non-metallic materials – Paints and varnishes – Test methods – Determination of the effects of thermal exposure* <sup>1)</sup>

EN 6042, *Aerospace series – Organic compounds – Test method – Analysis by infrared spectroscopy* <sup>1)</sup>

STANAG 4477, *Specification for paints and paint systems resistant to chemical agents and decontaminations for protection of aerospace military equipment* <sup>2)</sup>

**3 Definitions**

For the purposes of this standard, the definitions given in EN 3840 apply.

**4 Classification**

The topcoat is classified according to the following types and classes:

Type I: Standard solvent content;

Type II: Low volatile organic content ( $\leq 420$  g/l);

Class A: Matt finish  $< 2$  units at  $60^\circ$  and  $\leq 10$  units at  $85^\circ$ ;

Class B: Semi matt finish  $(20 \pm 5)$  units at  $60^\circ$ ;

Class C: High gloss finish  $> 90$  units at  $60^\circ$  and  $> 80$  units at  $20^\circ$ .

**5 Batch release and qualification testing****5.1 Qualification tests**

For product qualification, all tests defined in this standard, in the Tables 1 to 7, shall be performed.

A minimum of three batches shall be tested for qualification purposes.

1) Published as ASD Prestandard at the date of publication of this standard.

2) Published by: NATO Military Agency for Standardization (MAS); B-1110 Brussels.



## 5.2 Batch acceptance testing

For batch acceptance the tests marked with the symbol \* shall be performed.

**Table 1 — General requirements**

	Material description	Two component cold curing polyurethane topcoat
	Formulation	Base: hydroxyl functional polyester or acrylic resins Activator: a polyisocyanate activator solution Thinner: if required
	Preparation	These components shall be mixed in simple whole number proportions, by volume or weight, in accordance with the manufacturers instructions.
	Technical specification	EN 3840
	Marking	See EN 3840.
	Storage stability	See EN 3840.
	Application and use	Dry film thickness of $(50 \pm 5)$ $\mu\text{m}$ (with primer EN 2435-005 or EN 2436-006 [ $(25 \pm 5)$ $\mu\text{m}$ ] will be 65 $\mu\text{m}$ to 85 $\mu\text{m}$ )
	Drying conditions	ISO 3270 for 168 h before testing. Finish is applied to the primer (EN 2435-005 or EN 2436-006) following drying up the primer for 4 h to 6 h as specified
	Freedom from defects	See EN 3840.
	Quality assurance	See EN 3840.
	Packaging	See EN 3840.
	Health and safety	See EN 3840.