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Aerospace series - Paints and varnishes - Technical specification

Luft- und Raumfahrt - Beschichtungsstoffe - Technische Lieferbedingungen

Série aérospatiale - Peintures et vernis - Spécification technique

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**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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**SIST EN 3840:2009**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 3840**

July 2007

ICS 49.040

English Version

**Aerospace series - Paints and varnishes - Technical  
specification**

Série aérospatiale - Peintures et vernis - Spécification  
technique

Luft- und Raumfahrt - Beschichtungsstoffe - Technische  
Lieferbedingungen

This European Standard was approved by CEN on 13 April 2007.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN 3840:2007) 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of an identical text or by endorsement, at the latest by January 2008, and conflicting national standards shall be withdrawn at the latest by January 2008.

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, 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 3840:2007 (E)

## 1 Scope

This standard defines the technical requirements for the qualification, manufacture, inspection and the delivery of paints and varnishes for use in aerospace applications. It shall be applied in conjunction with the EN material specification.

## 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 any amendments) applies.

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

EN 4158, *Aerospace series — Paints and varnishes — Test method for measurement of electrical surface resistance of conductive layers.*

EN 4159, *Aerospace series — Paints and varnishes — Determination of resistance to microbial growth.* <sup>1)</sup>

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

EN 4170, *Aerospace series — Paints and varnishes — Test method for measurement of resistance to cold crack temperature cycle.* <sup>1)</sup>

EN 4171, *Aerospace series — Paints and varnishes — Test method for determination of phosphoric acid index.* <sup>1)</sup>

EN 4195, *Aerospace series — Paints and varnishes — Test method for determination of chromate leaching.* <sup>1)</sup>

EN 4508, *Aerospace series — Paints and varnishes — Test method for anti slip coatings — Determination of the sliding friction behaviour.*

EN 4592, *Aerospace series — Paints and varnishes — Test method for determination of infrared reflectance.*

EN 9100, *Aerospace series — Quality management systems — Requirements (based on ISO 9001:2000) and Quality systems — Model for quality assurance in design, development, production, installation and servicing (based on ISO 9001:1994).*

EN 10204, *Metallic products — Types of inspection documents.*

EN 23270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing (ISO 3270:1984).*

EN 29117, *Paints and varnishes — Determination of through-dry state and through-dry time — Method of test (ISO 9117:1990).*

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 Prestandard at the date of publication of this standard.

EN ISO 1517, *Paints and varnishes — Surface-drying test — Ballotini method* (ISO 1517:1973).

EN ISO 1518, *Paints and varnishes — Scratch test* (ISO 1518:1992).

EN ISO 1519, *Paints and varnishes — Bend test (cylindrical mandrel)* (ISO 1519:2002).

EN ISO 1520, *Paints and varnishes — Cupping test* (ISO 1520:1999).

EN ISO 1524, *Paints, varnishes and printing inks — Determination of fineness of grind* (ISO 1524:2000).

EN ISO 2114, *Plastics (polyester resins) and paints and varnishes (binders) — Determination of partial acid value and total acid value* (ISO 2114:2000).

EN ISO 2409, *Paints and varnishes — Cross-cut test* (ISO 2409:1992).

EN ISO 2431, *Paints and varnishes — Determination of flow time by use of flow cups* (ISO 2431:1993, including Technical Corrigendum 1:1994).

EN ISO 2808, *Paints and varnishes — Determination of film thickness* (ISO 2808:1997).

EN ISO 2810, *Paints and varnishes — Natural weathering of coatings — Exposure and assessment* (ISO 2810:2004).

EN ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pyknometer method* (ISO 2811-1:1997).

EN ISO 2811-2, *Paints and varnishes — Determination of density — Part 2: Immersed body (plummet) method* (ISO 2811-2:1997).

EN ISO 2811-3, *Paints and varnishes — Determination of density — Part 3: Oscillation method* (ISO 2811-3:1997).

EN ISO 2811-4, *Paints and varnishes — Determination of density — Part 4: Pressure cup method* (ISO 2811-4:1997).

EN ISO 2812-1, *Paints and varnishes — Determination of resistance to liquids — Part 1: General methods* (ISO 2812-1:1993).

EN ISO 2812-2, *Paints and varnishes — Determination of resistance to liquids — Part 2: Water immersion method* (ISO 2812-2:1993).

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°* (ISO 2813:1994, including Technical Corrigendum 1:1997).

EN ISO 3001, *Plastics — Epoxy compounds — Determination of epoxy equivalent* (ISO 3001:1999).

EN ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile matter content* (ISO 3251:2003).

EN ISO 3668, *Paints and varnishes — Visual comparison of the colour of paints* (ISO 3668:1998).

EN ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method* (ISO 3675:1998).

EN ISO 3678, *Paints and varnishes — Print-free test* (ISO 3678:1976).

EN ISO 3679, *Determination of flash point — Rapid equilibrium closed cup method* (ISO 3679:2004).

EN ISO 3680, *Determination of flash/no flash — Rapid equilibrium closed cup method* (ISO 3680:2004).

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EN ISO 4617, *Paints and varnishes — List of equivalent terms* (ISO 4617:2000).

EN ISO 4618, *Paints and varnishes — Terms and definitions* (ISO/DIS 4618:2004).

EN ISO 4623-1, *Paints and varnishes — Determination of resistance to filiform corrosion — Part 1: Steel substrates* (ISO 4623-1:2000).

EN ISO 4623-2, *Paints and varnishes — Determination of resistance to filiform corrosion — Part 2: Aluminium substrates* (ISO 4623-2:2003).

EN ISO 4629, *Binders for paints and varnishes — Determination of hydroxyl value — Titrimetric method* (ISO 4629:1996).

EN ISO 6270-1, *Paints and varnishes — Determination of resistance to humidity — Part 1: Continuous condensation* (ISO 6270-1:1998).

EN ISO 6272-1, *Paints and varnishes — Rapid-deformation (impact resistance) tests — Part 1: Falling-weight test, large-area indenter* (ISO 6272-1:2002).

EN ISO 7253, *Paints and varnishes — Determination of resistance to neutral salt spray (fog)* (ISO 7253:1996).

EN ISO 9001, *Quality management systems — Requirements* (ISO 9001:2000).

EN ISO 9514, *Paints and varnishes — Determination of the pot life of multicomponent coating systems — Preparation and conditioning of samples and guidelines for testing* (ISO 9514:1992).

EN ISO 9702, *Plastics — Amine epoxide hardeners — Determination of primary, secondary and tertiary amine group nitrogen content* (ISO 9702:1996).

EN ISO 11341, *Paints and varnishes — Artificial weathering and exposure to artificial radiation — Exposure to filtered xenon-arc radiation* (ISO 11341:2004).

EN ISO 11507, *Paints and varnishes — Exposure of coatings to artificial weathering — Exposure to fluorescent UV and water* (ISO 11507:1997).

EN ISO 11890-1, *Paints and varnishes — Determination of volatile organic compound (VOC) content — Part 1: Difference method* (ISO 11890-1:2000).

EN ISO 11890-2, *Paints and varnishes — Determination of volatile organic compound (VOC) content — Part 2: Gas-chromatographic method* (ISO 11890-2:2000).

EN ISO 11909, *Binders for paints and varnishes — Polyisocyanate resins — General methods of test* (ISO 11909:1996).

EN ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling* (ISO 15528:2000).

ISO 760, *Determination of water — Karl Fischer method (General method)*.

ISO 2718, *Standard layout for a method of chemical analysis by gas chromatography*.

ISO 2884-1, *Paints and varnishes — Determination of viscosity using rotary viscometers — Part 1: Cone-and-plate viscometer operated at a high rate of shear*.

ISO 3233, *Paints and varnishes — Determination of percentage volume of non-volatile matter by measuring the density of dried coating*.

ISO 5661, *Petroleum products — Hydrocarbon liquids — Determination of refractive index*.



ISO 6286, *Molecular absorption spectrometry — Vocabulary — General — Apparatus.*

ISO 6504-1, *Paints and varnishes — Determination of hiding power — Part 1: Kubelka-Munk method for white and light-coloured paints.*

ISO 6504-3, *Paints and varnishes — Determination of hiding power — Part 3: Determination of contrast ratio of light-coloured paints at a fixed spreading rate.*

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 7784-2, *Paints and varnishes — Determination of resistance to abrasion — Part 2: Rotating abrasive rubber wheel method.*

ISO 14680-1, *Paints and varnishes — Determination of pigment content — Part 1: Centrifuge method.*

ISO 14680-2, *Paints and varnishes — Determination of pigment content — Part 2: Ashing method.*

ISO 14680-3, *Paints and varnishes — Determination of pigment content — Part 3: Filtration method.*

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

ISO 15716, *Binders for paints and varnishes — Determination of storage stability.*

TR 7000-9, *Aerospace series — Non-metallic materials — Rules for the drafting and presentation of material standards — Part 9: Paints and varnishes.*<sup>2)</sup>

ASTM D 2370, *Standard test method for tensile properties of organic coatings.*<sup>3)</sup>

DIN 6175-1, *Tolerances for automotive paints — Uni paints.*

### 3 Terms and definitions

For the purposes of this standard, the terms and definitions given in EN 9100, EN ISO 4617, EN ISO 4618 and EN ISO 9001 as well as the following terms and definitions apply.

#### 3.1

##### **product**

in this and associated documents, the word product refers to all forms of paints and varnishes

#### 3.2

##### **production batch**

a production batch is a quantity of one product of determined composition produced in a single or continuous run to a defined manufacturing schedule

2) Published as ASD Technical Report at the date of publication of this standard.

3) Published by: ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA.