



# SLOVENSKI STANDARD

## SIST EN 4476:2011

01-december-2011

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### Aeronavtika - Barve in laki - Vmesni premaz, ki se suši pri sobni temperaturi

Aerospace series - Paints and varnishes - Cold curing intermediate coat

Luft- und Raumfahrt - Anstrichstoff - Zwischenschicht raumtemperaturhärtend

Série aérospatiale - Peintures et vernis - Couche intermédiaire polymérisant à température ambiante

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Ta slovenski standard je istoveten z: **EN 4476:2011**

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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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EUROPEAN STANDARD

**EN 4476**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2011

ICS 49.040

English Version

**Aerospace series - Paints and varnishes - Cold curing  
intermediate coat**Série aérospatiale - Peintures et vernis - Couche  
intermédiaire polymérisant à température ambianteLuft- und Raumfahrt - Beschichtungsstoffe -  
Zwischenbeschichtung, kalthärtend

This European Standard was approved by CEN on 3 March 2011.

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.

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.

CEN members are the national standards bodies of 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 United Kingdom.

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## Contents

	Page
Foreword.....	3
Introduction .....	4
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	6
4 Classification.....	6
5 Batch release and qualification testing.....	6
5.1 Batch release testing.....	6
5.2 Qualification tests.....	7
6 Designation .....	12
Annex A (normative) Method for the determination of ability to selectively remove the finish .....	13
Annex B (normative) Method for the determination of ability to restore the paint system after removal .....	14
Annex C (normative) Composition of reference paint remover .....	15
Bibliography .....	16

SIST EN 4476:2011

<https://standards.iteh.ai/catalog/standards/sist/72144010-47bd-403d-8dc9-989c0d52fef7/sist-en-4476-2011>

## Foreword

This document (EN 4476:2011) 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 November 2011, and conflicting national standards shall be withdrawn at the latest by November 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 4476:2011 (E)

## Introduction

This European Standard has been prepared in accordance with AECMA TR 7000-9.

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## 1 Scope

This European Standard specifies the requirements for a two component polyurethane, topcoat, with a medium degree of resistance to erosion by the effects of rain, available in a range of colours and levels of gloss, to be applied over a primer for aerospace applications on areas where rain erosion at subsonic speeds may be a problem, e.g. leading edges and air intakes.

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 2435-001 and -002. The ability of the material to be used for a specific application (e.g. alternative substrate, alternative primer, specific drying conditions, etc.) should be determined by supplementary tests to confirm that the requirements of this European Standard are met.

## 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 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 2434-004, *Aerospace series — Paints and varnishes — Two component cold curing polyurethane finish — Part 004: High flexibility*

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

EN 3696, *Aerospace series — Washers in heat resisting steel*

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 4160, *Aerospace series — Paints and varnishes — Determination of the effect of thermal exposure*

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

EN ISO 1513, *Paints and varnishes — Examination and preparation of test samples (ISO 1513:2010)*

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

EN ISO 1520, *Paints and varnishes — Cupping test (ISO 1520:2006)*

EN ISO 2409, *Paints and varnishes — Cross-cut test (ISO 2409:2007)*

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 2811 (all parts), *Paints and varnishes — Determination of density (ISO 2811 series)*

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<sup>1</sup> In preparation at the date of publication of this European Standard.

**EN 4476:2011 (E)**

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 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 2884-1:1999)*

EN ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content (ISO 3251:2008)*

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

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)*

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 9117-1, *Paints and varnishes — Drying tests — Part 1: Determination of through-dry state and through-dry time (ISO 9117-1:2009)*

EN ISO 9117-3, *Paints and varnishes — Drying tests — Part 3: Surface-drying test using ballotini (ISO 9117-3:2010)*

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 9514:2005)*

EN ISO 11507, *Paints and varnishes — (Standard test method) Exposure of coatings to artificial weathering — Exposure to fluorescent UV lamps and water (ISO 11507:2007)*

EN ISO 11890-1, *Paints and varnishes — Determination of volatile organic compound (VOC) content — Part 1: Difference method (ISO 11890-1:2007)*

ISO 3847, *Liquid flow measurement in open channels by weirs and flumes — End-depth method for estimation of flow in rectangular channels with a free overfall*

ISO 7724 (all parts), *Paints and varnishes — Colorimetry*

**3 Terms and definitions**

For the purposes of this document gloss finish is defined as  $\geq 80$  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 \* shall be performed.



## 5.2 Qualification tests

For product qualification, all tests mentioned in this European Standard, in Table 1 to Table 4, shall be performed.

**Table 1 — General requirements**

Characteristic number	Characteristic	Requirements			
1.001	Material description	Single or two component cold curing intermediate coat			
1.002	Formulation	Not restricted Thinner — if required			
1.003	Preparation	If more than one component these components shall be mixed in simple whole number proportions, by volume or by mass, in accordance with the manufacturer's instructions			
1.004	Technical specification	See EN 3840			
1.007	Visual colour	See EN 3840			
1.008	Freedom from defects	See EN ISO 1513			
1.009	Application and use	Dry film thickness of $(15 \pm 5) \mu\text{m}$ unless otherwise specified.			
1.010	Storage stability	See EN 3840			
1.011	Shelf life	See EN 3840			
1.013	Drying conditions	EN 23270 for seven days before testing unless otherwise specified. Intermediate coat is applied to the primer and the finish to the intermediate coat following drying for 4 h to 16 h unless otherwise specified.			
1.093	Quality assurance	See EN 3840			
1.094	Designation	Intermediate Coat EN 4476			
1.095	Packaging	See EN 3840			
1.096	Identification marking	See EN 3840			
1.097	Flash point	EN 3840			
		Test 7 EN ISO 3679 or EN ISO 3680			
			base	activator <sup>f</sup>	thinner <sup>f</sup>
		°C	≥ reference value <sup>c</sup>	≥ reference value <sup>c</sup>	≥ reference value <sup>c</sup>
1.098	Health and safety	See EN 3840			
1.999	Notes	<sup>f</sup> Test only if component is present. <sup>c</sup> The reference value is that established during qualification.			