SLOVENSKI STANDARD
SIST EN 4406:2009

01-junij-2009

Aeronavtika - Barve in laki - Dvokomponentni poliuretanski premaz, ki se suši pri sobni temperaturi - Odpornost proti obrabi

Aerospace series - Paints and varnishes - Two component cold curing polyurethane coating - Abrasion resistant

Luft- und Raumfahrt - Beschichtungsstoffe - Zweikomponenten-Polyurethan-Deckbeschichtung, kalthärtend - Abriebfest

Série aérospatiale - Peintures et vernis - Peinture de finition polyuréthane à deux composants polymérisant à température ambiante - Résistance à l'abrasion

Ta slovenski standard je istoveten z: **EN 4406:2006**

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

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EN 4406

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English Version

Aerospace series - Paints and varnishes - Two component cold curing polyurethane coating - Abrasion resistant

Série aérospatiale - Peintures et vernis - Peinture de finition polyuréthane à deux composants polymérisant à température ambiante - Résistance à l'abrasion

Luft- und Raumfahrt - Anstrichstoffe - Zweikomponenten Polyurethan-Decklack Kalthärtend - Abriebfest

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Foreword

This document (EN 4406:2006) 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of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by April 2007.

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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.

Introduction

This standard has been prepared in accordance with TR 7000-9.

1 Scope

This standard specifies the requirements for a two component polyurethane, abrasion resistant coating available in a range of colours and levels of gloss, to be applied over a primer for aerospace applications offering resistance to wear on sliding surfaces and resistance to impact from solid particles.

The properties specified in this standard are obtained on defined aluminium alloy test pieces prepared in accordance with EN 3837 Procedure A and ISO 3270 and painted with primer to EN 2435. 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.

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.

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

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

ISO 3696, *Water for analytical laboratory use — Specification and test methods.*

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

EN 2379, *Aerospace series — Fluids for assessment of non-metallic materials.* [1)]

EN 2434 (all parts), *Aerospace series — Paints and varnishes — Two component cold curing polyurethane finish.* [1)]

EN 2435 (all parts), *Aerospace series — Paints and varnishes — Corrosion resistant chromated two component cold curing primer.* [1)]

EN 3837, *Aerospace series — Paints and varnishes — Nature and method for surface preparation of test pieces in aluminium alloys.* [1)]

EN 3840, *Aerospace series — Paints and varnishes — Technical specification.* [1)]

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

STANAG 4477, *Specification for paints and paint systems, resistant to chemical agents and decontaminants, for the protection of aerospace military equipment.*

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

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

3 Definitions

None applicable.

4 Classification

The coating is classified according to the degree of chemical resistance required.

Type A : resistant to phosphate ester hydraulic fluid;

Type B : for military use.

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 standard, in the Tables 1 to 5, shall be performed.

NOTE If the product is formulated by the addition of abrasion resisting ingredient to a product already approved to the appropriate part of EN 2434 without change to the base resin or activator components then only tests in the Tables 1 to 4 need be performed to prove compliance with this standard.

Table 1 — General requirements

Characteristic number	Characteristic	Requirements
1.001	Material description	Two component cold curing polyurethane coating with resistance to abrasion
1.002	Formulation	Base : a base containing an hydroxyl functional resin, solvents and pigments to give the required colour and gloss and other ingredients to give abrasion resistance. Activator : a polyisocyanate activator solution. 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	EN 3840
1.009	Application and use	Dry film thickness of (200 ± 25) µm
1.010	Storage stability	See EN 3840.
1.011	Shelf life	See EN 3840.
1.013	Drying conditions	ISO 3270 for seven days before testing unless otherwise specified. Polyurethane abrasion resistant coating 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 abrasion resistant coating. EN 4406 - Type A or Type B.
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.

Table 2 — Physical and chemical characteristics

Characteristic number	Characteristic		Requirements	
2.008	Freedom from defects *	1	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. The base component and activator component shall each be in a condition such that stirring easily produces a smooth, uniform consistency which, after mixing in the proportions specified by the manufacturer, shall be suitable for spray application.	
2.009	Application and use	1	None	
		3	EN 3837 - A2	2024-T3 clad
		4	EN 3837 Proc. A or B or C	EN 2334 Pickle or CAA or CCC
		5	EN 2435-4 primer + coating to this standard	
		7	Paint film shall show an opaque even finish, free from runs, sags, wrinkling, pinholing or other defect.	

continued

Table 2 *(concluded)*

Characteristic number	Characteristic	Requirements			
2.107	Reactivity – viscosity (flow time)	–	EN 3840		
		1	Test 5		
		6	base + activator + thinner		
	*	7	Ml	≤ 2 × initial value after 4 h	
2.104	Composition – Non volatile matter	–	EN 3840		
		1	Test 1		
		7		Base	Activator
			%	± 2 [a, b]	± 2 [a, b]
2.104	Composition – Volatile organic content	–	EN 3840		
		1	Test 49		
		6	base + activator + thinner		
		7	g/l	≤ reference value [a, b]	
2.301	Density	–	EN 3840		
		1	Test 3		
		6	Base		
	*	7	g/cm^3	± 2 [a, b, c]	
2.301	Density – hydrometer	–	EN 3840		
		1	Test 4		
		6	activator + thinner		
	*	7		Activator	Thinner
			g/cm^3	± 2 [a, b]	± 2 [a, b]
2.109	Flammability – Flash point	–	EN 3840		
		1	Test 7		
	*	7		Base	Activator / Thinner
			°C	≥ reference value [b]	≥ reference value [b] / ≥ reference value [b]
2.106	Reactivity – Through dry	–	EN 3840		
		1	Test 23		
		3	EN 3837 - A2	2024-T3 clad	
		4	EN 3837 Proc. A or B or C	EN 2334 Pickle or CAA or CCC	
		5	EN 2435-4 primer + coating to this standard		
		6	ISO 3270		
	*	7	H	≤ 16	
2.999	Notes	[a] The deviation is that compared to the reference value. [b] The reference value is that established during qualification. [c] Test could also be used for activator and thinner if required.			