

SLOVENSKI STANDARD SIST EN 4474:2009

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Aeronavtika - Premazi, pigmentirani z aluminijem - Premazna metoda

Aerospace series - Aluminium pigmented coatings - Coating methods

Luft- und Raumfahrt - Aluminium pigmenttete Beschichtungen - Beschichtungsverfahren

Série aérospatiale - Revêtements alumino-organiques - Méthode d'application

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<u>ICS:</u>

49.025.20 Aluminij 49.040 Prevleke in z njimi povezani postopki, ki se uporabljajo v letalski in vesoljski industriji

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Aluminium

industry

Coatings and related

processes used in aerospace



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Série aérospatiale - Revêtements alumino-organiques -Méthode d'application Luft- und Raumfahrt - Aluminiumpigmentierte Beschichtungen - Beschichtungsverfahren

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EUROPEAN COMMITTEE FOR STANDARDIZATION COMITÉ EUROPÉEN DE NORMALISATION EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4474:2009) 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

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1 Scope

This standard defines the coating methods and characteristics of aluminium pigmented coatings to EN 4473 which may be applied to fasteners in titanium, titanium alloys, heat resisting nickel base or cobalt base alloys and corrosion resisting steels excluding high strength steels above 1 550 MPa.

2 Purpose of process

To reduce galvanic corrosion, wear, risk of seizing and, in some cases, fretting corrosion.

3 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 2516, Aerospace series — Passivation of corrosion resisting steels and decontamination of nickel base alloys.

EN 3032, Aerospace series — Test method for dry film lubricants — Thickness measurement.

EN 4473, Aerospace series — Aluminium pigmented coatings — Technical specification. ¹⁾

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 ISO 1463, Metallic and oxide coatings <u>54612483100/standards/sist/9e4ddfe7-61a6-47e7-adc2-</u> (ISO 1463:2003).

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).

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).

ISO 2859-1, Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.

ISO 8080, Aerospace — Anodic treatment of titanium and titanium alloys — Sulphuric acid process.

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

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4 Terms and definitions

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

4.1

batch

parts subjected to the same aluminium pigmented coating application at the same time under the same condition

4.2

pre-production parts

parts representing future production parts

4.3

definition document

document specifying directly or indirectly all the requirements for the parts

4.4

scratch

gouged out or scoring of metallic coating

4.5 run

localized excess amount of coating to the extent of creating a drip or running of coating

4.6

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indentation

indent or uneven surface thickness (orange peeprds.iteh.ai)

4.7 flaking

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particles of coating falling off due to poor adhesion or excess coating

4.8

crack

separation of coating due to improper mix or poor adhesion of material

4.9

sampling plan

plan according to which one or more samples are taken in order to obtain information and to reach a decision, if possibly

4.10

acceptable quality limit (AQL)

maximum percent defective (or the maximum number of defects per hundred units) that, for purposes of sampling inspection, can be considered satisfactory as a process average

NOTE Variant: quality level which in a sampling plan corresponds to a specified but relatively high probability of acceptance.

5 Apparatus

5.1 For application by dipping

Container with a lid, stirring device and temperature control

The apparatus shall be capable of applying the specified thickness, for example by controlling the speed of immersion and removal and by draining or centrifuging the parts.

5.2 For application by spraying

A dry, oil free air fed gun shall be used, with settings adapted to the characteristics of the aluminium pigmented coating used and to the shape of the parts to be coated.

Preferably a mechanical stirring device in the reservoir.

NOTE 1 A device allowing for rotation of the parts to be coated and the automatic displacement of the gun will give a more uniform application.

NOTE 2 Use of an aerosol spray is not suitable as it does not always ensure acceptable reproducibility.

5.3 For curing

An oven capable of curing temperatures prescribed by the coating manufacturer and controlled by periodical calibration

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6 Information for the processor

The following information is to be given:

- a) designation of the aluminium pigmented coating to EN 4473;
- b) percentage of solvent plus reference of the solvent product;
- c) number of the material standard and metallurgical condition of the latter;
- d) areas to be processed;
- e) thickness of the pigmented coating, if necessary, (see #able_1); https://standards.iteh.ai/catalog/standards/sist/9e4ddfe7-61a6-47e7-adc2-
- f) duration and temperature of curing. 54612483fdff/sist-en-4474-2009

7 Surface roughness of parts prior to application

It shall be specified on the drawing or in the definition documents.

NOTE The surface roughness is an important factor affecting adhesion and behaviour of the coating in service.

8 Surface preparation

8.1 Parts in titanium and titanium alloys

Unless otherwise specified, anodize to ISO 8080 or degreasing followed by abrasive blasting.

8.2 Parts in corrosion resisting steel

Unless otherwise specified, passivate to EN 2516.

Coating 9

9.1 General

It shall be performed:

- within 24 h, after surface preparation ; precautions shall be taken to prevent contamination or corrosion of a) the parts awaiting treatment;
- in a clean and dry environment, relative humidity between 40 % and 75 %, temperature (20 \pm 5) °C b) avoiding any operations liable to contaminate the surfaces to be treated.

9.2 Application by dipping

Dipping can be performed as follows:

- adjust the viscosity of the solution (see EN ISO 2431 or EN ISO 2884-1) to the value given by the a) manufacturer of the product to be deposited;
- if necessary, pre-heat the parts to about 50 °C; b)
- immerse the parts at a speed determined by tests on pre-production parts; C)
- keep the parts immersed for 2 s to 10 s; d)
- 'eh STANDARD PREVIEW remove the parts at a speed determined by tests on pre-production parts; e)
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- f) drain parts;
- SIST EN 4474:2009 dry parts avoiding handling them; ai/catalog/standards/sist/9e4ddfe7-61a6-47e7-adc2g)
- if necessary, cure the coating in an oven. The temperature and duration shall comply with the values h) given by the manufacturer of the product used.

9.3 Application by spraying

Spaying can be performed as follows:

- adjust the viscosity of the solution (see EN ISO 2431 or EN ISO 2884-1) to the value given by the a) manufacturer;
- if necessary, pre-heat the parts to approx. 50 °C; b)
- produce the coating by applying successive passes, the gun setting and its distance being determined by C) tests on pre-production parts;
- dry parts avoiding handling them; d)
- if necessary, cure the coating in an oven. The temperature and duration shall comply with the values e) given by the manufacturer of the product to be used.

9.4 Other applications

Other application methods producing the same quality of deposit may be used (for example: barrel deposition).