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Interested committees:

Title: Draft BS EN 4868 Aerospace series — Anodic electrodeposition of hexavalent chromium free primer

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Introduction

This draft standard is based on European discussions in which the UK has taken an active part. Your comments on this draft are welcome and will assist in the preparation of the consequent British Standard. Comment is particularly welcome on national, legislative or similar deviations that may be necessary.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	(7)
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/ Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

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ICS: Descriptors: ENGLISH VERSION <u>Aerospace series — Anodic electrodeposition of hexavalent chromium free primer</u> ~~Aerospace series — Anodic electrodeposition of hexavalent chromium free primer~~ <u>Luft- und Raumfahrt — Anodische Elektrotackierung von Grundierung</u> ~~Luft- und Raumfahrt — Anodische Elektrotackierung von Grundierung~~ <u>Série aérospatiale — Electrodeposition anodique d'un primaire sans chrome hexavalent</u> ~~Série aérospatiale — Electrodeposition anodique d'un primaire sans chrome hexavalent~~ This "Aerospace Series" Prestandard has been drawn up under the responsibility of ASD-STAN (The Aerospace and Defence Industries Association of Europe- Standardization). It is published on green paper for the needs of the European Aerospace and Defence Industry. It has been technically approved by the experts of the concerned Domain following member comments. Subsequent to the publication of this Prestandard, the technical content shall not be changed to an extent that interchangeability is affected, physically or functionally, without re-identification of the standard. After examination and review by users and formal agreement of ASD-STAN it will be submitted as a draft European Standard to CEN (European Committee for Standardization) for formal vote.	
Edition approved for publication	Comments should be sent within six months after the date of publication to ASD-STAN Material Domain

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Foreword

This standard was reviewed by the Domain Technical Coordinator of ASD-STAN's Material Domain.

After inquiries and votes carried out in accordance with the rules of ASD-STAN defined in ASD-STAN's General Process Manual, this standard has received approval for Publication.

1 Scope

This standard defines the requirements for hexavalent chromium free anodic electrodeposition of organic coatings on aluminium and aluminium alloys for corrosion protection of parts.

The purpose of this standard is to give design, quality and manufacturing requirements. It doesn't give complete in-house process instructions; these shall be given in the processors detailed process instructions.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3840, *Aerospace series — Paints and varnishes — Technical specification*

EN ISO 1463, *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method*

EN ISO 1518-1, *Paints and varnishes — Determination of scratch resistance — Part 1: Constant-loading method*

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

EN ISO 2360, *Non-conductive coatings on non-magnetic electrically conductive base metals — Measurement of coating thickness — Amplitude-sensitive eddy-current method*

EN ISO 2409, *Paints and varnishes — Cross-cut test*

EN ISO 2812-1, *Paints and varnishes — Determination of resistance to liquids — Part 1: Immersion in liquids other than water*

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

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

EN 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: Assessment of degree of delamination and corrosion around a scribe or other artificial defect*

EN 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*

EN ISO 9220, *Metallic coatings — Measurement of coating thickness — Scanning electron microscope method*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

EN ISO 17872, *Paints and varnishes — Guidelines for the introduction of scribe marks through coatings on metallic panels for corrosion testing*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 General terms

3.1.1

OEM

producer who manufactures products or components that are purchased by a company and retailed under that purchasing company's brand name

Note 1 to entry: the OEM can also apply the process.

3.1.2

manufacturer

company or person who makes, manufactures, assembles components

Note 1 to entry: the manufacturer can also apply the process.

3.1.3

processor

company or person who applies the process

3.1.4

process instruction

document that describes the application scopes, detailed process (key parameters, detailed steps, etc.), quality management, environmental and safety regulations, etc.

3.1.5

batch

unless otherwise specified, it comprises parts of the same type (i.e. shape, size, material), processed at the same time in the same bath

3.2 Technical terms

3.2.1

Mechanically Disturbed Layer

MDL

layer that is present at the surface resulting from the rolling process of the material

3.2.2

pit

surface corrosion defect at which the anodic coating is penetrated

Note 1 to entry: Typical characteristics of corrosion pits are:

- rounded or irregular or elongated geometry,
- comet tail or line or halo that emerges from the cavity,

- some corrosion by products inside pits (on aluminium the by-product may be granular, powdery or amorphous and white, grey or black in colour).

To be considered as a corrosion pit, a surface cavity shall exhibit at least two of the above characteristics.

3.3 (see 3.1.4)

process instruction

~~document that describes the application scopes, detailed process (key parameters, detailed steps, etc.), quality management, environmental and safety regulations, etc.~~

3.4 3.2.3

rework

repetition of the anodic electrodeposition process step after complete stripping of the layer

3.5 (see 3.1.5)

batch

~~unless otherwise specified, it comprises parts of the same type (i.e. shape, size, material), processed at the same time in the same bath~~

3.6 3.2.4

anodic electrodeposition

industrial coating method in which negatively charged ~~paint~~**organic coating** particles in aqueous solution migrate (electrophoresis) toward the anode of a direct-current electrical circuit passing through the solution, so that electrolysis of water creates a localized pH gradient, precipitating a uniform layer of coating on the anode

3.7 3.2.5

ultra-filtrate

effluent generated from an electrocoat bath passing across an ultrafilter membrane

Note 1 to entry: The effluent is mainly composed of water and water soluble species.

4 Purpose of process

4.1 General

This specification establishes the requirements for a waterborne, hexavalent chromium free corrosion inhibiting, chemical and solvent resistant, anodic electrodeposition of organic coating capable of curing at 110 °C to 120 °C.

The anodic electrodeposition process applies a protective coating with uniform film thickness control, complete coverage of recessed areas, minimal surface defects and high transfer efficiency. Once the film is deposited on the substrate, a thermal cure is required to achieve the final properties of the coated parts

4.2 Applicability

It can be used as a protection against corrosion, as an ~~an painting~~**organic coating** primer before top coating application, for electrical insulation, and as a masking before anodizing and/or conversion.

4.3 Limitations

4.3.1 All processes that can compromise the anodic electrodeposition film (e.g. forming, blasting, shot peening, heat-treatment) shall be performed prior to surface preparation of the parts to be coated).

4.3.2 Anodic electrodeposition shall not be applied: