SLOVENSKI STANDARD
SIST EN 13438:2014

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SIST EN 13438:2006

Barve in laki - Praškasti organski premazi za izdelke iz vroče pocinkanega ali difuzijsko pocinkanega jekla za gradbeništvo

Paints and varnishes - Powder organic coatings for hot dip galvanised or sherardised steel products for construction purposes

Beschichtungsstoffe - Pulverbeschichtungen für feuerverzinkte oder sherardisierte Stahlerzeugnisse für Bauzwecke

Peintures et vernis - Revêtements de poudre organique pour produits en acier galvanisé à chaud ou shérardisé utilisés dans la construction

Ta slovenski standard je istoveten z: **EN 13438:2013**

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Paints and varnishes - Powder organic coatings for hot dip galvanised or sherardised steel products for construction purposes

Peintures et vernis - Revêtements de poudre organique pour produits en acier galvanisé à chaud ou shérardisé utilisés dans la construction

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This European Standard was approved by CEN on 19 July 2013.

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Foreword

This document (EN 13438:2013) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

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.

This document supersedes EN 13438:2005.

In relation to EN 13438:2005, the following main amendments have been made:

a) the term defined as "test sample" has been removed;

b) a new term "substrate" has been introduced;

c) a paragraph in Clause 4 includes references to EN ISO 14713-2 and EN ISO 14713-3 to optimise design of articles sent for processing to this standard;

d) tolerance limits on gloss requirements has been tightened slightly for gloss levels over 50 units (reduced from ± 10 units to ± 7 units) and "Table 1 — Gloss requirements" removed;

e) Clause 6 has been edited to clarify references to "cleaning" as distinct from "preparation" or "pretreatment";

f) reference to (old) Table 1 in 6.5.5 "Gloss" has been removed;

g) an adhesion test on the finished powder coated article is now not mandatory (see revised 6.5.6) and if required should be specified;

h) a new "Table 1 — Summary of tests" has been included for ease of reference, after Clause 7;

i) the minimum thickness of coated test panels used for tests for mechanical properties has been increased from 0,3 mm to 1,0 mm (see A.3.1);

j) reference to updated standards have been included, e.g. replacement of ISO 7724-3 with EN ISO 11664-4 (see A.4.2) and replacement of ISO 1518 with EN ISO 1518-1 (see A.4.5);

k) Annex B has been edited to clarify references to "cleaning" and "pretreatment" and the content reduced;

l) the possibility of an adhesion test on finished article now included in Annex D (see D.3.5);

m) the content of Annex E has been reduced – reference has been made to EN 15773 for further information.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard has been produced as a result of the growing demand for products made of powder coated hot dip galvanised or sherardised steel. These products offer a combination of corrosion resistance and decorative appearance.

It is assumed in the drafting of this standard that the specified test methods will be applied by those who are suitably trained and supervised.

This European Standard has been written from a coating performance perspective and does not seek to set out one method of powder coating hot dip galvanised or sherardised steel products. Nevertheless, in order to facilitate production of the best quality powder coated hot dip galvanised or sherardised articles, experience has shown how important it is that sufficient dialogue between the client, specifier, designer, fabricator, galvaniser or sherardiser and powder coating applicator takes place at the earliest stages of the project and that, where possible, timescales set out for processing of the work are practical and adhered to.

It is strongly recommended that the guidance document for supply of duplex coatings, EN 15773, *Industrial application of powder organic coatings to hot dip galvanized or sherardized steel articles [duplex systems] — Specifications, recommendations and guidelines*, is used in combination with this standard when specifying for duplex systems.

1 Scope

This European Standard specifies performance requirements for organic coating powders and powder organic coatings as applied to finished articles (hot dip galvanised or sherardised steel products) for construction purposes. Hot dip galvanised steel products can be articles that have been batch hot dip galvanised (hot dip galvanised after fabrication) or articles consisting of continuously hot dip galvanised sheet which is then subsequently fabricated.

This European Standard does not set out any performance requirements for the powder coating process itself. Guidance on cleaning and pretreatment of the hot dip galvanised or sherardised steel products prior to powder coating is provided.

This European Standard does not apply to articles with zinc-aluminium coatings or aluminium-zinc coatings, or to continuously hot dip galvanised wire. This standard does not apply to organic coating powders and powder organic coatings as applied to hot dip galvanised or sherardised steel products (i.e. duplex coated articles) for which there are specific standards, which might include additional requirements or requirements which are different from those of this standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10346, *Continuously hot-dip coated steel flat products — Technical delivery conditions*

EN 13811, *Sherardizing — Zinc diffusion coatings on ferrous products — Specification*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods (ISO 1461)*

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

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

EN ISO 2178, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method (ISO 2178)*

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

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

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

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813)*

EN ISO 3231, *Paints and varnishes — Determination of resistance to humid atmospheres containing sulfur dioxide (ISO 3231)*

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

EN ISO 4618:2006, *Paints and varnishes — Terms and definitions (ISO 4618:2006)*

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

EN ISO 8130-9, *Coating powders — Part 9: Sampling (ISO 8130-9)*

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

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

EN ISO 11664-4, *Colorimetry — Part 4: CIE 1976 L*a*b Colour space (ISO 11664-4)*

ISO 10474, *Steel and steel products — Inspection documents*

3 Terms and definitions

For the purposes of this document, the terms and definitions contained in EN ISO 4618:2006 and the following apply.

3.1
finishing coat
final coat of a coating system

[SOURCE: EN ISO 4618:2006, 2.108]

3.2
conversion coating
layer produced on a hot dip galvanised or sherardised steel surface by a chemical treatment

3.3
powder coating
dry film obtained by application and fusing of a coating powder

3.4
coating powder
solvent-free coating material in powder form which, after fusing and possible curing, gives a continuous film

3.5
test piece
single item, representative of the work being processed

3.6
significant surface
part of the coated article on which the coating is essential for serviceability of the article

3.7
specifier
person specifying the performance requirements for the coating and significant surfaces of the article

3.8
coating applicator
company responsible for applying the coating powder onto a substrate

3.9
substrate
surface to which a coating material is applied or is to be applied

[SOURCE: EN ISO 4618:2006, 2.219]

4 Substrate material

The substrate shall be hot dip galvanised steel in accordance with EN ISO 1461, EN 10346, or sherardised steel in accordance with EN 13811. If required, steel sections shall be free from surface imperfections such as die lines and laminations. Unless otherwise agreed, the preparation of the surface of the hot dip galvanised article, such that the surface is suitable for pretreatment and application of powder to the surface, shall be the responsibility of the coating applicator (see 3.8).

The galvaniser or the sherardiser and coating applicator should be consulted about the design of the steel products intended for galvanising or sherardising after construction, prior to the fabrication stage, in order to optimise galvanising and powder coating quality.

NOTE EN 15773 and EN ISO 12944-4 provide some guidance on surface conditions that might be encountered on post fabrication hot dip galvanised or sherardised articles.

To achieve optimum quality of finished product, sharp edges on the fabrication should be avoided (see EN ISO 14713-2 and EN ISO 14713-3).

5 Coating powder

5.1 Identification

The following information shall be made available by the supplier for each consignment of coating powder:

a) manufacturer;

b) trade name;

c) colour;

d) gloss level;

e) type of resin;

f) batch number;

g) box number;

h) product reference code;

i) date of manufacture;

j) date of despatch.

5.2 Storage

The coating powder, after storage in unopened containers for a maximum period indicated by the manufacturer, calculated from the date of dispatch by the manufacturer, shall still conform to 5.3. If no maximum permissible storage period is indicated by the manufacturer, the coating powder shall, after storage in unopened containers for up to 12 months from the date of despatch by the manufacturer, conform to 5.3.

The storage temperature shall not exceed 25 °C unless otherwise specified by the coating powder manufacturer.

Coating powder that has been stored for longer than the maximum permissible period indicated by the manufacturer (or if no maximum permissible storage period has been indicated and the coating powder has been stored for longer than 12 months) shall only be used upon agreement between the manufacturer and the coating applicator.

5.3 Performance requirements

5.3.1 General

The following requirements (5.3.2. to 5.3.12) shall be met. Tests shall be carried out in accordance with Annex A by the manufacturer of the coating powder.

The manufacturer of the coating powder shall identify, with reference to Class 1 or Class 2, the performance capability of powder supplied, dependent upon the results of testing set out in 5.3.12.

5.3.2 Colour

When a coated test panel is examined in accordance with A.4.2, the colour of the coating shall be within the tolerance limits indicated by the manufacturer.

5.3.3 Gloss

When a coated test panel is examined in accordance with A.4.3, the gloss level of the coating shall be within the tolerance limits indicated by the manufacturer. If no tolerance limits have been indicated by the manufacturer, the tolerance limits on the gloss level of the coating shall be ±7 units.

5.3.4 Adhesion

When a coated test panel is tested in accordance with A.4.4, the result shall be in accordance with the classification 0 of EN ISO 2409.

5.3.5 Resistance to scratching

When a coated test panel is tested in accordance with A.4.5, there shall be no penetration through the coating to the substrate.

5.3.6 Resistance to deformation

When a coated test panel is tested in accordance with A.4.6, there shall be no cracking or delamination of the coating from the substrate.

5.3.7 Resistance to mortar

When a coated test panel is tested in accordance with A.4.7, the mortar shall be readily dislodged without the use of an implement. There shall be no detachment of the coating and no change in its appearance.

5.3.8 Resistance to weathering

A coated test panel shall conform to one of the following weathering tests, dependent on the product and following the agreement between the coating applicator and the specifier.

a) Resistance to artificial weathering: After testing in accordance with A.4.8.1, there shall be no signs of cracking or blistering. The residual gloss level shall be more than 40 % of the original gloss level. Colour changes shall be within the limits agreed by the coating applicator and the specifier (e.g. as ΔE and/or ΔC and/or ΔL).