

Zinc coatings - Guidelines and recommendations for the protection against corrosion of iron and steel in structures - Part 2: Hot dip galvanizing

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 14713-2:2010 sisaldab Euroopa standardi EN ISO 14713-2:2009 ingliskeelset teksti.

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English Version

Zinc coatings - Guidelines and recommendations for the
protection against corrosion of iron and steel in structures - Part
2: Hot dip galvanizing (ISO 14713-2:2009)

Revêtements de zinc - Lignes directrices et
recommandations pour la protection contre la corrosion du
fer et de l'acier dans les constructions - Partie 2:
Galvanisation à chaud (ISO 14713-2:2009)

Zinküberzüge - Leitfäden und Empfehlungen zum Schutz
von Eisen- und Stahlkonstruktionen vor Korrosion - Teil 2:
Schmelztauchverzinken (ISO 14713-2:2009)

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 14713-2:2009) has been prepared by Technical Committee ISO/TC 107 "Metallic and other inorganic coatings" in collaboration with Technical Committee CEN/TC 262 "Metallic and other inorganic coatings", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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Endorsement notice

The text of ISO 14713-2:2009 has been approved by CEN as a EN ISO 14713-2:2009 without any modification.

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Part 2: Hot dip galvanizing

1 Scope

This part of ISO 14713 provides guidelines and recommendations regarding the general principles of design which are appropriate for articles to be hot dip galvanized for corrosion protection.

The protection afforded by the hot dip galvanized coating to the article will depend upon the method of application of the coating, the design of the article and the specific environment to which the article is exposed. The hot dip galvanized article can be further protected by application of additional coatings (outside the scope of this part of ISO 14713), such as organic coatings (paints or powder coatings). When applied to hot dip galvanized articles, this combination of coatings is often known as a “duplex system”.

The guidelines and recommendations in this part of ISO 14713 do not deal with the maintenance of corrosion protection in service for steel with hot dip galvanized coatings. Guidance on this subject can be found in ISO 12944-5.

Specific product-related requirements (e.g. for hot dip galvanized coatings on tubes or fasteners, etc.) will take precedence over these general recommendations.

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

ISO 4964, *Steel — Hardness conversions*

ISO 8044, *Corrosion of metals and alloys — Basic terms and definitions*

ISO 10684, *Fasteners — Hot dip galvanized coatings*

ISO 12944-5, *Paints and varnishes — Corrosion protection of steel structures by protective paint systems — Part 5: Protective paint systems*

EN 10210-1, *Hot finished structural hollow sections of non-alloy and fine grain steels — Part 1: Technical delivery requirements*

EN 10219-1, *Cold formed welded structural hollow sections of non-alloy and fine grain steels — Part 1: Technical delivery requirements*

EN 10240, *Internal and/or external protective coatings for steel tubes — Specification for hot dip galvanized coatings applied in automatic plants*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following apply.

3.1 hot dip galvanizing
formation of a coating of zinc and/or zinc/iron alloys on iron and steel products by dipping prepared steel or cast irons in the zinc melt

3.2 hot dip galvanized coating
coating obtained by hot dip galvanizing

NOTE The term “hot dip galvanized coating” is subsequently referred to as the “coating”.

4 Design for hot dip galvanizing

4.1 General

It is essential that the design of any article required to be finished should take into account not only the function of the article and its method of manufacture but also the limitations imposed by the finish. Annex A illustrates some of the important design features, some of which are specific to hot dip galvanizing.

Some internal stresses in the articles to be galvanized will be relieved during the hot dip galvanizing process and this may cause deformation or damage of the coated article. These internal stresses arise from the finishing operations at the fabrication stage, such as cold forming, welding, oxy-cutting or drilling, and from the residual stresses inherited from the rolling mill. The purchaser should seek the advice of the hot dip galvanizer before designing or making a product that is subsequently to be hot dip galvanized, as it may be necessary to adapt the construction of the article for the hot dip galvanizing process.

The purchaser should be aware of the two distinct types of hot dip galvanizing and take these distinctions into account when designing articles:

- a) hot dip galvanizing after fabrication – where, after suitable pretreatment, fabricated iron or steel articles are dipped in a bath containing a zinc melt (see ISO 1461);
- b) continuous galvanizing – where, after suitable pretreatment, sheet materials are continuously fed through a zinc melt and the hot dip galvanized sheet materials are then used to fabricate an article (see EN 10346).

4.2 Surface preparation

The design and the materials used should permit good surface preparation. This is essential for the production of a high-quality coating (see 6.2). Surfaces should be free from defects to ensure a coating of good appearance and serviceability.

Graphite exposed at the surface of iron castings interferes with wetting by molten metal and those castings that have been annealed may have silica particles in the surface layers which have to be removed in order to obtain a good-quality hot dipped coating. Grit blasting is recommended both before and after annealing.