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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 44150-2024

**Metallic and other inorganic coatings - Electrodeposited zinc
alloys with nickel, cobalt or iron**

金属及其他无机覆盖层 锌与镍、钴或铁合金电镀层

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is modified to adopt ISO 15726:2009 "Metallic and other inorganic coatings - Electroplated coatings of zinc and nickel, cobalt or iron alloys".

The technical differences between this document and ISO 15726:2009 and their reasons are as follows.

--- Replaced ISO 2080 with the normative reference GB/T 3138 (see Chapter 3); replaced with the normative reference GB/T 5270 ISO 2819 (see A.2); ISO 3882 (see A.1) is replaced by GB/T 6463, which is a normative reference;

GB/T 12334 replaces ISO 2064 (see Chapter 3); GB/T 12609 replaces ISO 4519 with normative references (See Chapter 7); The normative reference GB/T 17720 replaces ISO 10308 (see A.3); The normative reference GB/T 17721 replaces ISO 10309 (see A.3); GB/T 19349, which is a normative reference, replaces ISO 9587 (see 3 and 6.7); ISO 9588 (see Chapter 3 and 6.8) is replaced by the normative reference GB/T 19350 to apply the

Chinese technical Technical conditions to improve operability;

--- Added the terms and definitions of "white rust" and "red rust" (see 3.1 and 3.2) to define the corrosion types;

--- Deleted the normative reference ASTM B117 (see 6.6, Appendix B) to adapt to my country's technical conditions;

--- Added normative reference GB/T 10125 (see 6.6, Appendix B) to adapt to my country's technical conditions;

--- Added normative reference GB/T 41950 (see 6.8) to clarify the guidance value of hydrogen heat treatment after electroplating;

--- Added heat treatment requirements to reduce hydrogen embrittlement (see 6.8) to adapt to my country's technical conditions;

--- Added Chapter 8 "Test Report".

The following editorial changes were made to this document.

--- Adjusted the structure of Table 2, and changed the thickness of ZnNi, ZnCo and ZnFe from vertical to horizontal to adapt to the standards of my country.

Use habit;

--- Change "Description" in Table 3 to "Color, Surface Appearance", and add "Type" and "Remarks" in Table 3;

--- Added the tensile strength symbol R_m and the symbol description;

--- In Table B.1, the "Alloy coating symbol" is added, and the "Minimum corrosion time of zinc alloy coating (no white rust)" and the order of "the shortest time of base metal corrosion (no red rust)" is adopted to adapt to the standard usage habits in my country.

Introduction

The zinc alloy electroplating layer is an anodic coating on the steel substrate. The corrosion resistance of the zinc alloy electroplating layer containing nickel, cobalt or iron is significantly higher than that of the same coating.

Thickness of zinc plating layer.

For zinc-nickel alloys, proprietary acid and alkaline electroplating processes exist that produce deposits with controlled nickel content.

Nickel plating is the most widely used and can also be used as an alternative to cadmium plating. Zinc-nickel alloy plating can also be made using the brush plating process.

Zinc alloy electroplating is used in combination with chromate passivation layer, organic

sealant and other post-plating treatments to further improve corrosion resistance; zinc alloy Gold electroplating can also serve as an underplating for organic overlays.

Metal and other inorganic coatings Electroplated coatings of zinc and nickel, cobalt or iron alloys Warning --- Some of the substances and processes required by this document may be harmful to health if appropriate measures are not taken.

It does not discuss any health, safety or environmental hazards and regulations that may be involved in the use of this document. Users of this document are responsible for establishing Appropriate and feasible health, safety and environmental regulations, and take appropriate measures to comply with relevant national laws and regulations.

It means exemption from legal obligations.

1 Scope

This document specifies the requirements for electroplated coatings of zinc alloys containing nickel, cobalt or iron, including marking, chromate passivation layers and other post-plating treatments.

method.

This document applies to electroplated coatings of zinc alloys containing nickel, cobalt or iron.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 3138 Terminology for surface treatment of metals and other inorganic coatings (GB/T 3138-2015, ISO 2080:2008, IDT) GB/T 5270 Review of the test method for adhesion strength of electrodeposited and chemically deposited metal coatings on metal substrates (GB/T 5270-2005, ISO 2819:1980, IDT) GB/T 6463 Review of the measurement method for thickness of metal and other inorganic coatings (GB/T 6463-2005, ISO 3882:2003, IDT) GB/T 10125 Artificial atmosphere corrosion test Salt spray test (GB/T 10125-2021, ISO 9227:2017, MOD) GB/T 12334 Definitions and general rules for thickness measurement of metals and other non-organic coatings (GB/T 12334-2001, ISO 2064:1996, IDT) GB/T 12609 Sampling procedures for inspection of electrodeposited metallic coatings and related finishes by counting (GB/T 12609-2005, ISO 4519:1980, IDT) GB/T 17720 Review of porosity test for metallic coatings (GB/T 17720-1999, ISO 10308:1995, IDT) GB/T 17721 Metallic coating porosity test Iron reagent test (GB/T 17721-1999, ISO 10309:1994, IDT)

GB/T 19349 Pretreatment of steel with metallic and other inorganic coatings to reduce the risk of hydrogen embrittlement (GB/T 19349-2012, ISO 9587:2007, IDT) GB/T 19350 Treatment of coated steel with metallic and other inorganic coatings to reduce the risk of hydrogen embrittlement (GB/T 19350-2012, ISO 9588:2007, IDT) GB/T 26107 Residual hydrogen embrittlement test for metal and other inorganic coatings, plated and unplated metal external threads and screws Wedge method (GB/T 26107-2010, ISO 10587:2000, IDT) GB/T 41950 Metallic coatings - Electroplated coatings of zinc and zinc alloys on steel without hexavalent chromium treatment (GB/T 41950-2022, ISO 19598:2016, MOD) ISO 15724 Metallic and other inorganic coatings - Chemical test for hydrogen diffusion in steel - Barnacle electrode method