

ICS 25.220.40

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

GB/T 41950-2022

**Metallic coatings - Electroplated coatings of zinc and zinc
alloys on iron or steel with supplementary Cr(VI)-free treatment**

Issued on: December 30, 2022

Implemented on: July 1, 2023

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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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 19598.2016 "Zinc and zinc alloy electroplating coatings on iron and steel with hexavalent chromium-free treatment".

Compared with ISO 19598.2016, this document has made the following structural adjustments.

---The sequence of "barrel plating and rack plating" and "post-plating treatment" has been

reversed according to the sequence of processes.

The technical differences between this document and ISO 19598:2016 and their reasons are as follows.

--- Increase the definition of "white rust" and "red rust" (see 3.1 and 3.2) to define the type of corrosion;

--- Change the nickel mass fraction in the definition of "ZnNi" from "12%~16%" to "8%~16%" (see Table 1, ISO 19598:2016

Table 1), in order to meet the actual application situation in our country;

--- Changed the requirements for the hexavalent chromium-free test (see 8.3) to meet the actual application situation in our country.

The following editorial changes have been made to this document.

--- Change the title of 4.3 "post-treatment" to "sealing layer or surface coating";

--- Change "/" in the identification example to "/" (see 4.5, 8.1);

--- Change the title of 7.1 "Surface pretreatment and electroplating" to "Process control and process flow";

--- Added references to Figure 1, Table 3 and Table 6;

--- Changed the informative references in the thickness and adhesion test.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

There are two main differences between the hexavalent chromium-free system and the hexavalent chromium system.

- a) The hexavalent chromium-free system has no self-healing ability;
- b) The hexavalent chromium-free system has higher heat resistance (greater than 150°C), while the heat resistance limit of the hexavalent chromium system is not greater than 70°C.

Hexavalent chromium-free treated steel on metal cladding

Zinc and zinc alloy plating

1 Scope

This document stipulates the identification of zinc and zinc alloy electroplating coating systems without hexavalent chromium passivation treatment on the surface of steel and the specified test conditions

The minimum corrosion resistance and minimum coating thickness required to be achieved. The zinc alloy electroplating layer contains nickel or iron alloy elements, which are called zinc-nickel alloys respectively.

Gold plating or zinc-iron alloy plating.

This document is applicable to zinc and zinc alloy electroplating coatings without hexavalent chromium passivation treatment on steel surface. The main purpose of an electroplating layer or coating system is to

Protects steel components from corrosion.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

Note. GB/T 3138-2015 Terminology for Surface Treatment of Metals and Other Inorganic Coatings (ISO 2080.2008, IDT)

ISO 3497 Metallic coatings-Measurement of thickness measurement by X-ray spectrometry

Note. GB/T 16921-2005 X-ray spectroscopic method for measuring the thickness of metal coatings (ISO 3497.2000, IDT)

ISO 3613.2021 Tests for chromate conversion coatings of zinc, cadmium, aluminum-zinc alloys and zinc-aluminum alloys on metals and other inorganic coatings

ium-zincalloys and zinc-aluminiumalloys-Testmethods)

tests)

Note. GB/T 10125-2021 Artificial atmosphere corrosion test salt spray test (ISO 9227.2017, MOD)

Note. GB/T 19349-2012 Metal and other inorganic coatings to reduce the risk of hydrogen embrittlement steel pretreatment (ISO 9587.2007, IDT)

ISO 9588 Treatment of coated steel and steel with metallic and other inorganic coatings to reduce the risk of hydrogen embrittlement (Metalicandotherin-

ment)

Note. GB/T 19350-2012 Metal and other inorganic coatings for the treatment of coated steel

to reduce the risk of hydrogen embrittlement (ISO 9588.2007, IDT)

Note. There is no technical difference between the referenced content of ISO 27830.2017 and the referenced content of ISO 27830.2008.

3 Terms and Definitions

The following terms and definitions apply to this document as defined in ISO 2080.

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