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

GB/T 17720-2025

Replacing GB/T 17720-1999

Metallic coatings - Review of porosity tests

金属覆盖层 孔隙率试验评述

(English Translation)

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Table of Contents

Preface	
1 Scope	
2 Normative References	
3 Terms and Definitions	
4 Principle	
5 Common characteristics of porosity tests	
6 Test specimens	
7 Specific porosity tests	
7.1 Alizarin test	
7.2 Anthraquinone test	
7.3 Cadmium sulfide test	
7.4 Copper Sulfate (Preece) Test	
7.5 Dupernel Test for Copper Sulfate	
7.6 Corrosion Test of Corrosion Paste (CORR)	
7.7 Electrolytic Imaging Experiment	
7.8 Ferrocyanide Test	
7.9 Ferrin Test	
7.10 Iron reagent test	
7.11 Sulfur evaporation porosity test	
7.12 Hot Water Test	
7.13 Hydrogen sulfide or sulfur dioxide/hydrogen sulfide test	
7.14 Hematoxylin test	
7.15 Magnesium Reagent Test	
7.16 Nitric Acid Vapor Test	
7.17 8-Hydroxyquinoline test	
7.18 Permanganate Test	
7.19 Polysulfide Test	
7.20 Alpha-Nitrosamino-beta-naphthol test	
7.21 Salt spray test [Neutral salt spray test (NSS), Acetic acid salt spray test (AASS), Copper accelerated acetic acid salt spray test (CASS)]	
7.22 Sulfur Dioxide Test	
7.23 Sulfurous acid/sulfur dioxide atmosphere test	

7.24 Thiocyanate Test

7.25 Thioacetamide Test (TAA)

7.26 Acetic acid test for casing

7.27 Sodium bisulfite test for watch case

Appendix A (Informative) Schematic diagram of pore types

Appendix B (Informative) Typical Reports and Evaluations of Porosity Tests

B.1 Report

B.2 Rating

B.3 Measurement Instability

Appendix C (Informative) Classification of Discontinuities in Metallic and Other Inorganic Coatings

Appendix D (Informative) Porosity Test Table

Appendix E (Informative) Classification of Test Methods for Porosity of Overburden Layers

Appendix F (Informative) Test List for Substrates and Coverings

References

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document replaces GB/T 17720-1999 "Review of Porosity Tests for Metallic Coatings". Compared with GB/T 17720-1999, except for...

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The summary of the cadmium sulfide test method has been revised (see 7.3.2, 1999 edition of 7.3.2);
- b) The scope of application for the Dupernel test has been modified (see 7.5.1, 1999 edition 7.5.1);
- c) The summary of the corrosion resistance test (CORR) method has been revised (see 7.6.2, 1999 edition of 7.6.2);
- d) The scope of application of the ferrite test has been changed (see 7.9.1, 7.9.1 of the 1999 edition);
- e) The scope of application of the iron reagent test has been changed (see 7.10.1, 1999

edition of 7.10.1);

f) The scope of application for the sulfur emulsion porosity test has been modified (see 7.11.1, 1999 edition of 7.11.1);

g) The scope of application for hot water testing has been changed (see 7.12.1, 1999 edition of 7.12.1);

h) The water requirements for hot water testing have been changed (see 7.12.2, 1999 edition);

i) The scope of application for the nitric acid vapor test has been changed (see 7.16.1, 7.16.1 of the 1999 edition);

j) The summary of the method for the nitric acid vapor test has been revised (see 7.16.2, 1999 edition of 7.16.2);

k) The scope of application of the salt spray test has been changed (see 7.21.1, 7.21.1 of the 1999 edition);

l) The scope of application of the thioacetamide test has been changed (see 7.25.1, 7.25.1 of the 1999 edition);

m) The concentration requirements for thioacetamide crystals have been changed (see 7.25.2, 7.25.2 in the 1999 edition).

This document is modified to adopt ISO 10308:2006 "Metallic coatings - Porosity test evaluation".

Compared with ISO 10308:2006, this document has undergone the following structural adjustments.

a) Appendix A corresponds to Appendix C in ISO 10308:2006, and Appendix C corresponds to Appendix D in ISO 10308:2006. Appendix D...

According to Annex A of ISO 10308:2006;

b) B.1.2 corresponds to B.1.1 in ISO 10308:2006, B.1.3 corresponds to B.1.2 in ISO 10308:2006, and B.1.4 corresponds to...

B.1.3 of ISO 10308:2006.

The technical differences between this document and ISO 10308:2006, and the reasons therefor, are as follows.

a) The scope of application has been expanded (see Chapter 1) to adapt to my country's technological conditions;

b) ISO 2080:1981 (see Chapter 3) has been replaced with the normatively referenced GB/T 3138 to adapt to my country's technical conditions;

c) The requirements for water in the hot water test have been modified (see 7.12.2).

The following editorial changes have been made to this document.

a) Added introductory phrases for Tables C.1, D.1, D.2, and E.1;

b) A test list arranged in alphabetical order of Chinese pinyin for the substrate and the cover layer (see Appendix F).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Metallic and Non-metallic Coatings (SAC/TC57).

1 Scope

This document reviews published methods for displaying porosity (see GB/T 3138) and discontinuities in the overlay.

This document applies to aluminum, anodized aluminum, brass, cadmium, chromium, cobalt, copper, gold, indium, lead, nickel, nickel-boron, nickel-cobalt, nickel-iron, nickel-phosphorus, palladium, and platinum.

Enamelled porcelain or porcelain, rhodium, silver, tin, tin-lead, tin-nickel, tin-zinc, zinc and other coatings, as well as aluminum, beryllium-copper, brass, copper, iron, nickel-iron-cobalt alloys, magnesium, nickel, etc.

Chromate conversion coatings, phosphate conversion coatings, and fluorine-zirconium conversion coatings on nickel-boron, nickel-phosphorus, phosphorus-bronze, silver, steel, tin-nickel, and zinc alloy base metals.

Titanium-zirconium conversion coating; other conversion coatings are used in the same manner (including relevant organic coatings).

The test method described in this document forms observable reaction products by reacting with the substrate exposed at discontinuities in the capping layer.

Note 1: Pores are generally perpendicular to the surface of the capping layer, but may also be inclined to it; they are often cylindrical or twisted, see Appendix Record A.

Note 2: Pore sizes vary, ranging from submicroscopic (invisible under a regular microscope) to microscopic (visible at 10x to 1000x magnification) to macroscopic (visible even under flesh-like scales).

Visible to the naked eye.

Note 3: Porosity can be clearly seen through the discoloration of the coating surface.