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

GB/T 43101-2023

**Metallic and other inorganic coatings - Definitions and
conventions concerning porosity**

金属及其他无机覆盖层 关于孔隙率的定义和一般规则

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Foreword

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Metallic and Other Inorganic Coatings - Definitions and Conventions Concerning Porosity 1
Scope

This document defines porosity and its related terms and describes the principle of porosity test of metallic and other inorganic coatings. This document provides the purpose of porosity test to help users choose the most suitable test method for their products and applications. This document is applicable to the test of discontinuities, such as: cracks, micropores, pores or pits that extend from the surface of the coating to the underlying layer or substrate. This document is not applicable to corrosion performance evaluation.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 17720 Metallic Coatings - Review of Porosity Tests (GB/T 17720-1999, eqv ISO 10308:1995)

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 porosity Porosity refers to holes, cracks or other discontinuities (3.3) in the coating that expose the underlying metal or substrate to the environment.

3.2 pore in a coating Pore in a coating refers to a circular discontinuity (3.3) on a surface that extends to the underlying layer or base metal. NOTE: for the size of the pore, see GB/T 17720.

3.4 corrosion product Corrosion product refers to a substance formed due to corrosion.

4 Test Purpose

The main purpose of porosity test is to determine the quality of the coating and identify porosity of the coating, especially in areas with functional requirements on the main surface, for example, electric contacts. In order to test the porosity of metallic and other inorganic coatings, it is necessary to consider two corrosion methods, namely, electrochemical test and exposure test. Both methods can be used to identify the existence, distribution and extent of porosity. The chosen test method depends on the nature of the coating, substrate and underlying layer. Generally speaking, electrochemical test has an accelerated nature and is performed under controlled chemical, electrical and physical conditions, with relative short exposure times, making it ideal for production process control. Exposure test (immersion test, liquid mist test and gas atmosphere test) usually lasts for a relatively long time, and the exposure form (for example, static or cyclic) can be selected in accordance with product requirements. This type of test is especially applicable to product quality appraisal (qualification assessment). The classification of porosity test shall be carried out in accordance with GB/T 17720.

5 Principle 5.1 Electrochemical Test

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