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

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**Corrosion of metals and alloys - Corrosion tests in artificial
atmospheres - Guidelines for selection of accelerated corrosion
test for product qualification**

金属和合金的腐蚀 人造气氛腐蚀试验 产品鉴定加速腐蚀试验选择指南
(English Translation)

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Foreword

This document is a report-type guidance technical document.

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 is equivalent to ISO /T R16335.2013 "Corrosion of metals and alloys - Artificial atmosphere corrosion testing - Product identification - Accelerated corrosion". "Guidelines for Selecting Corrosion Tests". This document includes a new chapter on "Terms and Definitions".

Introduction

This document is a guide for selecting appropriate accelerated corrosion tests and an overview of different international standard test methods.

Therefore, this document is not suitable as a standardization document, but relevant industries and testing institutions greatly need it.

Therefore, this document is prepared in the form of a guiding technical document.

Corrosion testing methods have evolved from qualitative to quantitative approaches, and the preconditions for corrosion testing in product evaluation are also changing. In testing equipment... The adoption of new control technologies and adjustments to climate test parameters improved the reproducibility of the experiment. To better integrate the laboratory test results... To translate this into tangible results, quantitative characterization methods for corrosion performance have been introduced in recent years. To assess the impact of corrosion on product functionality, methods are employed... Quantitative methods are used to assess changes in functional performance and related chemical changes caused by corrosion of component materials.

Field exposure testing has been, and continues to be, a traditional method for verifying the corrosion resistance of new materials and products, especially for testing new surfaces.

Surface treatment systems or anti-corrosion coatings. Field tests can be conducted in highly corrosive areas such as marine or industrial zones. Field test locations typically represent the most... The harsh environment means that tests conducted at these locations can be considered accelerated tests. However, the acceleration is mostly mild and typically requires... It takes a long time to obtain results on whether the tested material or product meets the requirements for corrosion resistance.

For assessing the corrosion resistance of new materials and products, accelerated corrosion testing is typically required during product design. Corrosion testing... The higher the degree of acceleration, the more advantageous it is for shortening the required test time in accelerated corrosion testing. On the other hand, the higher the degree of acceleration of the corrosion process during the test... The higher the temperature, the more difficult it is to accurately simulate the naturally occurring corrosion process. This becomes a major problem in designing accelerated corrosion tests that effectively evaluate products.

Significant efforts have been made in developing accelerated corrosion testing methods to facilitate product evaluation. As a result of this work, currently... Numerous methods already exist, some of which can be used as international standards. Some of these tests are used solely to identify gold with or without corrosion protection.

The relative mass of metallic materials, and other tests can even be used to predict or estimate the impact of products with metallic materials on their performance in service environments. Long-term performance under corrosion stress.

The specific information required to determine the most accurate method often exceeds the information obtained from a single standard. Therefore, this document provides...

Comparing existing accelerated corrosion tests provides a guideline to properly consider each aspect when selecting the best method and procedure. Elements and their effects.

1 Scope

This document applies to the selection of appropriate atmospheric accelerated corrosion testing methods for the identification of metallic material products, regardless of whether they exhibit permanent or non-permanent corrosion.

Temporary corrosion protection measures. As a guide for preparing test specifications, this document also outlines the characteristics of accelerated corrosion tests in various standards. This document includes the following aspects.

- Atmospheric accelerated corrosion test category;
- Recommended application areas for different types of tests and their applicability;
- Test corrosion and relative corrosion rate of standard metals;
- Test equipment requirements, and the principles of repeatability and correlation of service performance;
- Product identification and recommendation program.

The main purpose of this document is to propose a standard for comparing different accelerated corrosion testing methods that are currently used as international standards.

The applicability of a test method may vary depending on the intended application requirements of the product.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

Note: GB/T 19292.1-2018 Corrosion of metals and alloys - Atmospheric corrosivity - Part 1: Classification, determination and evaluation (ISO 9223:2012, IDT)

Note: GB/T 19292.2-2018 Corrosion of metals and alloys - Atmospheric corrosivity - Part 2: Guidance values for corrosion grades (ISO 9224:2012) MOD)

ISO 9226 Corrosion of metals and alloys - Atmospheric corrosion - Determination of corrosion rate of standard specimens for assessing corrosion.

Note: GB/T 19292.4-2018 Corrosion of metals and alloys - Atmospheric Corrosion - Part 4: Corrosion Rates of Standard Specimens Used for Evaluation of Corrosion Determination (ISO 9226:2012, IDT) tests)

Note: GB/T 10125-2021 Artificial Atmosphere Corrosion Test - Salt Spray Test (ISO 9227:2017, MOD)

Note: GB/T 19745-2005 Corrosion test in artificial low-concentration polluted atmosphere (ISO 10062:1991, IDT)

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