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

GB/T 20853-2026

Replacing GB/T 20853-2007

**Corrosion of metals and alloys - Corrosion in artificial atmosphere - Accelerated
corrosion test involving exposure under controlled conditions of humidity
cycling and intermitted spraying of a salt solution**

金属和合金的腐蚀 人造大气中的腐蚀 暴露于间歇喷洒盐溶液和潮湿循环受控条
件下的加速腐蚀试验

(English Translation)

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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 20853-2007 "Corrosion of Metals and Alloys - Corrosion in Artificial Atmospheres - Exposure to Intermittent Spraying of Salt Solutions".

"Accelerated Corrosion Tests under Controlled Liquid and Humid Cyclic Conditions" has been revised compared to GB/T 20853-2007, except for structural adjustments and editorial changes.

In addition, the main technological changes are as follows.

- a) Added test procedure instructions and changed the scope of application for accelerated corrosion testing (see Chapter 1, Chapter 1 of the 2007 edition);
- b) Added terms and definitions (see Chapter 3);
- c) The requirements for testing equipment have been changed (see Chapter 4, Chapter 4 of the 2007 edition);
- d) The test methods and test solutions have been changed (see Chapter 5, Chapters 3 and 6 of the 2007 edition);
- e) The sample conditions have been changed, and requirements for sample distribution have been added (see Chapter 6, Chapter 5 of the 2007 edition);
- f) Increased quality control and calibration requirements (see Chapter 7);

- g) The example for evaluating test results has been revised, and the notes on evaluating test results have been removed (see Chapter 8, Chapter 7 of the 2007 edition);
- h) The information required to be included in the test report has been changed (see Chapter 9, Chapter 8 in the 2007 edition);
- i) Additional requirements for test equipment and temperature/humidity control procedures have been added (see Annex A and Annex D).

This document is equivalent to ISO 16701:2025 "Corrosion of metals and alloys in man-made atmospheres - Exposure to intermittent spraying of salt solutions".

Accelerated corrosion test under controlled liquid and humid cycling conditions.

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 Iron and Steel Association.

This document is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183).

Introduction

Regardless of whether they are protected, metallic materials are susceptible to atmospheric corrosion due to numerous environmental factors. The extent of corrosion caused by these factors varies.

The types of exposed material systems vary. Therefore, it is impossible to design an experiment that can fully reproduce the complexity and variability of actual service conditions.

Laboratory corrosion testing. Therefore, accelerated laboratory testing is often used to simulate the most important influencing factors that accelerate the corrosion of metallic materials.

Rapid testing (forced conditions) can also negatively impact the correlation with actual service performance. However, compared to continuous salt spray testing, wet cycling...

Tests involving intermittent exposure to salt solutions correlate better with actual service performance.

This document was developed in the automotive field, and one of the main factors causing corrosion is the use of winter road de-icing systems in cold temperate regions.

Salts, typically present as sodium chloride deposits, play a role under cyclic wetting conditions. The experimental process is somewhat affected by...

The effects of humidity and salt. This document is intended for quality assurance purposes

regarding typical metal and corrosion protection in automobiles [1-4]. In other similar...

This method is also applicable to certain fields where environmental conditions are affected by sodium chloride deposits [5,6].

Corrosion of metals and alloys in man-made atmospheres Exposure to intermittent spraying of salt solution and humid circulation Accelerated corrosion test under controlled conditions

1 Scope

This document describes two closely related atmospheric acceleration test procedures that combine intermittent salt spray exposure with dynamic humidity variations.

The methods are divided into two modes, with procedure A performed under constant dew point conditions and procedure B performed under constant temperature conditions. These methods are used to evaluate the effects of chloride ionization.

Substances (primarily derived from sodium chloride, such as sodium chloride in winter road de-icing salt) have a significant impact on the corrosion resistance of metals in the environment. However, tests...

Test results cannot comprehensively predict the corrosion resistance of the tested metallic material in all possible service environments; they can only provide information on the material's performance in salt-contaminated environments.

Furthermore, information on relative corrosion resistance under varying humidity conditions.

These two laboratory accelerated corrosion testing procedures are suitable for.

---Metals and their alloys (ferrous and nonferrous);

---Metallic coating;

---Chemical transformation coating;

---Organic coating layer on metal substrate;

---Combination of materials and coatings that incorporate the effects of galvanic action and/or gap conditions.

Note 1: If low-alloy stainless steel, especially austenitic stainless steel, is tested according to this document, excessive pitting corrosion may occur. This does not mean that it will perform well in most actual service environments.

Corrosion conditions in the environment.

Note 2: Due to the continuous temperature rise during the test, this document is not applicable to the testing of wax-based and oil-based rust inhibitors.