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

GB/T 46055-2025

**Corrosion of metals and alloys - Guidelines for corrosion
testing of metals and alloys exposed in deep-sea water**

金属和合金的腐蚀 金属和合金深海腐蚀试验导则

(English Translation)

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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 adopts ISO 20226:2020 "Corrosion of metals and alloys - Guidelines for deep-sea corrosion testing of metals and alloys".

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).

1 Scope

This document specifies the methodological guidelines for seawater exposure corrosion testing of metals and alloys in deep-sea environments, including the selection of test sites, the components and devices of the test system, sample preparation, test procedures, post-sample recovery processing and evaluation, and test reports.

This document applies to comprehensive corrosion exposure tests and localized corrosion tests on metals and alloys in deep-sea environments, such as stress corrosion cracking and electrical corrosion testing.

Tests for galvanic corrosion and crevice corrosion, etc.

Exposure tests for other materials such as composites and rubber in the deep sea are also conducted with reference to this document, but the evaluation methods for recovered samples are the same as those for gold.

The difference between metals and alloys.

This document is not applicable to the performance testing of sacrificial anodes in actual deep-sea environments, which can be performed using specialized test units and equipment.

Marine exposure tests. However, this document can still provide a useful reference for conducting deep-sea performance tests of sacrificial anodes.

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 10123-2022 Corrosion terminology for metals and alloys (ISO 8044:2020, IDT)

3 Terms and Definitions

The terms and definitions defined in ISO 8044, as well as the following terms and definitions, apply to this document.

deep-seawater

The water depth ranges from approximately 200 meters to several thousand meters in the seawater zone.

Note: The deep sea has corrosive environmental parameters that differ significantly from those of surface seawater, such as seawater temperature, salinity, dissolved oxygen content, and the presence of microorganisms and biofouling.

testsite

Location for conducting deep-sea exposure corrosion tests.

service environment

An environment where corrosion data is required.

Test rack

A structural framework for accommodating samples or sample modules.