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

GB/T 5776-2023

Replacing GB/T 5776-2005

**Corrosion of metals and alloys - Guidelines for exposing and
evaluating metals and alloys in surface sea water**

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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 replaces GB/T 5776-2005 "Corrosion of Metals and Alloys. Guidelines for exposure and assessment of metals and alloys in surface seawater."

"Principles", compared with GB/T 5776-2005, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

---Added normative reference document GB/T 10123 (see Chapter 3);

---Deleted the provisions for specimen suspension and fixation (see 5.5 of the 2005 edition);

---Added the recommended value for the spacing between specimens (see 6.3);

---Added the recommended sample fixing positions and methods in the seawater full immersion zone, tidal range zone and splash zone (see 6.6~6.8);

---Changed the recommended dimensions for plate specimens (see 7.1, 6.1 of the 2005 edition);

---Added sample processing dimensional drawing (see 7.1);

---Changed the recommended time for sampling (see 7.3, 6.3 of the 2005 version);

---Added the requirement that the surface of the sample should be as defect-free as possible, and if defects exist, they should be recorded or photographed (see 8.3);

---Added provisions for recording the adhesion of organisms and rust layers during sampling (see 9.1);

- Added surface observation and evaluation methods and requirements for special corrosion type specimens (see 9.6);
- Added requirements for corrosion assessment on the side of the specimen (see 9.7);
- Added provisions giving the corrosion type of the specimen (see Chapter 10).

This document has been modified to adopt ISO 11306.1998 "Corrosion of metals and alloys. Guide for the exposure and assessment of metals and alloys in surface seawater." but".

Compared with ISO 11306.1998, this document has many adjustments in structure. A comparison list of structural number changes between the two documents

See Appendix A.

Compared with ISO 11306.1998, there are many technical differences between this document and the clauses involved in the outer margins.

Straight single lines (|) are marked. A list of these technical differences and their causes is provided in Appendix B.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document describes the conditions and methods for exposing metals and alloys to surface seawater and specifies the assessment of seawater corrosion of metals and alloys.

requirements in order to make meaningful comparisons of exposures in different locations.

This document is applicable from the important moist zones above the water surface (splash zone and tidal zone) to below the water surface with a composition similar to that of surface seawater.

Depth of exposure. Due to the variability and complexity of seawater, the exposure time is usually more than one year to reduce the impact of variable factors.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

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

this document.

GB/T 10123 Corrosion terminology for metals and alloys

GB/T 16545 Corrosion of metals and alloys Removal of corrosion products from corrosion specimens (GB/T 16545-2015, ISO 8407.

2009, IDT)

GB/T 18590 Assessment of corrosion pitting of metals and alloys (GB/T 18590-2001, ISO 11463.1995, IDT)

3 Terms and definitions

The terms and definitions defined in GB/T 10123 apply to this document.

4 control sample

Due to the variability of test process conditions, for the sake of rigor, the following two types of control specimens should be used in corrosion tests.

a) For specimens whose properties are completely determined and corroded under given conditions (for example. low carbon steel), the corrosion rate can be used to determine the test specimen's corrosion rate.

length of testing time;

b) Specimens that are usually resistant to corrosion under given conditions (e.g. copper); the purpose of using such specimens is to find out whether

Abnormal situations, such as chemical contamination; when evaluating aluminum alloys, if copper samples are present, attention should be paid to the distance between different samples (see

6.2).

5 test locations

5.1 The test location should be selected in a typical natural seawater environment where the metals and alloys being tested are likely to be used. An ideal natural seawater testing site

The point should be built in a location that can meet the conditions necessary for these tests (such as splash, tide, total immersion) and have protective measures to avoid disasters. test

The location should have clean, pollution-free seawater, except when studying corrosion caused by pollution. The differences between tropical environments and other environments should be understood in order to

and seasonal changes in temperature. There are locations with a clear "fouling organism season". It is necessary to understand the seasonal changes in the attachment of marine organisms on the test plate. Selecting

Climate and atmospheric properties are also important factors to consider when selecting test sites for tidal or splash exposure.

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