



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

GB/T 19292.4-2018

**Corrosion of metals and alloys -- Corrosivity of atmospheres --
Part 4: Determination of corrosion rate of standard specimens
for the evaluation of corrosivity**

Issued on: May 14, 2018

Implemented on: February 1, 2019

Issued by: SAMR; SAC

Table of Contents

- Foreword
- introduction
- 1 Scope
- 2 Normative references
- 3 Principle
- 4 standard sample
- 5 Exposure of standard samples
- 6 results expression

Foreword

GB/T 19292 "Corrosion of Atmospheric Corrosion of Metals and Alloys" has been or is planned to be released as follows.

- Part 1. Classification, determination and evaluation;
- Part 2. Guidance values for corrosion levels;
- Part 3. Measurement of environmental parameters affecting atmospheric corrosivity;
- Part 4. Determination of corrosion rate of standard samples for evaluation of corrosivity.

This part is the fourth part of GB/T 19292.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 19292.4-2003 "Corrosion of metals and alloys - Atmospheric corrosion - Part 4.

The determination of the corrosion rate of the standard sample, compared with GB/T 19292.4-2003, the main changes are as follows.

- Increased the scope of application of this section (see Chapter 1);
- Removed the method of testing the corrosion rate using open spiral specimens as standard specimens (see 4.2 of.2003 edition);
- Revised the chemical removal method for corrosion products of steel, zinc and copper in Appendix A "Chemical cleaning method for removing corrosion products" (see attached Record A, Appendix A of the.2003 edition.

This section uses the translation method equivalent to the international standard ISO

9226.2012 "Corrosion of metals and alloys for atmospheric corrosivity for evaluation

Estimation of Corrosion Rate of Corrosive Standard Samples.

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

GB/T 14165-2008 General requirements for field tests for atmospheric corrosion testing of metals and alloys (ISO 8565.1992, MOD)

GB/T 16545-2015 Corrosion of metals and alloys Corrosion of corrosion products on specimens (ISO 8407.2009, IDT)

GB/T 19292.1-2003 Corrosion of metals and alloys - Part 2. Classification, determination and evaluation

(ISO 9223.1992, IDT)

GB/T 19292.2-2003 Corrosion of metals and alloys - Part 2. Guide to corrosion grades

(ISO 9224.1992, IDT)

This section has made the following editorial changes.

--- Modified the standard name.

This part was proposed by the China Iron and Steel Association.

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

This section was drafted by. Qingdao Institute of Marine Corrosion, Institute of Metallurgical Industry Information Standards, Institute of Iron and Steel Research, Metals of Chinese Academy of Sciences

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introduction

Corrosion of atmospheric corrosion test points or service sites can be determined by determining the corrosion rate of standard samples after one year of exposure at this location.

Sign (direct corrosion assessment). The standard specimens are four standard structural materials. flat specimens made of aluminum, copper, steel and zinc. These method generations

It is a very economical method for assessing corrosivity and takes into account all local environmental factors.

Warnings - some of the hazardous chemicals involved in some of the steps included in this section, therefore emphasizing the necessary safety

Protective measures.

Corrosion of metals and alloys

Part 4. Standard specimens for evaluation of corrosivity

Determination of corrosion rate

1 Scope

This part of GB/T 19292 specifies the method used to determine the corrosion rate of a standard sample.

These measurements (corrosion rate of the first year of exposure) will be used as a basis for assessing atmospheric corrosivity in GB/T 19292.1. Also available

Informational evaluation of atmospheric corrosion outside the scope of GB/T 19292.1.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 8407 corrosion of corrosive corrosion products on metals and alloys
(Corrosion of metals and alloys-Re-

Moval of corrosion products from corrosion test specimens)

ISO 8565 Metal and Alloy Outdoor Atmospheric Exposure Test Method
(Metals and alloys-Atmospheric corrosion test-

ting-General requirements)

Corrosion of corrosive atmospheres of ISO 9223 metals and alloys
(Corrosion of metals and alloys-Corrosivity

of atmospheres-Classification, determination and estimation)

ISO 9224 Corrosion of Corrosive Atmosphere for Metals and Alloys (Corrosion of metals and alloys-Corrosivity of atmospheres-Guiding values for the corrosivity categories)

3 Principle

Corrosion at exposure points or industrial equipment locations can be inferred by corrosion

rate, which is a standard test after 1 year of exposure.

The weight loss per unit area after the removal of the corrosion product is calculated.

For iron, zinc and copper alloys, weight loss is a reliable measure of corrosion damage. For aluminum alloys, weight loss is corrosive

An effective measurement method. This section describes only corrosion weight loss evaluation, not corrosion penetration evaluation.

The corrosion rate for the first year of exposure can be used to calculate the corrosion rate for long-term exposure according to ISO 9224.

4 standard sample

The sample is a rectangular plate shape, and the recommended size is 100 mm x 150 mm, but not less than 50 mm x 100 mm, and the thickness is about 1 mm.

The materials used to prepare the standard samples are manufactured in the near future, namely.

---Steel. carbon structural steel (Cu 0.03%~0.10%, P< 0.07%);

---Zinc. $\geq 98.5\%$;

---Copper. $\geq 99.5\%$;

--- Aluminum. $\geq 99.5\%$.

All samples should be solvent degreased prior to exposure. The sample should not be affected by grease, in order to achieve this, in the next step

Different solvents are required. If there are visible rust or corrosion products on the surface of the steel, it should be sanded with 120# sandpaper before degreasing.

Corrosion products. Sand blasting and rusting of metals can make their surfaces susceptible to corrosion, so it is not recommended for ISO 9223 corrosive environment.

Surface treatment of standard samples in the class. Copper, zinc and aluminum samples will not be visible if they have visible corrosion products on the surface prior to exposure.

use.

5 Exposure of standard samples

The sample shall be weighed and marked prior to exposure, and the exposure of the sample shall be as specified in ISO 8565.

Three samples of each metal should be exposed for one year, starting with the beginning of the most severe corrosion period in one year.