



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

GB/T 38213-2019

**Corrosion of metals and alloys - Procedures to determine and
estimate runoff rates of metals from materials as a result of
atmospheric corrosion**

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1 --- panel;

2 --- Inert material fixing device;

5 --- silicon tube;

6 --- polyethylene container for collecting lost water.

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to ISO 17752..2012 "Corrosion of metals and alloys. Metal flow in materials caused by atmospheric corrosion

Procedures for the determination and evaluation of loss rates.

For documents in China that have a consistent correspondence with the international documents referenced normatively in this standard, see Appendix NA.

The following editorial changes have been made to this standard.

--- Added informative appendix NA.

This standard is proposed by China Iron and Steel Industry Association.

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

This standard was drafted. Institute of Metal Research, Chinese Academy of Sciences, Institute of Information Standards of Metallurgical Industry.

introduction

The purpose of the bleed test is to obtain data on the rate of metal loss from different materials under atmospheric exposure. Churn test included in the test

Expose samples at the test site and continuously collect bleed samples. Therefore, bleed tests are more demanding than standardized corrosion tests.

In the long run, the bleed rate is always less than or equal to, and often much less than, the corrosion rate. Because the corrosion products contain metals,

This cannot be achieved with standardized corrosion tests. Compared with standardized tests, bleed tests can be performed on the surface of actual products or

Any surface-treated material, such as pure metals, alloys or different coatings (e.g. metal coatings, metal-containing organic coatings)

Layer), just record the sample's origin, surface treatment and characteristics.

The result of this field test is the metal loss rate obtained by collecting rainwater on the surface of the scouring material. Metal may further occur

The conversion of chemical forms and the interaction with the environment are beyond the scope of this standard.

Taking into account specific application conditions, the churn rate program can be established based on standardized exposure sample determinations or through informational assessments.

Appendix A gives the conditions that affect the metal loss rate evaluation of bare-based materials in special applications of atmospheric corrosion.

Corrosion of metals and alloys caused by atmospheric corrosion

Procedures for determination and evaluation of metal loss rates in materials

1 Scope

This standard specifies procedures for the determination and evaluation of metal loss rates in metals, alloys and coatings under outdoor atmospheric environments.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

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

ISO 4221 Air quality-Determination of the mass concentration of sulfur dioxide in ambient air-Reagent spectrophotometry (Airquality-

Determinationofmassconcentrationofsulphurdioxideinambientair-Thorinspectrophotometric method)

ISO 4226 Airquality-Generalaspects-Unitsofmeasure-ment)

ISO 4543 General rules for corrosion tests under storage conditions for metals and other inorganic coatings (Metalicandothernon-or-

ganiccoatings-Generalrulesforcorrosiontestsapplicableforstorageconditions)

ISO 8565 General requirements for field tests of atmospheric corrosion tests on metals and alloys (Metalandalloys-Atmospheric

corrosiontesting-Generalrequirements)

ISO 9169 Determination of performance characteristics of automatic air quality measurement systems (Airquality-Definitionanddetermination

ofperformancecharacteristicsofautomaticmeasuringsystem)

ISO 9225 Corrosion of metals and alloys. Atmospheric corrosivity. Measurement of environmental parameters that affect atmospheric corrosivity (Corrosionof

metalsandalloys-Corrosivityofatmospheres-Measurementofenvironmentalparametersaffectin g

corrosivityofatmospheres)

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

(Corrosion of metals and alloys - Corrosivity of atmospheres - Determination of corrosion rate of standard specimens for the evaluation of corrosivity)

3.1 Sample type

The exposed surface area of the sample should meet the following requirements. be able to provide a sufficient amount of water to ensure the reproducibility of the test results, to maximize

Reduce edge effects and all loss of flow. The size of the flat rectangular sample should not be less than 100mm x 300mm (300cm²). If available

The surface area can be accurately determined and all lost water can be collected continuously, and the surface area of the sample can be larger. The sample should be of sufficient thickness to ensure that the sample can

Sufficient to withstand the predetermined test cycle. Effective thickness is between 1mm ~ 3mm. The surface of the test sample should be as close as possible to the actual product condition.

3.2 Sample preparation and processing

Since atmospheric corrosion and metal loss testing may last for many years, ensure that samples can be clearly identified and recorded data carefully collected

(Total water loss, pH, and total metal concentration) are very important.

Avoid surface damage. The surface of all samples, especially the covering material, should be undamaged. To reduce surface contamination and ensure uniform surface

Uniform, non-covered samples should be washed as much as possible before exposure to the material. A practical method is to remove the oil in acetone and isopropanol.

It is not recommended to grind the sample, as the polished surface does not represent the true state of the product and greatly affects the degree of metal release. kind

Fingerprints generated during product processing will affect the results. Use cotton gloves and touch the edges of the sample to avoid fingerprints.

The back of each sample should be taped and the cut edges should be sealed with a non-metallic paint or wax to avoid metal release from these parts of the sample. Correct

For covering materials, the cutting edges should be sealed.

In the same place where the sample is placed, a blank sample rack of inert material (without the sample) should be exposed in parallel, and the washed blank sample should be collected