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**NATIONAL STANDARD OF THE
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**Corrosion of metals and alloys - Guidelines for applying
statistics to analysis of corrosion data**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document uses the redrafting method to amend and adopt ISO 14802.2012 "Corrosion and Corrosion Data Analysis of Metals and Alloys and Applied Statistics guide".

Compared with ISO 14802.2012, this document has many structural adjustments. Appendix A lists this document and ISO 14802.2012.

The structural adjustment control checklist.

Compared with ISO 14802.2012, this document has technical differences.

The set vertical single line (|) is marked, and Appendix B gives a list of corresponding technical differences, editorial changes and their reasons.

1 Scope

This document provides guidance on certain generally accepted statistical analysis methods that can be used to interpret corrosion test results.

This document applies to statistical methods that are widely accepted in corrosion testing.

This document does not include detailed calculations and methods, but considers a series of methods that have been used in corrosion tests.

Note. Appendix C gives a calculation example of the statistical analysis methods involved in the article.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4 Significance and use

Due to the influence of various factors, the corrosion test results are usually more dispersive than other types of tests, for example, a small amount of impurities can significantly affect

Affect the corrosion rate. Statistical analysis can help researchers interpret these results, especially when it is necessary to determine whether the two sets of test results are significant.

In the case of sexual differences. When the test involves multiple materials, the difficulty of the test will increase, but statistical methods can provide a reasonable solution to this

problem.

Deciding method.

The combination of modern data reduction programs and computers can make it easier for people to perform complex statistical analysis on data sets. because

Therefore, statistical analysis can make it easier for researchers to determine whether there is an association between different variables, and if so, then further develop

Develop quantitative expressions related to variables.

In analyzing various quantitative results, statistical evaluation is a necessary step. This analysis can estimate the confidence interval from the measurement results.

5.1 Distribution

When the measured value is related to metal corrosion, various factors will cause the actual measured value to deviate from the expected value. Generally speaking, the measured value is scattered

The factor of more or less acts in a random manner, and the average of several measured values is closer to the expected value than a single measured value. Data dispersion model

The formula is called distribution, and various distributions are observed in corrosion, such as normal distribution, lognormal distribution, binomial distribution, Poisson distribution, and extreme value points.

Cloth (including Gumbel and Weibull distributions).

5.2 Histogram

Bar graphs (called histograms) can be used to show data dispersion. Construction of histogram. divide the range of data values into phases on the abscissa

Equal intervals, and then place bars with a height equal to the number of samples in the interval in each interval. The formula for calculating the number of groups k is shown in formula (1).