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Korozija kovin in zlitin - Osnovni pojmi in definicije (ISO/DIS 8044:2019)

Corrosion of metals and alloys - Basic terms and definitions (ISO/DIS 8044:2019)

Korrosion von Metallen und Legierungen - Grundbegriffe (ISO/DIS 8044:2019)

Corrosion des métaux et alliages - Termes principaux et définitions (ISO/DIS 8044:2019)

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Corrosion of metals and alloys — Basic terms and definitions

Corrosion des métaux et alliages — Termes principaux et définitions

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Foreword

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The committee responsible for this document is ISO/TC 156, *Corrosion of metals and alloys*.

This fourth edition cancels and replaces the third edition (ISO 8044:1999), which has been revised to include additional terms and definitions.

Contents

Introduction

The definitions in this International Standard have been drawn up with the objective of achieving a proper balance between precision and simplicity. The main objective of this International Standard is to provide definitions that can be understood to have the same meaning by all concerned. Some corrosion terms in present use have developed through common usage and are not always logical. It has not, therefore, been possible to define certain terms in the form they are used in some countries. Because of the occasional conflicts between tradition and logic some definitions inevitably represent a compromise.

An example of this kind of conflict is the term “corrosion”. This has been used to mean the process, results of the process and damage caused by the process. In this International Standard corrosion is understood to mean the process. Any detectable result of corrosion in any part of a corrosion system is termed “corrosion effect”. The term “corrosion damage” covers any impairment of the function of the technical system of which the metal and the environment form a part. Consequently the term “corrosion protection” implies that the important thing is to avoid corrosion damage rather than to prevent corrosion, which in many cases is impossible and sometimes not necessary.

Corrosion of metals and alloys — Basic terms and definitions

1 Scope

This International Standard defines terms relating to corrosion that are widely used in modern science and technology. In addition, some definitions are supplemented with short explanations.

NOTE 1 Throughout the document IUPAC rules for electrode potential signs are applied. The term "metal" is also used to include alloys and other metallic materials.

NOTE 2 Terms and definitions related to inorganic surface treatment of metals are given in ISO 2080.

NOTE 3 See also the ISO online browsing platform (OBP): www.iso.org/obp/ui/

2 General terms

2.1
corrosion
physicochemical interaction between a metalic material and its environment that results in changes in the properties of the metal, and which may lead to significant impairment of the function of the metal, the environment, or the technical system, of which these form a part

Note 1 to entry: This interaction is often of an electrochemical nature.

2.2
corrosive agent
substance which will initiate or promote corrosion when in contact with a given metal"

2.3
corrosive environment
environment that contains one or more *corrosive agents* (2.2)

2.4
corrosion system
system consisting of one or more metals and those parts of the environment that influence *corrosion* (2.1)

Note 1 to entry: Parts of the environment may be, for example, coatings, surface layers or additional *electrodes* (6.1.2).

2.5
corrosion effect
change in any part of the *corrosion system* (2.4) caused by *corrosion* (2.1)

2.6
corrosion damage

corrosion effect (2.5) that causes impairment of the function of the metal, the environment or the technical system, of which these form a part

2.7
corrosion failure
corrosion damage (2.6) characterized by the total loss of function of the technical system

2.8
corrosion product
substance formed as a result of *corrosion* (2.1)

2.9
scale
solid layer of *corrosion products* (2.8)formed on a metal at high temperature

Note 1 to entry: The term “scale” is also used in some countries for deposits from supersaturated water.

2.10
rust
visible *corrosion products* (2.8) consisting mainly of hydrated iron oxides

2.11
corrosion depth
distance between a point on the surface of a metal affected by *corrosion* (2.1) and the original surface of the metal

2.12
corrosion rate
corrosion effect (2.5) on a metal per time

Note 1 to entry: The unit used to express the corrosion rate depends on the technical system and on the type of corrosion effect. Thus corrosion rate may be expressed as an increase in *corrosion depth* (2.11) per time, or the mass of metal turned into *corrosion products* (2.8) per area of surface and per time, etc. The corrosion effect may vary with time and may not be the same at all points of the corroding surface. Therefore, reports of corrosion rates should be accompanied by information on the type, time dependency and location of the corrosion effect.

2.13
corrosion resistance
ability of a metal to maintain *serviceability* (2.16) in a given *corrosion system* (2.4)

2.14
corrosivity
ability of an environment to cause *corrosion* (2.1) of a metal in a given *corrosion system* (2.4)

2.15
corrosion likelihood
qualitative and/or quantitative expression of the expected *corrosion effects* (2.5) in a defined *corrosion system* (2.4)

2.16
serviceability (with respect to corrosion)
ability of a *corrosion system* (2.4) to perform its specified functions without impairment due to *corrosion* (2.1)

2.17
durability (with respect to corrosion)
ability of a *corrosion system* (2.4) to maintain *serviceability* (2.16) over a specified time when the specified requirements for use and maintenance have been fulfilled

2.18
service life (with respect to corrosion)
time during which a *corrosion system* (2.4) meets the requirements for *serviceability* (2.16)

2.19
critical humidity
value of the relative humidity of an atmosphere above which there is a sharp increase in the *corrosion rate* (2.12) of a given metal

2.20
corrosion attack
corrosion effect (2.5) that is detrimental but has not progressed to the point of impairment of the function of the metal, the environment, or the technical system of which they form a part

2.21
pickling
removal of oxides or other compounds from a metal surface by chemical or electrochemical action

2.22
pitting resistance equivalent number
PREN
indication of the resistance of stainless steels and nickel-based alloys to pitting in the presence of chloride-containing water

Note 1 to entry: An example formula for PREN is given by

$$\mathrm{PREN} = \%\,\mathrm{Cr} + 3{,}3\left[(\%\,\mathrm{Mo}) + 0{,}5(\%\,\mathrm{W})\right] + 16(\%\,\mathrm{N}).$$

Note 2 to entry: The higher the PREN, the higher is the resistance to pitting corrosion.

2.23
trap
micro structural site at which the residence time for a hydrogen atom is long compared to the residence time in an interstitial lattice site

2.24
time of wetness