SLOVENSKI STANDARD
SIST EN ISO 8044:2015

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Nadomešča:
SIST EN ISO 8044:2000

Korozija kovin in zlitin - Osnovni pojmi in definicije (ISO 8044:2015)

Corrosion of metals and alloys - Basic terms and definitions (ISO 8044:2015)

Korrosion von Metallen und Legierungen - Grundbegriffe (ISO 8044:2015)

Corrosion des métaux et alliages - Termes principaux et définitions (ISO 8044:2015)

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Corrosion of metals and alloys - Basic terms and definitions (ISO 8044:2015)

Corrosion des métaux et alliages - Termes principaux et définitions (ISO 8044:2015)

Korrosion von Metallen und Legierungen - Grundbegriffe (ISO 8044:2015)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO 8044:2015) has been prepared by Technical Committee ISO/TC 156 “Corrosion of metals and alloys” in collaboration with Technical Committee CEN/TC 262 “Metallic and other inorganic coatings” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2016, and conflicting national standards shall be withdrawn at the latest by March 2016.

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NORME INTERNATIONALE

ISO 8044

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Corrosion of metals and alloys — Basic terms and definitions

Corrosion des métaux et alliages — Termes principaux et définitions

Korrosion von Metallen und Legierungen — Grundbegriffe

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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.

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 metal 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
corrodent
substance which when in contact with a given metal will cause *corrosion* (2.1)

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: A widely accepted formula for PREN is given by

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

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
period when a metallic surface is covered by adsorptive and/or liquid films of electrolyte to be capable of causing atmospheric corrosion

2.25
threshold stress (for stress corrosion cracking)
tensile stress above which stress corrosion cracks initiate and grow, for the specified test conditions

2.26
threshold stress intensity factor for stress corrosion cracking
K_{ISCC}
stress intensity factor above which stress corrosion crack propagation is sustained

Note 1 to entry: The threshold stress intensity factor is a concept of linear elastic fracture mechanics (LEFM) and is applicable when the plastic zone size is large compared with the microstructure, the crack is sufficiently long, and a high constraint to plastic deformation prevails, i.e. under plane strain predominant conditions. For growing stress corrosion cracks, LEFM is not necessarily applicable in all detail but is adopted as a pragmatic tool that is commonly used.

Note 2 to entry: Stress corrosion cracks may initiate at a surface or a surface defect and grow in the “short crack” regime at stress intensity factor levels below the apparent threshold stress intensity factor. Therefore, LEFM is not applicable in the “short crack” regime.

3 Types of corrosion

3.1
electrochemical corrosion
corrosion (2.1) involving at least one *anodic reaction* (6.1.9) and one *cathodic reaction* (6.1.6)

3.2
chemical corrosion
corrosion (2.1) not involving electrochemical reaction