

Protection of metallic materials against corrosion - Corrosion likelihood in atmospheric environment - Classification, determination and estimation of corrosivity of atmospheric environments

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Classification, determination and estimation of
corrosivity of atmospheric environments

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12500:2000 sisaldab Euroopa standardi EN 12500:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 15.11.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12500:2000 consists of the English text of the European standard EN 12500:2000.</p> <p>This document is endorsed on 15.11.2000 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This European standard establishes a classification system for the corrosivity of atmospheric environment. It defines corrosivity categories of the atmospheric environments taking into account ISO 9223; describes the determination of corrosivity based on assessment of mass loss of standard specimens after the first year of exposure; can be used to estimate the corrosivity of an environment based on knowledge of local conditions or of specific data that characterize the local conditions, where it is not possible to make an experimental determination.</p>	<p>Scope: This European standard establishes a classification system for the corrosivity of atmospheric environment. It defines corrosivity categories of the atmospheric environments taking into account ISO 9223; describes the determination of corrosivity based on assessment of mass loss of standard specimens after the first year of exposure; can be used to estimate the corrosivity of an environment based on knowledge of local conditions or of specific data that characterize the local conditions, where it is not possible to make an experimental determination.</p>
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English version

Protection of metallic materials against corrosion

Corrosion likelihood in atmospheric environment

Classification, determination and estimation of corrosivity of
atmospheric environments

Protection des matériaux métalliques
contre la corrosion – Risque de
corrosion dans un environnement
atmosphérique – Classification,
détermination et appréciation de la
corrosivité des environnements
atmosphériques

Korrosionsschutz metallischer Werk-
stoffe – Korrosionswahrscheinlichkeit
in einer atmosphärischen Um-
gebung – Einteilung, Bestimmung
und Abschätzung der Korrosivität von
atmosphärischen Umgebungen

This European Standard was approved by CEN on 2000-05-12.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Foreword

This European Standard has been prepared by 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 December 2000, and conflicting national standards shall be withdrawn at the latest by December 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Metals, alloys and metallic coatings can suffer atmospheric corrosion when their surfaces are wetted. The nature and the rate of corrosion effect depend on the corrosion system, which comprises:

- the metallic material(s);
- the atmospheric environment (characterized by time of wetness and the chemical composition of the electrolyte formed on the metallic surface influenced by type and level of air pollution);
- technical parameters (design, profile and mass, manufacture, joining techniques, etc.);
- operation conditions.

The choice of metals, alloys or metallic coatings, and the corrosion resistance of the manufactured products are influenced by the required service life and service conditions, as well as by the corrosivity of the atmosphere.

A classification system for corrosivity of atmospheric environments should be simple and user friendly. This European Standard is based on a quantitative determination of corrosivity (see ISO 9223). When experimental data are unavailable, a qualitative estimation of corrosivity categories is possible. However, a qualitative description of an atmospheric environment can give rise to serious problems because identically described atmospheric environments can cover a wide range of corrosivity. Therefore the determination of corrosivity based on exposure of standard specimens of reference metals is strongly recommended.

This European Standard should be considered a basis document because it does not take into account other technical parameters and operation conditions.

1 Scope

This European Standard establishes a classification system for the corrosivity of atmospheric environments. It:

- defines corrosivity categories of the atmospheric environments taking into account ISO 9223;
- describes the determination of corrosivity based on assessment of mass loss of standard specimens after the first year of exposure;
- can be used to estimate the corrosivity of an environment based on knowledge of local conditions or of specific data that characterize the local conditions, where it is not possible to make an experimental determination.

It cannot be used to determine corrosivity categories from exposure periods of less than or greater than the first year.

The classification system contributes to:

- the knowledge and comparison of corrosivity of atmospheric environments at different locations;
- the choice of materials and corrosion protection measures.

This European Standard does not characterize the corrosivity of special service atmospheric environments, e.g. chemical and metallurgical plants and environments with extreme chloride deposition such as splash zones.

2 Normative references

This European Standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 8407, *Corrosion of metals and alloys — Removal of corrosion products from corrosion test specimens.*

ISO 8565, *Metals and alloys — Atmospheric corrosion testing — General requirements for field tests.*

ISO 9224, *Corrosion of metals and alloys — Corrosivity of atmospheres — Guiding values for the corrosivity categories.*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply. 3.1 and 3.2 are taken from EN ISO 8044 and are repeated here for convenience.

3.1 corrosivity

ability of an environment to cause corrosion of a metal in a given corrosion system

[EN ISO 8044:1999]