SLOVENSKI STANDARD
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Korozija kovin in zlitin - Klasifikacija notranjih atmosfer z nizko korozivnostjo - 3. del: Merjenje okoljskih parametrov, ki vplivajo na korozivnost v zaprtih prostorih (ISO/DIS 11844-3:2018)

Corrosion of metals and alloys - Classification of low corrosivity of indoor atmospheres - Part 3: Measurement of environmental parameters affecting indoor corrosivity (ISO/DIS 11844-3:2018)

Korrosion von Metallen und Legierungen - Einteilung der Korrosivität in Räumen mit geringer Korrosivität - Teil 3: Messung der Umgebungsparameter, die Korrosivität in Räumen beeinflussen (ISO/DIS 11844-3:2018)

Corrosion des métaux et alliages - Classification de la corrosivité faible des atmosphères d'intérieur - Partie 3: Mesurage des paramètres environnementaux affectant la corrosivité des atmosphères d'intérieur (ISO/DIS 11844-3:2018)

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Corrosion of metals and alloys — Classification of low corrosivity of indoor atmospheres —

Part 3:
Measurement of environmental parameters affecting indoor corrosivity

Corrosion des métaux et alliages — Classification de la corrosivité faible des atmosphères d'intérieur —

Partie 3: Mesurage des paramètres environnementaux affectant la corrosivité des atmosphères d'intérieur

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

This second edition cancels and replaces the first edition (ISO 11844-3:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the normative references have been updated;

— reference to ISO 16000 in the Clause 5 has been added;

— detection limits in 7.3.1 and 7.3.2 have been updated;

— new Clause 8 has been added.

A list of all parts in the ISO 11844 series can be found on the ISO website.

Introduction

This document deals with environmental parameters for the characterisation of indoor atmospheres and methods of measurement.

The environmental parameters for the characterisation of indoor atmospheres include more airborne contaminants than are normally used for the characterisation of the outdoor environment.

Measurement of environmental parameters is a way of characterising the corrosivity of the indoor atmosphere and will always be required if it is necessary to consider measures for reducing the corrosivity.

Corrosion of metals and alloys — Classification of low corrosivity of indoor atmospheres —

Part 3: Measurement of environmental parameters affecting indoor corrosivity

1 Scope

This document describes methods for measuring the environmental parameters used to classify the corrosivity of indoor atmospheres on metals and alloys.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7708, *Air quality — Particle size fraction definitions for health-related sampling*

ISO 9225, *Corrosion of metals and alloys — Corrosivity of atmospheres — Measurement of environmental parameters affecting corrosivity of atmospheres*

ISO 11844-1, *Corrosion of metals and alloys — Classification of low corrosivity of indoor atmospheres — Part 1: Determination and estimation of indoor corrosivity*

EN 12341, *Air quality — Determination of the PM10 fraction of suspended particulate matter — Reference method and field test procedure to demonstrate reference equivalence of measurement methods*

ISO 16000-1, *Indoor air — Part 1: General aspects of sampling strategy*

ISO 16000-5, *Indoor air — Part 5: Sampling strategy for volatile organic compounds (VOCs)*

ISO 16000-15, *Indoor air — Part 15: Sampling strategy for nitrogen dioxide (NO2)*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

4 Principle

Different combinations of parameters affect the corrosivity of indoor atmospheres. Knowledge about possible sources of environmental effects must be obtained before decisions regarding the type of measurements needed are taken. The characterisation of indoor atmospheric corrosivity using environmental parameters is more complicated than measuring the corrosivity with metal specimens. However, in many cases, measurement of environmental parameters can give a good indication of how

to establish the corrosivity of an environment and will, in combination with the information given in ISO 11844-1, give a good indication of the corrosivity categories for the materials in the selected environment.

5 Environmental parameters

In indoor atmospheres, corrosion processes are characterised by a more complex group of parameters than in outdoor atmospheres. In general, two groups of parameters should be measured:

— humidity and temperature;

— airborne contaminants, such as gases and particles, which in turn are affected by;

— dry deposition velocity and air flow.

Fluctuation in the temperature and humidity, particularly at higher humidity levels, may cause condensation on cooler surfaces. The frequency and time of condensation is an important factor for indoor corrosion.

The corrosion effects from these groups of parameters are usually interdependent. A particular level of humidity is needed before corrosion begins, and this can vary for different contaminants. Combinations of contaminants might accelerate the corrosion processes.

Methods for sampling and analysis of various air pollutants in indoor atmospheres are described in the ISO 16000 series. Of specific relevance is ISO 16000-1, which describes a general measurement strategy for measuring indoor air pollution and specific standards for measuring selected compounds such as volatile organic compounds (ISO 16000-5) and nitrogen dioxide (ISO 16000-15).

NOTE The ISO 16000 (all parts) is mainly devoted to compounds hazardous to human health and the environment and not to compounds resulting in high corrosivity of the environment.

6 Humidity and temperature parameters

6.1 Relative humidity

Use continuous measuring devices such as hygrographs, thermohygrographs or logging hygrometers.

The measuring period is preferably one year, to cover seasonal variations. If shorter measuring periods are needed, select a measuring period where large variations in the relative humidity are expected. The period shall be at least one month per season.

The data shall be reported as monthly values. The average, maximum and minimum values for each month shall be reported.

The calculation of time with relative humidity in given intervals represents useful information.

6.2 Temperature

Use continuous measuring devices such as thermohygrographs or logging thermometers.

The measuring period is preferably one year, to cover seasonal variations. If shorter measuring periods are needed, select a measuring period where large variations in the temperature are expected. The period shall be at least one month per season.

The data shall be reported as monthly values. The average, maximum and minimum values for each month shall be reported.

The calculation of time with temperature in given intervals represents useful information.

