INTERNATIONAL STANDARD

**ISO 16000-41**

First edition
2023-08

# Indoor air —

## Part 41: Assessment and classification

*Air intérieur —*

*Partie 41: Évaluation et classification*

Reference number
ISO 16000-41:2023(E)

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Published in Switzerland



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# Foreword

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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 document 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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 6, *Indoor air*.

A list of all parts in the ISO 16000 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.


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# Introduction

In our society, privately and professionally, people stay indoors most of the day. Therefore, the quality of the indoor air is very decisive for the quality of life and health. This especially applies to small children, sick people and other vulnerable groups of persons.

Numerous scientific studies verify the positive effects of good indoor air on the overall performance during learning (e.g. in kindergartens and schools) and working. A consequence of improved indoor air quality can be, for example, reduced sickness rates and absenteeism.

The entitlement to high-quality indoor air does not contradict economical aspects of energy- and cost-efficiency. Improvements in the quality of indoor air are achievable with simple measures, for example, change of behaviour patterns.

This document describes a procedure to classify the air quality of indoor spaces using quality classes. These quality classes enable the allocation of the room air to a high, medium or low quality. The quality classes are based on criteria for physical, chemical and biological parameters according to the state of science and research. These criteria can be both concentration values in the room air (e.g. with formaldehyde) as well as sensory and other findings in the room itself (e.g. with mould). The basis for classifying a measured value of a parameter in a quality class is the definition of class boundaries for quality classes A to C by national institutions, using guide values from national guidelines, European and international publications and trade literature.

The most frequent pollutant sources indoors are human activities (e.g. domestic-, hobby- and cleaning activities, tobacco smoke), combustion processes as well as building materials, furnishings and interior design materials. The exception is the radioactive inert gas radon, which mostly originates from the geological subsoil and enters the interior spaces via leaks in the building envelope.

A variety of substances can emit into the indoor air from the most diverse pollution sources. For this reason, the single analysis of a source or pollutant cannot be used as a substitute for an overall assessment of the indoor air. A meaningful assessment of the indoor air is only achievable by an overall assessment of all pollutant sources and substances.

This document is intended for specialists who deal with the assessment of indoor air in the course of planning, construction, operation and use of buildings (e.g. indoor-experts, architects, specialist planners of trades, building owners, building developers and contracting authorities, maintenance engineers, lessors). Also included are producers and distributors of products, that are installed and/or operated indoors (e.g. building products), and possible users.

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# Indoor air —

# Part 41:
# Assessment and classification

## 1 Scope

This document specifies a procedure for the assessment of the indoor air quality that is valid for all interior rooms in residential and non-residential buildings with natural or mechanical ventilation, in which people do not only stay temporarily.

This document is applicable to indoor environments as defined in ISO 16000-1.

The assessment of working materials in workrooms or workplaces in buildings, that are subject to statutory occupational safety specifications, are excluded from this document. In these rooms, only air constituents that do not originate from working materials can be assessed according to this document.

It is not possible to define classes with exact values for the individual pollutants, as the corresponding limit and guide values differ in individual countries. In addition, the values relate to different observation periods.

Aspects concerning electromagnetic fields, noise and vibrations and their effect on the indoor air quality are not the object of this document. The classification of further consequences and measures, such as organisational steps, structural engineering measures, renovation proposals, further human medicine appraisals and the like, are not the object of this document.

NOTE This document applies to of all types of indoor environments occupied by all kinds of persons, including regular users, clients and workers.

## 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 11665-8, *Measurement of radioactivity in the environment — Air: radon-222 — Part 8: Methodologies for initial and additional investigations in buildings*

ISO 16000 (all parts), *Indoor air*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

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