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Workplace air - Chemical agent present as a mixture of airborne particles and vapour - Requirements for evaluation of measuring procedures using samplers (ISO 23861:2022)



## EESTI STANDARDI EESSÕNA

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ICS 13.040.30

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EUROPEAN STANDARD

EN ISO 23861

NORME EUROPÉENNE

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Supersedes EN 13936:2014

English Version

Workplace air - Chemical agent present as a mixture of  
airborne particles and vapour - Requirements for  
evaluation of measuring procedures using samplers (ISO  
23861:2022)

Air des lieux de travail - Agent chimique présent sous  
forme de mélange de particules en suspension dans  
l'air et de vapeur - Exigences d'évaluation des  
procédures de mesure utilisant des dispositifs de  
prélèvement (ISO 23861:2022)

Luft am Arbeitsplatz - Als Mischung aus luftgetragenen  
Partikeln und Dampf vorliegender chemischer  
Arbeitsstoff - Anforderungen an die Bewertung von  
Messverfahren mit Sammlern (ISO 23861:2022)

This European Standard was approved by CEN on 23 September 2022.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

## European foreword

This document (EN ISO 23861:2022) has been prepared by Technical Committee ISO/TC 146 "Air quality" in collaboration with Technical Committee CEN/TC 137 "Assessment of workplace exposure to chemical and biological agents" the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13936:2014.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## Endorsement notice

The text of ISO 23861:2022 has been approved by CEN as EN ISO 23861:2022 without any modification.

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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](http://www.iso.org/directives)).

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

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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace atmospheres*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 137, *Assessment of workplace exposure to chemical and biological agents*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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](http://www.iso.org/members.html).

## Introduction

This document provides a framework for assessing the performance of procedures for measuring a chemical agent present as a mixture of airborne particles and vapour against the general requirements for the performance of procedures for measuring chemical agents in workplace atmospheres as specified in ISO 20581.

This document enables manufacturers, users of samplers, developers and users of procedures for measuring a chemical agent present as a mixture of airborne particles and vapour to adopt a consistent approach to method validation.

This document is based on EN 13936.

# Workplace air — Chemical agent present as a mixture of airborne particles and vapour — Requirements for evaluation of measuring procedures using samplers

## 1 Scope

This document specifies requirements for the evaluation of measuring procedures using samplers for the determination of a chemical agent present in the workplace atmosphere as a mixture of airborne particles and vapour.

The procedures given in this document provide results only for the sum of airborne particles and vapour. The concentration is calculated in terms of mass per unit volume.

NOTE The physical behaviour of a mixture of airborne particles and vapour is described in [Annex A](#). Examples of substances which can be present in multiple phases are toluene diisocyanate, diethanolamine, ethyleneglycol and tributylphosphate.

This document can also be applied to complex mixtures, such as metal working fluids or bitumen fumes.

This document is applicable to samplers and measuring procedures using these samplers in which sampling and analysis are carried out in separate stages.

## 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 13137, *Workplace atmospheres — Pumps for personal sampling of chemical and biological agents — Requirements and test methods*

ISO 18158, *Workplace air — Terminology*

ISO 20581, *Workplace air — General requirements for the performance of procedures for the measurement of chemical agents*

ISO 21832, *Workplace air — Metals and metalloids in airborne particles — Requirements for evaluation of measuring procedures*

ISO 22065:2020, *Workplace air — Gases and vapours — Requirements for evaluation of measuring procedures using pumped samplers*

EN 13205-1, *Workplace exposure — Assessment of sampler performance for measurement of airborne particle concentrations — Part 1: General requirements*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18158 and the following 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>