# Workplace atmospheres - Determination of airborne endotoxins

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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| Käesolev Eesti standard EVS-EN 14031:2003 sisaldab Euroopa standardi EN 14031:2003 ingliskeelset teksti.<br><br>Käesolev dokument on jõustatud 18.02.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.<br><br>Standard on kättesaadav Eesti standardiorganisatsioonist. | This Estonian standard EVS-EN 14031:2003 consists of the English text of the European standard EN 14031:2003.<br><br>This document is endorsed on 18.02.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.<br><br>The standard is available from Estonian standardisation organisation. |

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| **Käsitlusala:**<br>This European Standard provides guidelines for the assessment of workplace exposure to airborne bacterial endotoxins. The standard provides methods for sampling, transportation, and storage of samples and determination of endotoxins | **Scope:**<br>This European Standard provides guidelines for the assessment of workplace exposure to airborne bacterial endotoxins. The standard provides methods for sampling, transportation, and storage of samples and determination of endotoxins |

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**Võtmesõnad:** occu, operating stations, particulate air pollutants, particulate matter measurement, pollution of the air, quantitative analysis, sampling, sampling methods, specification (approval), specifications, testing, working places, workplace safety

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English version

# Workplace atmospheres - Determination of airborne endotoxins

Atmosphères des lieux de travail - Détermination des endotoxines en suspension dans l'air

Arbeitsplatzatmosphäre - Bestimmung von luftgetragenen Endotoxinen

This European Standard was approved by CEN on 21 November 2002.

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 Management Centre or to any CEN member.

This European Standard exists 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 Management Centre has the same status as the official versions.

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



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

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## Contents

## Foreword

This document (EN 14031:2003) has been prepared by Technical Committee CEN/TC 137 "Assessment of workplace exposure", 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 July 2003, and conflicting national standards shall be withdrawn at the latest by July 2003.

Annexes A and B are informative.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

Endotoxins are integral components of the outer membrane of gramnegative bacteria which are composed of proteins, lipids, and lipopolysaccharides. The term 'endotoxin' refers to the toxin as present on the bacterial cell wall. Lipopolysaccharides of gram negative bacteria refer to a class of pure lipid carbohydrate molecules (free of protein and other cell wall components) that are held responsible for most of the biological properties characteristic of bacterial endotoxins. In annex A a brief overview is given with respect to physical and chemical properties of endotoxins and sources of exposure in the occupational environment.

Endotoxins are believed to play an important role in the development of organic dust related diseases in exposed workers.

It is important to assess occupational exposure to airborne endotoxins in a representative way to evaluate the exposure. There are, however, at present no generally accepted procedures for the measurement of environmental endotoxins, thus different practices continue to exist. Rigorous standardization with respect to sampling media, extraction media, analytical methods and storage conditions for endotoxins are needed to obtain results that are comparable between studies. By adhering to the recommendations outlined in this standard for choice of sampling, storage of samples, extraction and analytical procedures uncertainties in exposure assessment can be reduced and controlled, allowing comparable and representative measurements to be made.

## 1 Scope

This European Standard provides guidelines for the assessment of workplace exposure to airborne bacterial endotoxins. The standard provides methods for sampling, transportation, and storage of samples and determination of endotoxins.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place 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).

EN 481:1993, *Workplace atmospheres – Size fraction definitions for measurement of airborne particles.*

EN 1232, *Workplace atmospheres – Pumps for personal sampling of chemical agents – Requirements and test methods.*

EN 12919, *Workplace atmospheres – Pumps for the sampling of chemical agents with a volume flow rate of over 5 l/min - Requirements and test methods.*

## 3 Terms and definitions

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

**3.1**
**bioaerosol**
airborne particles with biological origin

NOTE See EN 13098:2000, 3.3, notes.

**3.2**
**control standard endotoxin**
standard that is traceable to the RSE