

**Töökoha õhu kvaliteet. Üldnõuded keemiliste
ohutegurite mõõteprotseduuride suutlikkusele**

**Workplace exposure - General requirements for the
performance of procedures for the measurement of
chemical agents**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 482:2012 sisaldab Euroopa standardi EN 482:2012 ingliskeelset teksti.	This Estonian standard EVS-EN 482:2012 consists of the English text of the European standard EN 482:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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English Version

Workplace exposure - General requirements for the performance of procedures for the measurement of chemical agents

Exposition sur les lieux de travail - Exigences générales concernant les performances des procédures de mesure des agents chimiques

Exposition am Arbeitsplatz - Allgemeine Anforderungen an die Leistungsfähigkeit von Verfahren zur Messung chemischer Arbeitsstoffe

This European Standard was approved by CEN on 9 March 2012.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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Foreword

This document (EN 482:2012) has been prepared by 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 October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

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

This document supersedes EN 482:2006.

The major technical changes between this European Standard and the previous edition are as follows:

- a) The terms and definitions given in the previous edition have been replaced by a normative reference to EN 1540:2011.
- b) The maximum expanded uncertainty for mixtures of airborne particles and vapour has been changed from 30 % to 50 %, for concentration measurements between 0,5 times and 2 times the limit value.
- c) The former Annex A, regarding measurement categories described in EN 689 and involving a combination of measurement tasks, has been deleted.
- d) The former Annex C (now Annex B) has been revised to remove information already given in EN 838, EN 1076 and EN 13890.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

National laws and regulations based on European Directives require the assessment of the potential exposure of a worker to chemical agents in workplace atmospheres. One way of assessing such exposure is to measure the concentration of a chemical agent in the air in the worker's breathing zone. The procedures used for such measurements should give reliable and valid results, so that when compared with set occupational exposure limit values, a correct decision can be made, for instance, as to whether the exposure level is acceptable or control measures need to be applied.

Because of their importance in the process of exposure assessment, it is required that the measurement procedures fulfil some general requirements which are given in this document. Specific European Standards have been prepared for different types of measuring procedures and measuring devices. These include European Standards for dust samplers (EN 13205), diffusive samplers (EN 838), pumped samplers (EN 1076), detector tubes (EN 1231), sampling pumps (EN 1232 and EN 12919), metals and metalloids (EN 13890), mixtures of airborne particles and vapour (ENV 13936¹⁾) and direct reading instruments (EN 45544 (all parts)). In these specific European Standards, additional requirements have been included for the procedure or device in question, so that the general requirements of this document are not compromised. Where no specific European Standard exists, only the general requirements apply.

Performance requirements are given in this document for unambiguity, selectivity, averaging time, measuring range and expanded uncertainty for minimum specified measuring ranges. These requirements are intended to apply under environmental conditions present at the workplace. However, because a wide range of environmental conditions are encountered in practice, this document specifies requirements that have to be fulfilled by measuring procedures when tested under prescribed laboratory conditions.

It is the user's responsibility to choose the appropriate procedures or devices that meet the requirements of this document. One way of doing this is to obtain information or confirmation from the provider of a procedure or the manufacturer of a device. Type-testing or, more generally, assessment of the performance of procedures or devices, can be undertaken by the manufacturer, user, test house or research and development laboratory, as is most appropriate. A number of existing procedures for workplace measurements have either been tested over a part of the required minimum measuring range, but not over the entire range, or have not been tested for all environmental influences and potential interferences. If these partially validated procedures meet the performance requirements of this European Standard, they can be used at present. Nevertheless these procedures should be tested over the full ranges as soon as is reasonably practicable. If there is no measuring procedure for a chemical agent which meets the requirements of this document, a procedure should be used whose performance is closest to the specified requirements.

1) A new edition of ENV 13936 is currently being elaborated and is foreseen to be published as EN 13936.

1 Scope

This European Standard specifies general performance requirements for procedures for the determination of the concentration of chemical agents in workplace atmospheres as required by the Chemical Agents Directive 98/24/EC (see reference [7]). These requirements apply to all measuring procedures, irrespective of the physical form of the chemical agent (gas, vapour, airborne particles), the sampling method and the analytical method used.

This European Standard is applicable to

- all steps of a measuring procedure,
- measuring procedures with separate sampling and analysis steps, and
- direct-reading devices.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 481, *Workplace atmospheres — Size fraction definitions for measurement of airborne particles*

EN 838, *Workplace exposure — Procedures for measuring gases and vapours using diffusive samplers — Requirements and test methods*

EN 1076, *Workplace exposure — Procedures for measuring gases and vapours using pumped samplers — Requirements and test methods*

EN 1231, *Workplace atmospheres — Short term detector tube measurement systems — Requirements and test methods*

EN 1232:1997²⁾, *Workplace atmospheres — Pumps for personal sampling of chemical agents — Requirements and test methods*

EN 1540, *Workplace exposure — Terminology*

EN 12919:1999²⁾, *Workplace atmospheres — Pumps for the sampling of chemical agents with a volume flow rate of over 5 l/min — Requirements and test methods*

EN 13205, *Workplace atmospheres — Assessment of performance of instruments of airborne particle concentrations*

EN 13890, *Workplace exposure — Procedures for measuring metals and metalloids in airborne particles — Requirements and test methods*

EN 45544 (all parts), *Workplace atmospheres — Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours*

ISO 78-2, *Chemistry — Layouts for standards — Part 2: Methods of chemical analysis*

2) A European Standard, EN ISO 13137, is being elaborated and is foreseen to replace this document.