

Workplace atmospheres - Determination of diesel particulate matter - General requirements

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particulate matter - General requirements

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 14530:2004 sisaldab Euroopa standardi EN 14530:2004 ingliskeelset teksti. Käesolev dokument on jõustatud 27.07.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 14530:2004 consists of the English text of the European standard EN 14530:2004. This document is endorsed on 27.07.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.
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Käsitlusala: This European Standard specifies the sampling and analytical requirements for the determination of particulate diesel engine exhaust emissions in workplace atmospheres. Time weighed average mass concentrations are measured for the components of particulate diesel engine exhaust emissions (i.e. OC, EC, TC). This European Standard enables users to select a procedure to determine occupational exposure to DPM according to a uniform approach and to obtain directly comparable results.	Scope: This European Standard specifies the sampling and analytical requirements for the determination of particulate diesel engine exhaust emissions in workplace atmospheres. Time weighed average mass concentrations are measured for the components of particulate diesel engine exhaust emissions (i.e. OC, EC, TC). This European Standard enables users to select a procedure to determine occupational exposure to DPM according to a uniform approach and to obtain directly comparable results.
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English version

Workplace atmospheres - Determination of diesel particulate matter - General requirements

Air des lieux de travail - Dosage des matières particulaires émises par les moteurs diesel - Exigences générales

Arbeitsplatzatmosphäre - Bestimmung von teilchenförmigen Emissionen von Dieselmotoren - Allgemeine Anforderungen

This European Standard was approved by CEN on 2 February 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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



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Foreword

This document (EN 14530:2004) 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 2004, and conflicting national standards shall be withdrawn at the latest by October 2004.

Annex A is 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

Diesel engine exhaust emissions are a complex mixture consisting of gases and vapours such as carbon monoxide, carbon dioxide, sulphur dioxide, nitrogen oxides, aldehydes and hydrocarbons, plus also diesel particulate matter (DPM). DPM is the particulate phase of diesel engine exhaust emissions and contains inorganic components (e.g. sulphates) as well as the ones described in the method. They occur in workplaces where diesel engines operate, especially during tunnel and gallery construction, in freight and transport facilities, in the mining industry and in workshops. The potentially carcinogenic effect of diesel engine exhaust emissions is currently attributed to the particulate phase, especially to those particles that consist of a soot core with associated adsorbed organic compounds. Therefore, these are the components of the total particulate matter that are considered and referred to in this European Standard.

Since the target organ for the carcinogenic effect from DPM is the alveolar lung region, only the respirable fraction as defined in EN 481 is sampled. Since the mass median aerodynamic diameter of DPM is approximately $0,1\text{ }\mu\text{m}$, sampling this fraction still guarantees complete trapping of all DPM.

NOTE Epidemiological studies from ambient air suggests that there can be other health effects associated with exposure to diesel engine exhaust besides lung cancer.

1 Scope

This European Standard specifies the sampling and analytical requirements for the determination of particulate diesel engine exhaust emissions in workplace atmospheres. Time weighed average mass concentrations are measured for the components of particulate diesel engine exhaust emissions (i.e. OC, EC, TC).

This European Standard enables users to select a procedure to determine occupational exposure to DPM according to a uniform approach and to obtain directly comparable results.

It is the responsibility of users to ascertain that the requirements of EN 482 under the given laboratory conditions are fulfilled.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places 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, *Workplace atmospheres — Size fraction definitions for the measurement of airborne particles*.

EN 482: 1994, *Workplace atmospheres — General requirements for the performance of procedures for the measurement of chemical agents*.

EN 689, *Workplace atmosphere — Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy*.

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*.

EN 13205: 2001, *Workplace atmospheres — Assessment of performance of instruments for measurement of airborne particle concentrations*.

3 Terms and definitions

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

3.1

components of particulate diesel engine exhaust emissions

organic carbon, elemental carbon and total carbon referred to in this European Standard

NOTE These components are not defined via a specific bonding state of carbon in natural or synthetic substances, but refer to carbon masses determined by performing specific analytical procedures in several subsequent measuring steps. Thus, the components of particulate diesel engine exhaust emissions are directly defined via the analysis procedure.

3.2

organic carbon

OC

organic compounds that can be removed from the soot cores and which are a component of DPM