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National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 12341:1999

ICS 13.040.20
61.040

AIR QUALITY - DETERMINATION OF THE PM10 FRACTION OF SUSPENDED PARTICULATE MATTER - REFERENCE METHOD AND FIELD TEST PROCEDURE TO DEMONSTRATE REFERENCE EQUIVALENCE OF MEASUREMENT METHODS

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English version

Air quality - Determination of the PM10 fraction of suspended particulate matter - Reference method and field test procedure to demonstrate reference equivalence of measurement methods

Qualité de l'air - Détermination de la fraction MP10 de matière particulaire en suspension - Méthode de référence et procédure d'essai in situ pour démontrer l'équivalence à la référence de méthodes de mesurage

Luftbeschaffenheit - Ermittlung der PM10-Fraktion von Schwebstaub - Referenzmethode und Feldprüfverfahren zum Nachweis der Gleichwertigkeit von Meßverfahren und Referenzmeßmethode

This European Standard was approved by CEN on 2 November 1998.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 264 "Air quality", 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of an identical text or by endorsement, at the latest by May 1999, and conflicting national standards shall be withdrawn at the latest by May 1999.

Annex A, annex B and annex C are normative annexes and annex D and annex E are informative annexes.

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

Introduction

ISO 7708 defines sampling conventions for the particle size fractions to be collected from ambient (and also workplace) atmospheres in order to assess their impact on human health. Conventions are defined for the inhalable, thoracic and respirable suspended particulate matter (SPM) fractions. These conventions represent target specifications for samplers, giving the ideal sampling efficiency as a function of particle aerodynamic diameter.

In general, the sampling efficiency of real samplers will deviate from the target specification, and the SPM mass collected will therefore differ from that which an ideal sampler would collect. In addition, the behaviour of real samplers is influenced by many factors such as wind speed, humidity, temperature, and barometric pressure. The wide range of particle sizes and compositions present in ambient air has led to the development of a diversity of instruments for collection and quantification of the aforementioned SPM fractions.

Obviously, the aforementioned situation calls for standardised test procedures to ensure that the performance of candidate sampling instruments according to pertinent sampling conventions can be established reliably.

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1 Scope

This standard specifies the performance of PM10 sampling instruments in order to harmonize the monitoring within the framework of the European Union Council Directive 96/62/EC [1] on ambient air quality assessment and management, and the first daughter directive. In the daughter directive, by convention the ISO thoracic sampling convention has been assimilated to the PM10 fraction (see annex A; [2]).

The standard specifies a test protocol for comparing the results of a candidate PM10 sampler with a reference PM10 one in a field test [3]. Basically, the reference equivalence awarded to a candidate sampler applies only to the range of conditions under which the field tests were carried out. By carrying out the ambient field test in characteristic situations covering a wide range of relevant ambient parameters it is secured that reference equivalence does hold in prevailing conditions within European countries. Reference equivalence will explicitly not be awarded for specific situations (e.g. background only or urban situations only). Above all, the procedure given in this standard is thought to be a practical one, enabling European institutions or industries to assess candidate sampling systems under ambient conditions.

The reference equivalence awarded using the procedures given in this standard, only applies to the process of sampling SPM in ambient air. It does not deal with the equivalence of commonly employed automated methods (e.g. attenuation of â-radiation or the oscillating mass balance method) to analyse the ambient SPM collected on the collection substrate. The limit of detection and the precision of the analytical method are important considerations for the user, but their determination is outside the scope of this standard.

The main arguments for the designated field test procedure are elucidated in D.1.

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 this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 45001
General criteria for the operation of testing laboratories

ISO 8756
Air Quality - Handling of temperature, pressure and humidity data

ISO 7708
Air quality - Particle size fraction definitions for health related sampling

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