TÖÖKOHA ÕHK
Plii ja pliiühendite sisalduse määramine õhus
Leek või elektrotermiline aatomabsorptsioon-spektomeetria

Workplace air
Determination of particulate lead and lead compounds
Flame or electrothermal atomic absorption spectrometric method

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA	NATIONAL FOREWORD
Käesolev Eesti standard EVS-ISO 8518:2004 "Töökoha õhk. Plii ja pliiühendite sisalduse määramine õhus. Leek või elektrotermiline aatomabsorptsioon-spektomeetria" sisaldab rahvusvahelise standardi ISO 8518:2001 "Workplace air - Determination of particulate lead and lead compounds - Flame or electrothermal atomic absorption spectrometric method" identset ingliskeelset teksti.	This Estonian Standard EVS-ISO 8518:2004 consists of the identical English text of the International Standard ISO 8518:2001 "Workplace air – Determination of particulate lead and lead compounds - Flame or electrothermal atomic absorption spectrometric method".
Standard EVS-ISO 8518:2004 on kinnitatud Eesti Standardikeskuse 19.06.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 19.06.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from Estonian Centre for Standardisation.

Käsitlusala	Scope
1.1 See rahvusvaheline standard täpsustab leek-aatomabsorptsioon-spektomeetria ja elektrotermilise atomiseerimis-aatomabsorptsioon-spektomeetria meetodid töökoha õhus pliiosakeste ja -ühendite keskmise massikontsentratsiooni määramiseks teatud aja jooksul.	1.1 This International Standard specifies flame and electrothermal atomic absorption spectrometric methods for the determination of the time-weighted average mass concentration of particulate lead and lead compounds in workplace air.
1.2 See meetod on rakendatav lenduvate osakeste sissehingatava hulga isikupõhiseks määramiseks vastavalt ISO 7708 standardile ning staatiliseks (alapõhiseks) määramiseks.	1.2 The method is applicable to personal sampling of the inhalable fraction of airborne particles, as defined in ISO 7708, and to static (area) sampling.
1.3 Proovi lahustamine nõuab kuumal plaadil või mikrolaineahjus lagundamist või ultrahelieraldust (11.2). Alternatiivse, jõulisema lahustamisprotseduuri kasutamine on vajalik, kui soovitakse eraldada tina katseatmosfääris leiduvatest ühenditest, mida pole võimalik eraldada siin kirjeldatud eraldusprotseduuride abil.	1.3 The sample dissolution procedure specifies hot plate or microwave digestion, or ultrasonic extraction (11.2). The use of an alternative, more vigorous dissolution procedure is necessary when it is desired to extract lead from compounds present in the test atmosphere that are insoluble using the dissolution procedures described herein.
1.4 Leek-aatomabsorptsioon-spektomeetria on rakendatav umbes 1 µg kuni 200 µg pliihulga määramisel proovi kohta, ilma lahjendamata [1]. Elektrotermiline atomiseerimis-aatomabsorptsioon-spektomeetria on rakendatav umbes 0,01 µg kuni 0,5 µg pliihulga määramisel proovi kohta, ilma lahjendamata [0,01].	1.4 The flame atomic absorption method is applicable to the determination of masses of approximately 1 µg to 200 µg of lead per sample, without dilution [1]. The electrothermal atomic absorption method is applicable to the determination of masses of approximately 0,01 µg to 0,5 µg of lead per sample, without dilution [1].
1.5 Ultrahelieraldus on hinnatud sobivaks umbes 20 µg kuni 100 µg pliihulga määramiseks proovi kohta laboris saadud õhusaastefiltri proovide põhjal [2].	1.5 The ultrasonic extraction procedure has been validated for the determination of masses of approximately 20 µg to 100 µg of lead per sample, for laboratory-generated lead fume air filter samples [2].
1.6 Plii sisaldus õhus, millele see protseduur on rakendatav, määratakse osaliselt kasutaja valitud proovivõtumenetluse põhjal (vt 10.1).	1.6 The concentration range for lead in air for which this procedure is applicable is determined in part by the sampling procedure selected by the user (see 10.1).

ICS 13.040.30 Töökeskkonna õhu kvaliteet
Võtmesõnad: aerosoolid, plii, spektromeetriline meetod, välisõhk, õhk, õhu kvaliteet

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

International Standard ISO 8518 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace atmospheres*.

This second edition cancels and replaces the first edition (ISO 8518:1990), which has been technically revised.

Annexes A and B of this International Standard are for information only.

Introduction

The health of workers in many industries, e.g. mining, metal refining, battery manufacture, construction, etc., is at risk through exposure by inhalation of particulate lead and lead compounds. Industrial hygienists and other public health professionals need to determine the effectiveness of measures taken to control workers' exposure, and this is generally achieved by making workplace air measurements. This International Standard provides a method for making valid exposure measurements for lead. It will be of benefit to: agencies concerned with health and safety at work; industrial hygienists and other public health professionals; analytical laboratories; industrial users and workers of metals and metalloids, etc.

It has been assumed in the drafting of this International Standard that the execution of its provisions, and the interpretation of the results obtained, is entrusted to appropriately qualified and experienced people.

Workplace air — Determination of particulate lead and lead compounds — Flame or electrothermal atomic absorption spectrometric method

1 Scope

1.1 This International Standard specifies flame and electrothermal atomic absorption spectrometric methods for the determination of the time-weighted average mass concentration of particulate lead and lead compounds in workplace air.

1.2 The method is applicable to personal sampling of the inhalable fraction of airborne particles, as defined in ISO 7708, and to static (area) sampling.

1.3 The sample dissolution procedure specifies hot plate or microwave digestion, or ultrasonic extraction (11.2). The use of an alternative, more vigorous dissolution procedure is necessary when it is desired to extract lead from compounds present in the test atmosphere that are insoluble using the dissolution procedures described herein.

1.4 The flame atomic absorption method is applicable to the determination of masses of approximately 1 μg to 200 μg of lead per sample, without dilution [1]. The electrothermal atomic absorption method is applicable to the determination of masses of approximately 0,01 μg to 0,5 μg of lead per sample, without dilution [1].

1.5 The ultrasonic extraction procedure has been validated for the determination of masses of approximately 20 μg to 100 μg of lead per sample, for laboratory-generated lead fume air filter samples [2].

1.6 The concentration range for lead in air for which this procedure is applicable is determined in part by the sampling procedure selected by the user (see 10.1).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 648:1977, *Laboratory glassware — One-mark pipettes*

ISO 1042:1998, *Laboratory glassware — One-mark volumetric flasks*

ISO 3585:1998, *Borosilicate glass 3.3 — Properties*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 7708:1995, *Air quality — Particle size fraction definitions for health-related sampling*

ISO 8655-1, *Piston-operated volumetric apparatus — Part 1: Terminology, general requirements and user recommendations*

ISO 8655-2, *Piston-operated volumetric apparatus — Part 2: Piston pipettes*

ISO 8655-5, *Piston-operated volumetric apparatus — Part 5: Dispensers*

ISO 8655-6, *Piston-operated volumetric apparatus — Part 6: Gravimetric methods for the determination of measurement error*

ISO 15202-2:2001, *Workplace air — Determination of metals and metalloids in airborne particulate matter by inductively coupled plasma atomic emission spectrometry — Part 2: Sample preparation*

EN 13205[1)], *Workplace atmospheres — Assessment of performance of instruments for measurement of airborne particle concentrations*