

**Stationary source emissions -  
Determination of volume concentration  
of oxygen (O<sub>2</sub>) - Reference method -  
Paramagnetism**

Stationary source emissions - Determination of  
volume concentration of oxygen (O<sub>2</sub>) - Reference  
method - Paramagnetism

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14789:2005 sisaldab Euroopa standardi EN 14789:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 28.12.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14789:2005 consists of the English text of the European standard EN 14789:2005.</p> <p>This document is endorsed on 28.12.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b> This European Standard describes the paramagnetic method, including the sampling and the gas conditioning system, to determine the oxygen concentrations in flue gases emitted to the atmosphere from ducts and stacks.</p>	<p><b>Scope:</b> This European Standard describes the paramagnetic method, including the sampling and the gas conditioning system, to determine the oxygen concentrations in flue gases emitted to the atmosphere from ducts and stacks.</p>
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**Võtmesõnad:** air pollution, air quality, concentration, dust, emissions

ICS 13.040.40

English Version

## Stationary source emissions - Determination of volume concentration of oxygen (O<sub>2</sub>) - Reference method - Paramagnetism

Emissions de sources fixes - Détermination de la concentration volumique en oxygène (O<sub>2</sub>) - Méthode de référence: Paramagnétisme

Emissionen aus stationären Quellen - Bestimmung der Volumenkonzentration von Sauerstoff - Referenzverfahren - Paramagnetismus

This European Standard was approved by CEN on 30 September 2005.

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 European Standard (EN 14789:2005) 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 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this European Standard.

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.

## 1 Scope

This European Standard describes the paramagnetic method, including the sampling and the gas conditioning system, to determine the oxygen concentrations in flue gases emitted to the atmosphere from ducts and stacks.

This European Standard is the Standard Reference Method (SRM) for periodic monitoring and for the calibration or control of Automatic Measuring Systems (AMS) permanently installed on a stack, for regulatory purposes or other purposes. To be used as the SRM, the user shall demonstrate that the performance characteristics of the method are better than the performance criteria defined in this European Standard and that the overall uncertainty of the method is less than  $\pm 6,0$  % of the measured concentration.

NOTE When paramagnetism is the measurement principle used for AMS, reference should be made to EN 14181 and other relevant standards provided by CEN/TC 264.

An alternative method to this SRM may be used provided that the user can demonstrate equivalence according to the Technical Specification CEN/TS 14793, to the satisfaction of his national accreditation body or law.

This Standard Reference Method has been evaluated during field tests on waste incineration, co-incineration and large combustion installations. It has been validated for sampling periods of 30 min in the range: 5 % to 26 %. Oxygen concentration values, expressed in % volume, are used in order to allow emission measurements of pollutants to be standardised to the reference O<sub>2</sub> concentration and dry gas conditions required by the following Council Directives:

- Council Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants;
- Council Directive 2000/76/EC on waste incineration plants.

## 2 Normative references

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

CEN/TS 14793, *Stationary source emission – Intralaboratory validation procedure for an alternative method compared to a reference method.*

ENV 13005, *Guide to the expression of uncertainty in measurement.*

EN ISO 14956, *Air quality - Evaluation of the suitability of a measurement procedure by comparison with a required measurement uncertainty (ISO 14956:2002).*

## 3 Terms and definitions

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

NOTE In this European Standard, the concentration of O<sub>2</sub> is expressed in % volume.

### 3.1

#### **adjustment (of a measuring system)**

operation of bringing a measuring system into a state of performance suitable for its use

[VIM 4.30]