

Health and safety in welding and allied processes - Laboratory method for sampling fume and gases generated by arc welding - Part 1: Determination of emission rate and sampling for analysis of particulate fume

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 15011-1:2002 sisaldab Euroopa standardi EN ISO 15011-1:2002 ingliskeelset teksti. Käesolev dokument on jõustatud 18.09.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 15011-1:2002 consists of the English text of the European standard EN ISO 15011-1:2002. This document is endorsed on 18.09.2002 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 describes a method for the determination of the particulate fume emission rate from arc welding processes using a fume box technique. It defines a method of sampling particulate fume for chemical analysis and suggests possible analytical techniques in order to characterize fumes emitted by consumable during welding.	Scope: This European standard describes a method for the determination of the particulate fume emission rate from arc welding processes using a fume box technique. It defines a method of sampling particulate fume for chemical analysis and suggests possible analytical techniques in order to characterize fumes emitted by consumable during welding.
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Võtmesõnad: chemical analysis and testin, definitions, determination, emission measurement, emissions, gases, health protection, laboratory testing, occupational safety, particulate matter measurement, sampling, sampling methods, smoke, welding, working conditions (physical)

English version

**Health and safety in welding and allied processes –
Laboratory method for sampling fume and gases
generated by arc welding**

**Part 1: Determination of emission rate and sampling for analysis of
particulate fume (ISO 15011-1 : 2002)**

Hygiène et sécurité en soudage et
techniques connexes – Méthode
de laboratoire d'échantillonnage
des fumées et des gaz émis par
le soudage à l'arc – Partie 1:
Détermination du taux d'émission et
échantillonnage pour l'analyse des
poussières (ISO 15011-1 : 2002)

Arbeits- und Gesundheitsschutz
beim Schweißen und bei verwandten
Verfahren – Laborverfahren zum
Sammeln von Rauch und Gasen, die
beim Lichtbogenschweißen erzeugt
werden – Teil 1: Bestimmung der
Emissionsrate und Probenahme zur
Analyse von partikel-förmigem Rauch
(ISO 15011-1 : 2002)

This European Standard was approved by CEN on 2001-04-20.

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 Management Centre or to any CEN member.

The European Standards exist 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 Management Centre has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Management Centre: rue de Stassart 36, B-1050 Brussels

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Foreword

This document (EN ISO 15011-1:2002) has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

This standard consists of the following parts:

- Part 1: Determination of emission rate and sampling for analysis of particulate fume;
- Part 2: Determination of emission rates of gases and vapours, except ozone;
- Part 3: Determination of ozone concentration using fixed point measurements.

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

Introduction

Welding and allied processes produce particulate fume and gaseous by-products which may be harmful to human health. A knowledge of the quantity of particulate fume and gases generated and the composition of the particulate fume may be useful for occupational hygienists in accessing workplace atmospheres. Emission rates cannot be directly related to fume concentrations existing in a welder's breathing zone, but processes with low emission rates are supposed to produce less fume concentration compared with high emission rates for the same welding condition.

The laboratory procedure described in Part 1 of this standard is used to determine emission rate of particulate fume generated by the arc welding and provides a method of sampling the fume for chemical analysis. The emission rate and composition of particulate fume depend on the welding process, welding parameters, workpiece surface, coatings etc.

With the aid of a fume box in an un-polluted atmosphere, the total particulate fume generated during welding is collected and sampled on a filter in order to determine the emission rate and/or chemical composition.

1 Scope

This European standard describes a method for the determination of the particulate fume emission rate from arc welding processes using a fume box technique. It defines a method of sampling particulate fume for chemical analysis and suggests possible analytical techniques in order to characterize fumes emitted by consumable during welding.

2 Terms and definitions

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

2.1

fume box

a closed or semi-closed ventilated chamber used for sampling and determination (emission rate and composition) of fume and gases in welding and allied processes

2.2

test piece

piece of metal on which the welding process is performed

2.3

arc time

arc time starts from arc initiation and stops immediately as the arc is extinguished

3 Test equipment

3.1 Fume box

The fume box should consist of a top section containing a filter, a welding chamber and a chamber base. The welding chamber shall be large enough to allow complete capture of the emitted fume. The fume box should be designed to reduce deposition of welding fume onto the internal box surface. Examples of possible arrangements are described in annex A, as an example. Other appropriate fume box designs may be used.