

**Health and safety in welding and allied processes -
Laboratory method for sampling fume and gases - Part
2: Determination of the emission rates of carbon
monoxide (CO), carbon dioxide (CO₂), nitrogen
monoxide (NO) and nitrogen dioxide (NO₂) during arc
welding, cutting and gouging**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 15011-2:2009 sisaldab Euroopa standardi EN ISO 15011-2:2009 ingliskeelset teksti.

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English Version

Health and safety in welding and allied processes - Laboratory method for sampling fume and gases - Part 2: Determination of the emission rates of carbon monoxide (CO), carbon dioxide (CO₂), nitrogen monoxide (NO) and nitrogen dioxide (NO₂) during arc welding, cutting and gouging (ISO 15011-2:2009)

Hygiène et sécurité en soudage et techniques connexes - Méthode de laboratoire d'échantillonnage des fumées et des gaz - Partie 2: Détermination des débits d'émission du monoxyde de carbone (CO), du dioxyde de carbone (CO₂), du monoxyde d'azote (NO) et du dioxyde d'azote (NO₂) lors du soudage à l'arc, du coupage et du gougeage (ISO 15011-2:2009)

Arbeits- und Gesundheitsschutz beim Schweißen und bei verwandten Verfahren - Laborverfahren zum Sammeln von Rauch und Gasen - Teil 2: Bestimmung der Emissionsraten von Kohlenmonoxid (CO), Kohlendioxid (CO₂), Stickstoffmonoxid (NO) und Stickstoffdioxid (NO₂) beim Lichtbogenschweißen, Schneiden und Fugenhobeln (ISO 15011-2:2009)

This European Standard was approved by CEN on 29 September 2009.

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Foreword

This document (EN ISO 15011-2:2009) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding" 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of an identical text or by endorsement, at the latest by April 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 15011-2:2009 has been approved by CEN as a EN ISO 15011-2:2009 without any modification.

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Introduction

Welding and allied processes generate fume and gases, which, if inhaled, can be harmful to human health. Knowledge of the composition and the emission rate of the fume and gases can be useful to occupational health professionals in assessing worker exposure and in determining appropriate control measures.

Absolute exposure is dependent upon factors such as welder position with respect to the plume and draughts and cannot be predicted from emission rate data. However, in the same work situation, a higher emission rate is expected to correlate with a higher exposure and a lower emission rate with a lower exposure. Hence, emission rate data can be used to predict relative changes in exposure that might occur in the workplace under different welding conditions and to identify measures for reducing such exposure, but they cannot be used to calculate ventilation requirements.

This part of ISO 15011 specifies a method for measuring the emission rate of carbon monoxide (CO), carbon dioxide (CO₂), nitrogen monoxide (NO) and nitrogen dioxide (NO₂) during arc welding, cutting and gouging using a hood technique. The procedure simply prescribes a methodology, leaving selection of the test parameters to the user, so that the effect of different variables can be evaluated.

It is assumed that the executions of the provisions and the interpretation of the results obtained in this part of ISO 15011 are entrusted to appropriately qualified and experienced people.

Health and safety in welding and allied processes — Laboratory method for sampling fume and gases —

Part 2: Determination of the emission rates of carbon monoxide (CO), carbon dioxide (CO₂), nitrogen monoxide (NO) and nitrogen dioxide (NO₂) during arc welding, cutting and gouging

1 Scope

This part of ISO 15011 defines laboratory methods for measuring the emission rates of carbon monoxide (CO), carbon dioxide (CO₂), nitrogen monoxide (NO) and nitrogen dioxide (NO₂) generated during arc welding, cutting and gouging, using a hood technique. The methodology is suitable for use with all open arc welding processes, cutting and gouging but different designs of hood are used depending on the process and whether or not it can be conducted automatically.

The method can be used to evaluate the effects of welding wires, welding parameters, processes, shielding gases, test piece composition and test piece surface condition on emission rate.

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.

ISO/TR 25901, *Welding and related processes — Vocabulary*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 25901 and the following apply.

3.1

bubble flow meter

primary device for measuring gas flow rate, where the time for a bubble of gas, defined by a soap film, to pass through a calibrated volume in a vertical tube is measured

3.2

test chamber

semi-enclosed, continuously extracted chamber used in emission rate tests performed during arc welding, cutting or gouging operations