SLOVENSKI STANDARD
SIST EN ISO 15011-5:2011

01-december-2011

Nadomešča:
SIST-TS CEN ISO/TS 15011-5:2006

Zdravje in varnost pri varjenju in sorodnih postopkih - Laboratorijska metoda za vzorčenje dima in plinov - 5. del: Določevanje produktov termičnega razkroja, ki nastanejo pri varjenju in rezanju izdelkov, ki so v celoti ali delno iz organskih snovi z metodo pirolize in plinske kromatografije z masno spektrometrijo (ISO 15011-5:2011)

Health and safety in welding and allied processes - Laboratory method for sampling fume and gases - Part 5: Identification of thermal-degradation products generated when welding or cutting through products composed wholly or partly of organic materials using pyrolysis-gas chromatography-mass spectrometry (ISO 15011-5:2011)

Arbeits- und Gesundheitsschutz beim Schweißen und bei verwandten Verfahren - Laborverfahren zum Sammeln von Rauch und Gasen - Teil 5: Identifizierung von thermischen Zersetzungsprodukten erzeugt beim Schweißen oder Schneiden von ganz oder teilweise aus organischen Materialen bestehenden Produkten mittels der Pyrolyse-Gaschromatographie-Massenspektrometrie (ISO 15011-5:2011)

Hygiène et sécurité en soudage et techniques connexes - Méthode de laboratoire d'échantillonnage des fumées et des gaz - Partie 5: Identification des produits de dégradation thermique générés lors du soudage ou du coupage de produits entièrement ou partiellement constitués de matériaux organiques, par pyrolyse-chromatographie en phase gazeuse-spectrométrie de masse (ISO 15011-5:2011)

Ta slovenski standard je istoveten z: **EN ISO 15011-5:2011**

ICS:

25.160.10 Varilni postopki in varjenje Welding processes

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 15011-5

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Supersedes CEN ISO/TS 15011-5:2006

English Version

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 15011-5:2011) 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

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Endorsement notice

The text of ISO 15011-5:2011 has been approved by CEN as a EN ISO 15011-5:2011 without any modification.

INTERNATIONAL STANDARD

ISO 15011-5

First edition
2011-10-01

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

Part 5: Identification of thermal-degradation products generated when welding or cutting through products composed wholly or partly of organic materials using pyrolysis-gas chromatography-mass spectrometry

Hygiène et sécurité en soudage et techniques connexes — Méthode de laboratoire d'échantillonnage des fumées et des gaz —

Partie 5: Identification des produits de dégradation thermique générés lors du soudage ou du coupage de produits entièrement ou partiellement constitués de matériaux organiques, par pyrolyse-chromatographie en phase gazeuse-spectrométrie de masse

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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 2.

The main task of technical committees is to prepare International Standards. 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.

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ISO 15011-5 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 9, *Health and safety*.

This first edition cancels and replaces ISO/TS 15011-5:2006, which has been technically revised.

ISO 15011 consists of the following parts, under the general title *Health and safety in welding and allied processes — Laboratory method for sampling fume and gases*:

— *Part 1: Determination of fume emission rate during arc welding and collection of fume for analysis*

— *Part 2: Determination of emission rates of carbon monoxide (CO), carbon dioxide (CO_2), nitrogen monoxide (NO) and nitrogen dioxide (NO_2) during arc welding, cutting and gouging*

— *Part 3: Determination of ozone emission rate during arc welding*

— *Part 4: Fume data sheets*

— *Part 5: Identification of thermal-degradation products generated when welding or cutting through products composed wholly or partly of organic materials using pyrolysis-gas chromatography-mass spectrometry*

— *Part 6: Procedure for quantitative determination of fume and gases from resistance spot welding* [Technical Specification]

Requests for official interpretations of any aspect of this part of ISO 15011 should be directed to the Secretariat of ISO/TC 44/SC 9, via your national standards body. A complete listing of these bodies can be found at www.iso.org.

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 hygienists in assessing worker exposure and in determining appropriate control measures.

ISO 15011-1[1] and ISO 15011-2[2] have been promulgated primarily to generate emission rate data when welding uncoated metals. However, it is now common practice in the welding industry to weld or cut through a variety of coatings that are composed wholly or partly of organic materials. These coatings include shop primers, paints, oils, waxes and inter-weld materials such as adhesives and sealants. When heated, these coatings give rise to a wide range of thermal degradation products, the composition of which depends upon the temperatures to which the coatings are subjected. During welding and cutting activities, the coating material is subjected to a range of temperatures due to the existence of temperature profiles within the material being processed.

The purpose of this part of ISO 15011 is to describe procedures that can be used to identify and make semi-quantitative measurements of the organic components generated when welding and cutting, preheating and straightening metal treated with the coatings mentioned above, with a view to identifying those components that are significant hygienically. The data generated can be used to provide information on degradation products for use on safety data sheets. If desired, the degradation products identified in these tests can then be measured quantitatively using existing standards for making workplace exposure measurements.

Comparative testing of various weld-through coatings has been carried out using laboratory based heating tests, pyrolysis, and different welding techniques[3][4][5]. From the results of these tests, it was decided that pyrolysis should be adopted as the basis for the testing procedure[6] prescribed in this part of ISO 15011. This was based on the following observations and conclusions:

— pyrolysis successfully identifies most of the hygienically significant components;

— despite the fact that pyrolysis tests are carried out in an atmosphere of helium, results are very comparable with those obtained in air by thermal decomposition in a furnace;

— the cost of pyrolysis testing is significantly lower than the cost of welding tests;

— pyrolysis test results show good interlaboratory consistency;

— it is easier to define standard conditions for pyrolysis tests than for welding tests; and

— in order to reduce the sampling regime required, any welding test programme would, in all likelihood, need to incorporate some pre-testing in the laboratory, probably using pyrolysis.