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Health and safety in welding and allied processes - Laboratory method for sampling fume and gases - Part 6: Procedure for quantitative determination of fume and gases from resistance spot welding (ISO/TS 15011-6:2012)

Hygiène et sécurité en soudage et techniques connexes - Méthode de laboratoire d'échantillonnage des fumées et des gaz - Partie 6: Procédure pour la détermination quantitative des fumées et des gaz générés par le soudage par résistance par points (ISO/TS 15011-6:2012)

Arbeits- und Gesundheitsschutz beim Schweißen und bei verwandten Verfahren - Laborverfahren zum Sammeln von Rauch und Gasen - Teil 6: Verfahren zur quantitativen Bestimmung von Rauchen und Gasen beim Widerstandspunktschweißen (ISO/TS 15011-6:2012)

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Foreword

This document (CEN ISO/TS 15011-6:2012) has been prepared by Technical Committee CEN/TC 121 “Welding", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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Introduction

Welding and cutting activities generate fume and gases which can be harmful to health and should be controlled within the limits laid down by regulations.

Determination of the particle size distribution and the qualitative analysis (metallic and organic fraction and, if possible, speciation) of the dust collected are part of the current practices in human health risk assessment.

In addition, determination of the emission rate of fume and gases is essential for a proper hazard characterization (qualitative and quantitative analysis).

Emission rates cannot be used directly to assess the welder's exposure, but it is expected that materials giving low emission rates will result in lower welder exposures than materials with high emission rates used in the same working situation.

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

Part 6: Procedure for quantitative determination of fume and gases from resistance spot welding

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1 Scope

This part of ISO 15011 provides guidance on determination of emission rates of fume and gases generated by spot welding of uncoated and coated steel sheets, expressed as the quantity of pollutants per spot weld. It describes the test principle and considers methods for sampling and analysis.

This part of ISO 15011 can be used for determining the influence of the type of material, the coating system, and the material thickness on the possible generation of fume and gases when using a fixed combination of electrodes, welding equipment, and testing conditions.

The data generated can be used by product manufacturers to provide information for inclusion in safety data sheets and by occupational hygienists to evaluate the significant substances emitted by spot welding in the performance of risk assessments and/or workplace exposure measurements.

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

ISO 15011-5, *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 15609-5, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 5: Resistance welding*

ISO 15767, *Workplace atmospheres — Controlling and characterizing uncertainty in weighing collected aerosols*

ISO 18278-2:2004, *Resistance welding — Weldability — Part 2: Alternative procedures for the assessment of sheet steels for spot welding*

CEN/TR 14599, *Terms and definitions for welding purposes in relation with EN 1792*

CEN/TR 15230, *Workplace atmospheres — Guidance for sampling of inhalable, thoracic and respirable aerosol fractions*

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