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Irish Standard
I.S. EN ISO 21904-4:2020

Health and safety in welding and allied processes - Equipment for capture and separation of welding fume - Part 4: Determination of the minimum air volume flow rate of capture devices (ISO 21904-4:2020)

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I.S. EN ISO 21904-4:2020 is the adopted Irish version of the European Document EN ISO 21904-4:2020, Health and safety in welding and allied processes - Equipment for capture and separation of welding fume - Part 4: Determination of the minimum air volume flow rate of capture devices (ISO 21904-4:2020)

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EUROPÄISCHE NORM

EN ISO 21904-4

March 2020

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English Version

Health and safety in welding and allied processes - Equipment for capture and separation of welding fume - Part 4: Determination of the minimum air volume flow rate of capture devices (ISO 21904-4:2020)

Hygiène et sécurité en soudage et techniques connexes - Équipements de captage et de filtration des fumées - Partie 4: Détermination du débit volumique minimal d'air des dispositifs de captage (ISO 21904-4:2020)

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European foreword

This document (EN ISO 21904-4:2020) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 “Welding and allied processes” 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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INTERNATIONAL STANDARD

ISO 21904-4

First edition
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Health and safety in welding and allied processes — Equipment for capture and separation of welding fume —

Part 4: Determination of the minimum air volume flow rate of capture devices

Hygiène et sécurité en soudage et techniques connexes — Équipements de captage et de filtration des fumées —

Partie 4: Détermination du débit volumique minimal d'air des dispositifs de captage

Reference number
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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

A list of all parts in the ISO 21904 series can be found on the ISO website.

This first edition cancels and replaces ISO 15012-2.

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Introduction

Welding and allied processes generate fume and gases, which, if inhaled, can be harmful to human health. Control is often required to maintain exposure at acceptable levels and this can be achieved by capturing the fume and gases using local exhaust ventilation.

For a particular capture device, the air velocity to capture welding fume can only be achieved by applying a minimum air volume flow rate. Consequently, capture devices need to be used with exhaust systems that provide, at least, the minimum air volume flow rate.

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Health and safety in welding and allied processes — Equipment for capture and separation of welding fume —

Part 4: Determination of the minimum air volume flow rate of capture devices

1 Scope

This document specifies two methods for establishing the minimum air volume flow rate. One method is dedicated for use with captor hoods, nozzles and slot nozzles with a ratio of slot length to hose diameter of 8:1 or less. The other method is dedicated for use with on-gun extraction devices.

These methods are not applicable to down draught tables.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 21904-1:2020, *Health and safety in welding and allied processes — Equipment for capture and separation of welding fume — Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and ISO 21904-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Captor hoods, nozzles and slot nozzles

4.1 Principle

Tests are performed to determine the minimum air volume flow rate to provide a suction field of given dimensions and air velocity at a measured distance perpendicular to the entry plane of the hood. The required velocity in the suction field as specified in ISO 21904-1:2020, 5.2, and the required dimensions are at least 1,5 D long and at least 1 D wide at a distance of 1,5 D, where D is the internal diameter of the extraction duct. It can be achieved by the measurement described in 4.3 or by numerical simulation (Computational Fluid Dynamics, CFD).

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