

<b>STN</b>	<b>Ochrana zdravia a bezpečnosť pri zvaraní a príbuzných procesoch</b> <b>Zariadenia na zachytávanie a separáciu plyných splodín pri zvaraní</b> <b>Časť 1: Všeobecné požiadavky (ISO 21904-1: 2020)</b>	<b>STN</b> <b>EN ISO 21904-1</b>  05 0608
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Health and safety in welding and allied processes - Equipment for capture and separation of welding fume - Part 1: General requirements (ISO 21904-1:2020)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/20

Obsahuje: EN ISO 21904-1:2020, ISO 21904-1:2020

Oznámením tejto normy sa ruší  
STN EN ISO 15012-4 (05 0608) z januára 2017

**130938**

EUROPEAN STANDARD

**EN ISO 21904-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2020

ICS 25.160.01; 13.100

Supersedes EN ISO 15012-4:2016

English Version

## Health and safety in welding and allied processes - Equipment for capture and separation of welding fume - Part 1: General requirements (ISO 21904-1:2020)

Hygiène et sécurité en soudage et techniques connexes  
- Equipements de captage et de filtration des fumées -  
Partie 1: Exigences générales (ISO 21904-1:2020)

Arbeits- und Gesundheitsschutz beim Schweißen und  
bei verwandten Verfahren - Einrichtungen zum  
Erfassen und Abscheiden von Schweißrauch - Teil 1:  
Allgemeine Anforderungen (ISO 21904-1:2020)

This European Standard was approved by CEN on 31 January 2020.

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This European Standard exists 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 CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN ISO 21904-1:2020 (E)**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>
<b>Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC aimed to be covered.....</b>	<b>4</b>

## **European foreword**

This document (EN ISO 21904-1:2020) 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.

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

This document supersedes EN ISO 15012-4:2016.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Endorsement notice**

The text of ISO 21904-1:2020 has been approved by CEN as EN ISO 21904-1:2020 without any modification.

## Annex ZA (informative)

### Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/396 (Machinery) to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast).

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that EU Directive 2006/42/EC, and associated EFTA regulations.

**Table ZA.1 — Correspondence between this European Standard and EU Directive 2006/42/EC**

Essential Requirements of EU Directive 2006/42/EC	Clause(s)/subclause(s) of this EN	Remarks/Notes
1.5.13	5.1, 5.2, 5.3, 5.4, 6, 7	

**WARNING 1** — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

**WARNING 2** — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

# INTERNATIONAL STANDARD

# ISO 21904-1

First edition  
2020-02

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

### Part 1: General requirements

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

*Partie 1: Exigences générales*



Reference number  
ISO 21904-1:2020(E)

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Published in Switzerland

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Significant hazards</b> .....	<b>4</b>
<b>5 Requirements and verifications</b> .....	<b>4</b>
5.1 General.....	4
5.2 Extraction devices.....	7
5.3 Ducting properties.....	13
5.4 Filters, related components and handling.....	15
<b>6 Instructions for use</b> .....	<b>19</b>
6.1 General.....	19
6.2 Extraction devices.....	19
6.2.1 Captor hoods and nozzles.....	19
6.2.2 On-torch extraction systems.....	20
<b>7 Marking</b> .....	<b>20</b>
7.1 General marking.....	20
7.2 Marking of separation efficiency.....	21
7.3 Marking of captor hoods and nozzles.....	21
7.4 Marking of on-torch extraction systems.....	21
<b>Annex A (informative) Malfunctions and determination of minimum airflow</b> .....	<b>23</b>
<b>Annex B (normative) Label for welding fume separation equipment</b> .....	<b>24</b>
<b>Bibliography</b> .....	<b>25</b>



## ISO 21904-1:2020(E)

### 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.

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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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](http://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 15012-4.

## Introduction

Welding and allied processes generate fumes and gases which, if inhaled, can be harmful to human health. Therefore, control of the fumes and gases generated is to be exercised to minimize worker exposure.

The most effective method of control is to capture the fumes and gases close to their source before they enter a worker's breathing zone or the general workplace environment.

Ventilation equipment used to capture the fumes and gases is to be fit for purpose because inefficient capture can result in high exposure and can be detrimental to workers' health. Therefore, it is important that it adheres to defined manufacturing, materials and design requirements and gives warning of malfunction.

This document is a type-C standard as stated in ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organisations, market surveillance etc.);

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e. g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

In addition, this document is intended for standardization bodies elaborating type-C standards.

The requirements of this document can be supplemented or modified by a type-C standard.

For machines which are covered by the scope of a type-C standard and which have been designed and built according to the requirements of that standard, the requirements of that type-C standard take precedence.

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

## Part 1: General requirements

### 1 Scope

This document defines the general requirements for ventilation equipment used to capture and separate fumes generated by welding and allied processes, e.g. arc welding and thermal cutting.

This document also specifies the test data to be marked on the capture devices.

It applies to the design and manufacture of parts of the equipment including hoods for welding, ducting, filter units, air movers, systems that inform of unsafe operation and workplace practices to ensure safe working with regard to exposure.

Significant hazards are listed in [Clause 4](#). It does not cover electrical, mechanical and pneumatic hazards.

This document is applicable to:

- local exhaust ventilation systems (LEV) excluding draught tables;
- mobile and stationary equipment;
- separation equipment used for welding and allied processes;

This document is not applicable to:

- general ventilation, air make up or air movement systems;
- air conditioning systems;
- grinding dust.

This document applies to systems designed and manufactured after its publication.

NOTE Specific safety requirements for thermal cutting machines are defined in ISO 17916.

### 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 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 21904-2:2020, *Health and safety in welding and allied processes — Equipment for capture and separation of welding fume — Part 2: Requirements for testing and marking of separation efficiency*

**ISO 21904-1:2020(E)**

ISO 21904-4:2020, *Health and safety in welding and allied processes — Requirements, testing and marking of equipment for air filtration — Part 4: Determination of the minimum air volume flow rate of captor hoods and nozzles*

IEC 60204-1:2005, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

IEC 60335-2-69:2012, *Household and similar electrical appliances — Safety — Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for commercial use*

IEC 60695-2-12:2010+A1:2014, *Fire hazard testing — Part 2-12: Glowing/hot-wire based test methods — Glow-wire flammability index (GWFI) test method for materials*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**