



**NSAI**  
Standards

Irish Standard Recommendation  
S.R. CEN ISO/TR 22100-1:2021&LC:2021

Safety of machinery - Relationship with  
ISO 12100 - Part 1: How ISO 12100  
relates to type-B and type-C standards  
(ISO/TR 22100-1:2021)

**S.R. CEN ISO/TR 22100-1:2021&LC:2021**

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*This document is based on:*

*Published:*

*This document was published  
under the authority of the NSAI  
and comes into effect on:*

2021-04-19

ICS number:

13.110

NOTE: If blank see CEN/CENELEC cover page

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## National Foreword

S.R. CEN ISO/TR 22100-1:2021&LC:2021 is the adopted Irish version of the European Document CEN ISO/TR 22100-1:2021, Safety of machinery - Relationship with ISO 12100 - Part 1: How ISO 12100 relates to type-B and type-C standards (ISO/TR 22100-1:2021)

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*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

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## Correction Notice

**Reference:** CEN ISO/TR 22100-1:2021

**Title:** Safety of machinery - Relationship with ISO 12100 - Part 1: How ISO 12100 relates to type-B and type-C standards (ISO/TR 22100-1:2021)

**Work Item:** 00114183

Brussels, 2021-03-10

**Please include the following minor editorial correction(s) in the document related to:**

the following language version(s) :

- ☒ English
- ☐ French
- ☐ German

for the following procedure :

- ☐ PQ/UQ
- ☐ Enquiry
- ☐ 2nd Enquiry
- ☐ Parallel Enquiry
- ☐ 2<sup>nd</sup> Parallel Enquiry
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- ☐ Parallel Formal Vote
- ☐ 2<sup>nd</sup> Parallel Formal Vote
- ☐ UAP
- ☐ TC Approval
- ☐ 2<sup>nd</sup> TC Approval
- ☐ Publication
- ☒ Parallel Publication

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It has been brought to our attention that this document, issued on 2021-02-10, requires modification.

Insertion of Annex ZA (informative) as requested by the TC.

Please find enclosed the updated English version.

We apologise for any inconvenience this may cause.

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TECHNICAL REPORT

**CEN ISO/TR 22100-1**

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

February 2021

ICS 13.110

Supersedes CEN ISO/TR 22100-1:2017

English Version

**Safety of machinery - Relationship with ISO 12100 - Part 1:  
How ISO 12100 relates to type-B and type-C standards  
(ISO/TR 22100-1:2021)**

Sécurité des machines - Relation avec l'ISO 12100 -  
Partie 1: Relation entre l'ISO 12100 et les normes de  
type B et type C (ISO/TR 22100-1:2021)

Sicherheit von Maschinen - Beziehung zu ISO 12100 -  
Teil 1: Wie ISO 12100 und Typ-B- und Typ-C-Normen  
zusammenhängen (ISO/TR 22100-1:2021)

This Technical Report was approved by CEN on 26 January 2021. It has been drawn up by the Technical Committee CEN/TC 114.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 10 March 2021.

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

**CEN ISO/TR 22100-1:2021 (E)**

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## **European foreword**

This document (CEN ISO/TR 22100-1:2021) has been prepared by Technical Committee ISO/TC 199 "Safety of machinery" in collaboration with Technical Committee CEN/TC 114 "Safety of machinery" the secretariat of which is held by DIN.

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 CEN ISO/TR 22100-1:2017.

For relation of this document to the Machinery Directive 2006/42/EC see informative Annex ZA.

## **Endorsement notice**

The text of ISO/TR 22100-1:2021 has been approved by CEN as CEN ISO/TR 22100-1:2021 without any modification.

## **Annex ZA** (informative)

### **Relation of this document to the Machinery Directive 2006/42/EC**

#### **ZA.1 General**

CEN ISO/TR 22100-1 (identical to ISO/TR 22100-1) provides a transparent guideline how to choose the appropriate machinery safety standard(s) representing the state of the art and to apply it/them correctly in order to achieve at a given time a level of tolerable risk by adequate risk reduction for an actual machine. In this document, the term tolerable risk should be read as residual risk as defined in ISO 12100-to be compliant with European Union (EU) legislation.

NOTE While the residual risk is defined as the risk remaining after risk reduction measures have been implemented (see ISO/IEC Guide 51:2014, 3.8), tolerable risk is the level of risk that is accepted in a given context based on the current values of society (see 3.2). It is generally accepted that the residual risk is equal or lower than the tolerable risk.

Compared to the international level (where no common legal framework for machinery safety exists) at the European Union (EU) machinery safety standards are developed by CEN and CENELEC within the legal framework of the *New Approach (New Legislative Framework)*<sup>1)</sup> to provide presumption of conformity with relevant Essential Requirements of the *EU Machinery Directive 2006/42/EC*<sup>2)</sup>.

Those standards are harmonized and provide presumption of conformity to 2006/42/EC when cited in the *Official Journal of the EU*<sup>3)</sup>.

#### **ZA.2 Special relevance of this document for harmonized standards (type-C) providing presumption of conformity**

The methodology as specified in Clause 6 of this document provides detailed guidance for the machine manufacturer how to choose and evaluate harmonised standards (type-C) in order to achieve presumption of conformity with Essential Requirements of 2006/42/EC for his actual machine in accordance with the following statement given in §111 of the Guide to the application of the Machinery Directive 2006/42/EC:

"Application of the specifications of a C-type standard confers a presumption of conformity with the essential health and safety requirements of the Machinery Directive covered by the standard provided the manufacturer has determined in his risk assessment that the scope and the significant hazards covered by the standard correspond with his actual machinery. Further practical guidance is provided by ISO/TR 22100-1."

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1) Further information to the New Approach (New Legislative Framework) are provided in the Blue Guide: <https://ec.europa.eu/docsroom/documents/38022>

2) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0042>

3) Example for a citation of Harmonized Standards to 2006/42/EC see: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L..2019.075.01.0108.01.ENG&toc=OJ:L:2019:075:TOC>

# TECHNICAL REPORT

# ISO/TR 22100-1

Second edition  
2021-01

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## Safety of machinery — Relationship with ISO 12100 —

### Part 1: How ISO 12100 relates to type-B and type-C standards

*Sécurité des machines — Relation avec l'ISO 12100 —*

*Partie 1: Relation entre l'ISO 12100 et les normes de type B et type C*



Reference number  
ISO/TR 22100-1:2021(E)

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## ISO/TR 22100-1:2021(E)



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Published in Switzerland

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## ISO/TR 22100-1:2021(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 199, *Safety of machinery*.

This second edition cancels and replaces the first edition (ISO/TR 22100-1:2015), which has been technically revised.

The main changes compared to the previous edition are as follows.

- the wording "..., hazardous situation(s) or hazardous event(s)" has been deleted from [5.3.2](#) (NOTE and last paragraph) and [6.2.2](#) (subheading "Step 4B" and the following two paragraphs as well as Step 4C, fifth paragraph), eight times, in total;
- in [6.2.1](#), second paragraph, second sentence "this part of ISO 22100" has been corrected to "that type-C standard";
- the sentence given in [6.2.2](#), Step 4C, as paragraph below the Note has also been inserted as new penultimate paragraph to Step 4B.

A list of all parts in the ISO/TR 22100 series can be found on the ISO website.

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).

## **Introduction**

This document is written to assist the designer/manufacture of machinery and related components in understanding and navigating the different types of ISO machinery safety standards. It presents the different ISO deliverables (see [Annex B](#)) and explains the type-A, type-B and type-C structure of machinery safety standards and their interrelationship with regard to the practical design of machinery subjected to adequate risk reduction to achieve tolerable risk.

This document can be helpful for standard writing committees (type-B and type-C), too. However, it does not provide specification of the general content that is expected to be included in the different types of machinery safety standards. This specification is given in ISO Guide 78.

This document includes a visual representation of many ISO machinery safety standards to assist in improving understanding of the interrelationships and linkages between these documents.





# Safety of machinery — Relationship with ISO 12100 —

## Part 1:

## How ISO 12100 relates to type-B and type-C standards

### 1 Scope

This document provides assistance to the designer/manufacture of machinery and related components as to how the system of existing type-A, type-B and type-C machinery safety standards should be applied in order to design a machine to achieve a level of tolerable risk by adequate risk reduction.

This document explains the general principles of ISO 12100 and how this type-A standard is used for practical cases in conjunction with type-B and type-C machinery safety standards.

This document provides assistance to standards-writing committees on how ISO 12100 and type-B and type-C standards relate and explains their function in the risk assessment and risk reduction process according to ISO 12100.

This document includes an overview of existing categories of type-B standards to assist standards readers and writers to navigate the many standards.

### 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*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and the following 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/>

#### 3.1

##### **adequate risk reduction**

risk reduction that is at least in accordance with legal requirements, taking into consideration the current state of the art

[SOURCE: ISO 12100:2010, 3.18, modified — Note 1 to entry has been removed.]

#### 3.2

##### **tolerable risk**

level of risk that is accepted in a given context based on the current values of society

Note 1 to entry: The terms “acceptable risk” and “tolerable risk” are considered to be synonymous.

[SOURCE: ISO/IEC Guide 51:2014, 3.15, modified — In Note 1 to entry, the words “For the purpose of this Guide” have been deleted.]

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