



ISO/IEC Directives, Part 2

Principles and rules for the structure and drafting of ISO and IEC documents

Directives ISO/IEC, Partie 2

*Principes et règles de structure et de rédaction des documents
ISO et IEC*

Ninth edition, 2021



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INTRODUCTORY CLAUSES TO THE ISO/IEC DIRECTIVES, PART 2

FOREWORD

The ISO/IEC Directives, Part 2 has been prepared by the ISO/IEC Joint Directives Maintenance Team (JDMT) and approved by the ISO Technical Management Board (ISO/TMB) and the IEC Standardization Management Board (IEC/SMB).

This ninth edition of the ISO/IEC Directives, Part 2 cancels and replaces the eighth edition published in 2018.

This edition includes the following significant changes compared with the previous edition:

- [3.1.8](#): addition of a new note to entry clarifying the permitted content of Technical Reports;
- [6.5](#): introduction of the notion of supplementary content (files or data accessible via URL);
- [6.6](#): introduction of the notion of subdivision of the subject matter into profiles;
- [7.1](#): clarification that the expression of provisions shall be limited to the verbal forms defined in [Table 3](#) to [Table 7](#);
- [7.4](#): clarification in [Table 5](#) that negative permissions are no longer permitted;
- [8.6](#): addition of a new subclause on inclusive terminology;
- [Clause 9](#): general review and reorganization of the content;
- [9.2](#): permission of an alternative representation of numbers, symbols for variable quantities and numerical values for programming languages, pseudo-code and mark-up languages;
- [27.3](#), [28.3.1](#) and [29.3](#): permission of an alternative system of numbering for formulae, figures and tables;
- [Clause 31](#): admission of the inclusion of trademarks or trade names for reasons of public interest or public safety.

It is not the intention that the ISO/IEC Directives, Part 2 follow the same structure and drafting rules as International Standards and associated publications (referred to collectively as “documents”, see [3.1.1](#)).

This ninth edition of the ISO/IEC Directives, Part 2 is applicable to all enquiry drafts and to all final drafts registered after 2021-10-01.

Both ISO and IEC have published guides on the use of templates and other tools for the preparation of documents prepared in accordance with the ISO/IEC Directives. These guides are available on the ISO website (<https://www.iso.org>) and IEC website (<https://www.iec.ch>).

INTRODUCTION

The ISO/IEC Directives, Part 2 states the general principles by which ISO and IEC documents are drafted and stipulates certain rules to be applied in order to ensure that they are clear, precise and unambiguous. These rules are also important for ensuring that each document contributes effectively to the consistent and interdependent body of knowledge that ISO and IEC produce.

It is recognized that the ever-increasing range of subject matter covered by ISO and IEC reflects an increasingly diverse range of users of their documents, both geographical and in terms of the level and type of technical expertise that it can be expected to have. Those drafting ISO and IEC documents should try to be aware of the particular needs of their intended users and to write in a style that is likely to be readily understood. It is particularly important to be conscious of the likelihood that a document will be translated.

Advice on applying the ISO/IEC Directives, Part 2 is readily available from ISO Central Secretariat and IEC Central Office, as appropriate, and it should be sought whenever any difficulties are encountered.

1 Scope

The ISO/IEC Directives, Part 2 contains the principles and rules for the structure and drafting of International Standards, Technical Specifications and Publicly Available Specifications. As far as practicable, these principles and rules also apply to Technical Reports and Guides. All these document types are referred to collectively as “documents”, unless otherwise necessary.

The ISO/IEC Directives, Part 2 does not specify the typography and layout of documents, which are determined by the house style of the publishing organization. Presentation is outside of the scope of the ISO/IEC Directives, Part 2.

The ISO/IEC Directives, Part 2 does not specify the rules governing the process and procedures by which ISO and IEC documents are developed. These rules are provided in the ISO/IEC Directives, Part 1 and ISO, IEC and JTC 1 Supplements.

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 128-3, *Technical product documentation (TPD) — General principles of representation — Part 3: Views, sections and cuts*

ISO 690, *Information and documentation — Guidelines for bibliographic references and citations to information resources*

ISO 3098 (all parts), *Technical product documentation — Lettering*

ISO 5807, *Information processing — Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts*

ISO 7000¹⁾, *Graphical symbols for use on equipment — Registered symbols*

ISO 7001¹⁾, *Graphical symbols — Public information symbols*

ISO 7010¹⁾, *Graphical symbols — Safety colours and safety signs — Registered safety signs*

ISO 10241-1, *Terminological entries in standards — Part 1: General requirements and examples of presentation*

ISO 14617 (all parts)¹⁾, *Graphical symbols for diagrams*

ISO 80000 (all parts), *Quantities and units*

IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60417²⁾, *Graphical symbols for use on equipment*

IEC 60617³⁾, *Graphical symbols for diagrams*

IEC 61082-1, *Preparation of documents used in electrotechnology — Part 1: Rules*

IEC 61175-1, *Industrial systems, installations and equipment and industrial products — Designation of signals — Part 1: Basic rules*

1) Available at <https://www.iso.org/obp>.

2) Available at <https://std.iec.ch/iec60417>.

3) Available at <https://std.iec.ch/iec60617>.

IEC 80000 (all parts), *Quantities and units*

IEC 81346 (all parts), *Industrial systems, installations and equipment and industrial products — Structuring principles and reference designations*

ISO/IEC Directives Part 1, *Procedures for the technical work*

ISO/IEC Directives Part 1, *Consolidated ISO Supplement*

ISO/IEC Directives Supplement — *Procedures specific to IEC*

Quality management systems — Guidance and criteria for the development of documents to meet needs of specific product and industry/economic sectors, ISO/TC 176⁴⁾

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org>

3.1 Document type

3.1.1

document

ISO or IEC standardization draft or publication

EXAMPLE *International Standards (3.1.4), Technical Specifications (3.1.5), Publicly Available Specifications (3.1.6), Technical Reports (3.1.8) and Guides (3.1.7).*

3.1.2

standard

document (3.1.1), established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context

Note 1 to entry: Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.

[SOURCE: ISO/IEC Guide 2:2004, 3.2]

3.1.3

international standard

standard (3.1.2) that is adopted by an international standardizing/standards organization and made available to the public

[SOURCE: ISO/IEC Guide 2:2004, 3.2.1.1]

3.1.4

International Standard

international standard (3.1.3) where the international standards organization is ISO or IEC

4) Available at <https://www.iso.org/directives> (in the section “Normative references”).

3.1.5**Technical Specification****TS**

document (3.1.1) published by ISO or IEC for which there is the future possibility of agreement on an *International Standard* (3.1.4), but for which at present

- the required support for approval as an International Standard cannot be obtained,
- there is doubt on whether consensus has been achieved,
- the subject matter is still under technical development, or
- there is another reason precluding immediate publication as an International Standard

Note 1 to entry: The content of a Technical Specification, including its annexes, may include *requirements* (3.3.3).

Note 2 to entry: A Technical Specification is not allowed to conflict with an existing International Standard.

Note 3 to entry: Competing Technical Specifications on the same subject are permitted.

Note 4 to entry: Prior to mid-1999, Technical Specifications were designated as Technical Reports of type 1 or 2.

3.1.6**Publicly Available Specification****PAS**

document (3.1.1) published by ISO or IEC to respond to an urgent market need, representing either

- a) a consensus in an organization external to ISO or IEC, or
- b) a consensus of the experts within a working group

Note 1 to entry: A Publicly Available Specification is not allowed to conflict with an existing *International Standard* (3.1.4).

Note 2 to entry: Competing Publicly Available Specifications on the same subject are permitted.

3.1.7**Guide**

document (3.1.1) published by ISO or IEC giving rules, orientation, advice or *recommendations* (3.3.4) relating to international standardization

Note 1 to entry: Guides can address issues of interest to all users of documents published by ISO and IEC.

3.1.8**Technical Report****TR**

document (3.1.1) published by ISO or IEC containing collected data of a different kind from that normally published as an *International Standard* (3.1.4) or *Technical Specification* (3.1.5)

Note 1 to entry: Such data may include, for example, data obtained from a survey carried out among the national bodies, data on work in other international organizations or data on the *state of the art* (3.4) in relation to standards of national bodies on a particular subject.

Note 2 to entry: Prior to mid-1999, Technical Reports were designated as Technical Reports of type 3.

Note 3 to entry: The content of a Technical Report is not permitted to include *requirements* (3.3.3), *recommendations* (3.3.4) or *permissions* (3.3.5).

3.1.9**normative document**

document that provides rules, guidelines or characteristics for activities or their results

[SOURCE: ISO/IEC Guide 2:2004, 3.1, modified — The original Notes to entry have been deleted.]

3.2 Elements of a document

3.2.1

normative element

element that describes the scope of the *document* ([3.1.1](#)) or sets out *provisions* ([3.3.1](#))

3.2.2

informative element

element intended to assist the understanding or use of the *document* ([3.1.1](#)) or that provides contextual information about its content, background or relationship with other documents

3.2.3

mandatory element

element that has to be present in a *document* ([3.1.1](#))

EXAMPLE The Scope is an example of a mandatory element.

3.2.4

conditional element

element that is present depending on the *provisions* ([3.3.1](#)) of the particular *document* ([3.1.1](#))

EXAMPLE The symbols and abbreviated terms clause is an example of a conditional element.

3.2.5

optional element

element that the writer of a *document* ([3.1.1](#)) may choose to include or not

EXAMPLE The Introduction is an example of an optional element.

3.3 Provisions

3.3.1

provision

expression in the content of a *normative document* ([3.1.9](#)) that takes the form of a *statement* ([3.3.2](#)), an instruction, a *recommendation* ([3.3.4](#)) or a *requirement* ([3.3.3](#))

Note 1 to entry: These types of provision are distinguished by the form of wording they employ; e.g. instructions are expressed in the imperative mood, recommendations by the use of the auxiliary “should” and requirements by the use of the auxiliary “shall”.

[SOURCE: ISO/IEC Guide 2:2004, 7.1]

3.3.2

statement

expression, in the content of a *document* ([3.1.1](#)), that conveys information

Note 1 to entry: to entry: [Table 5](#) specifies the verbal form for indicating statements of *permission* ([3.3.5](#)). [Table 6](#) specifies the verbal forms to be used for statements of *possibility* ([3.3.6](#)) and *capability* ([3.3.7](#)).

3.3.3

requirement

expression, in the content of a *document* ([3.1.1](#)), that conveys objectively verifiable criteria to be fulfilled and from which no deviation is permitted if conformance with the document is to be claimed

Note 1 to entry: Requirements are expressed using the verbal forms specified in [Table 3](#).

3.3.4

recommendation

expression, in the content of a *document* ([3.1.1](#)), that conveys a suggested possible choice or course of action deemed to be particularly suitable without necessarily mentioning or excluding others

Note 1 to entry: Recommendations are expressed using the verbal forms specified in [Table 4](#).

Note 2 to entry: In the negative form, a recommendation is the expression that a suggested possible choice or course of action is not preferred but it is not prohibited.

3.3.5

permission

expression, in the content of a *document* (3.1.1), that conveys consent or liberty (or opportunity) to do something

Note 1 to entry: Permissions are expressed using the verbal forms specified in Table 5.

3.3.6

possibility

expression, in the content of a *document* (3.1.1), that conveys expected or conceivable material, physical or causal outcome

Note 1 to entry: Possibility is expressed using the verbal forms specified in Table 6.

3.3.7

capability

expression, in the content of a *document* (3.1.1), that conveys the ability, fitness, or quality necessary to do or achieve a specified thing

Note 1 to entry: Capability is expressed using the verbal forms specified in Table 6.

3.3.8

external constraint

constraint or obligation on the user of the *document* (3.1.1) (e.g. laws of nature or particular conditions existing in some countries or regions) that is not stated as a *provision* (3.3.1) of the document

Note 1 to entry: External constraints are referred to using the verbal form specified in Table 7.

Note 2 to entry: Use of the word “must” does not imply that the external constraint referred to is a *requirement* (3.3.3) of the document.

3.4

state of the art

developed stage of technical *capability* (3.3.7) at a given time as regards products, processes and services, based on the relevant consolidated findings of science, technology and experience

[SOURCE: ISO/IEC Guide 2:2004, 1.4]

3.5

profile

named combination of options, chosen according to a specified framework, that are necessary to accomplish a particular function

Note 1 to entry: The options can be chosen from one or several documents or subdivisions of documents.

GENERAL PRINCIPLES

4 Objective of standardization

The objective of documents is to specify clear and unambiguous provisions in order to help international trade and communication. To achieve this objective, documents shall:

- be complete within the limits specified by their scope;

NOTE 1 When a document provides requirements or recommendations, these are either written explicitly, or made by reference to other documents (see [Clause 10](#)).

- be consistent, clear and accurate;
- be written using all available knowledge about the state of the art;
- take into account the current market conditions;

NOTE 2 There is sometimes a tension between what is technically feasible and what the market actually requires and is prepared to pay for.

- provide a framework for future technological development;
- be comprehensible to qualified people who have not participated in their preparation; and
- conform to the ISO/IEC Directives, Part 2.

A document does not in itself impose any obligation upon anyone to follow it. However, an obligation can be imposed, for example, by legislation or by a contract which makes reference to the document.

A document shall not include contractual requirements (e.g. concerning claims, guarantees, covering of expenses), or legal or statutory requirements.

5 Principles

5.1 Planning and preparation

Rules for the planning and preparation of new work items are given in the ISO/IEC Directives, Part 1. The rules given in the ISO/IEC Directives and ISO and IEC Supplements shall be applied throughout all stages of drafting to avoid delay. In order to ensure the timely publication of a document or of a series of associated documents, the following shall be determined before drafting begins:

- the intended structure;
- any interrelationships;
- the organization and subdivision of the subject matter (see [Clause 6](#)).

In the case of a multipart series, a list of the intended parts should be drawn up (preferably including their titles and scopes).

5.2 Aim-oriented approach

It is not always necessary or possible to standardize all characteristics of an item or a subject. The choice of characteristics to be standardized depends on the aims of the document (e.g. health, safety, protection of the environment, interface, interchangeability, compatibility or interworking, and variety control). A functional analysis of the product can help to identify the characteristics to be included in the document.

It is permitted, but not necessary, to give an explanation for the inclusion of individual characteristics. More general background information can be given in the Introduction (see [Clause 13](#)).

5.3 Fitness for implementation as a regional or national standard

The content of a document shall be written so that it can be applied and adopted without change as a regional or national standard. Only characteristics that are suitable for international acceptance shall be chosen. Where necessary, several options may be indicated (e.g. owing to differences in legislation, climate, environment, economies, social conditions, trade patterns).

See ISO/IEC Guide 21-1 for regional or national adoption of International Standards and ISO/IEC Guide 21-2 for regional or national adoption of other International Deliverables.

5.4 Performance principle

Whenever possible, requirements shall be expressed in terms of performance rather than design or descriptive characteristics. This principle allows maximum freedom for technical development and reduces the risk of undesirable market impacts (e.g. limiting development of innovative solutions).

EXAMPLE

Different approaches are possible in the specification of requirements concerning a table.

Design requirements: The table shall have four wooden legs.

Performance requirements: The table shall be constructed such that when subjected to ... [stability and strength criteria].

When the performance principle is adopted, ensure that features relevant to the scope of the document are not inadvertently omitted from the performance requirements.

If it is impossible to determine the necessary performance characteristics, the material or product may be specified. However, in such a case, the phrase "... or any other material or product proved to be equally suitable" should be included.

Requirements concerning the manufacturing process shall usually be omitted in favour of tests to be carried out on the final product. There are, nevertheless, some fields in which reference to the manufacturing process is necessary (e.g. hot rolling, extrusion) or even in which an inspection of the manufacturing process is necessary (e.g. pressure vessels).

However, it is necessary to consider whether to specify by description or by performance because specification by performance can lead to complicated, costly and lengthy testing procedures.

5.5 Verifiability

Requirements shall be objectively verifiable. Only those requirements that can be verified shall be included.

Phrases such as "sufficiently strong" or "of adequate strength" shall not be used because they are subjective statements.

The stability, reliability or lifetime of a product shall not be specified if no test method is known that can verify the claim in a reasonably short time. A guarantee by the manufacturer is not a substitute for such requirements. Guarantee conditions shall not be included because they are commercial or contractual, rather than technical, in nature.

5.6 Consistency

Consistency should be maintained within each document and within a series of associated documents.

- The structure of associated documents and the numbering of their clauses should, as far as possible, be identical.
- Identical wording should be used to express identical provisions.
- The same terminology should be used throughout. The use of synonyms should be avoided.

Consistency is particularly important to help the user understand documents or series of associated documents. It is also important when using automated text processing techniques and computer-aided translation.

The application of the ISO/IEC Directives, Part 2 contributes to the overall objective of consistency. A checklist for writers and editors of documents is provided in [Annex A](#).

5.7 Avoidance of duplication and unnecessary deviations

Documents should avoid duplication. This is particularly important in test methods, which are often applicable to more than one product, or type of product.

Before standardizing any item or subject, the writer shall determine whether an applicable standard already exists. If it is necessary to invoke a requirement that appears elsewhere, this should be done by reference, not by repetition – see [Clause 10](#).

[Annex D](#) provides reference documents and sources for drafting.

If a test method is, or is likely to be, applicable to two or more types of product, a document shall be prepared on the method itself, and each document dealing with a given product shall refer to it (indicating any modifications that are necessary). This will help to prevent unnecessary deviations.

As far as possible, the requirements for one item or subject should be confined to one document.

In some fields, it can be desirable to write a document specifying generic requirements applicable to a group of items or subjects.

If it is considered necessary to repeat a requirement from an exterior source, its source shall be referenced precisely (see [10.1](#)).

5.8 Accommodation of more than one product size

If the aim of a document is standardization of a single size for a product, but there is more than one widely accepted size in international use, a committee may decide to include alternative product sizes in the document. However, in such cases, every effort shall be made to reduce the number of alternatives to a minimum, taking the following points into account:

- the volume of international trade in the sort of product involved shall serve as a criterion for “international use”, not the number of countries or the volume of production in those countries;
- only sizes that are likely to be in international use in the reasonably foreseeable future (e.g. five years or more) shall be included in the document.

Whenever alternative solutions are to be adopted internationally, they shall all be included in the same document and preferences for the different alternatives shall be provided. The reasons for the preferences shall be explained in the Introduction.

When agreed by the committee and approved by the ISO Technical Management Board (ISO/TMB) or the IEC Standardization Management Board (IEC/SMB), a transitional period may be indicated during which the use of non-preferred values is permitted.

5.9 Characteristics not specified in a document

In some cases, a document may list characteristics that can be chosen freely by the supplier. The characteristics chosen shall be stated, for example on a nameplate, label or accompanying document.

For most kinds of complex item, it is impractical to specify exhaustive performance requirements. Instead, it is preferable to require that the item be supplied with a list of performance data.

This approach is not acceptable in the case of health and safety requirements.

Documents listing characteristics for which suppliers or purchasers are required to state values or other data not specified by the document shall specify how such values are to be measured and stated.

6 Organization and subdivision of the subject matter

6.1 Names of the main subdivisions

The terms that shall be used to designate the divisions and subdivisions of subject matter are given in [Table 1](#) in English and in French.

Table 1 — Names of divisions and subdivisions

English term	French term	Example of numbering
Part	Partie	9999-1
Clause	Article	1
Subclause	Paragraphe	1.1
Subclause	Paragraphe	1.1.1
Paragraph	Alinéa	[no number]
Annex	Annexe	A

6.2 Subdivision into documents

Documents are so diverse that no universally acceptable rules can be established for the subdivision of the subject matter.

However, as a general principle, an individual document shall be prepared for each subject to be standardized, and published either as a single standard or a single part of a series.

EXAMPLE 1 Examples of reasons for the subdivision into parts under the same number are

- the document is likely to become too long,
- subsequent parts of the content are interlinked,
- portions of the document are referred to in regulations, and
- portions of the document are intended to serve for certification purposes.

Such subdivision has the advantage that each part can be revised separately as necessary.

In particular, the aspects of a product that are of separate interest to different parties (e.g. manufacturers, certification bodies, legislative bodies or other users) shall be clearly distinguished, preferably as parts of a document or as individual documents.

EXAMPLE 2 Examples of such individual aspects are

- health and safety requirements,
- performance requirements,
- maintenance and service requirements,
- installation rules, and
- quality assessment.

6.3 Subdivision of the subject matter within a series of parts

There are two main ways of subdividing subject matter within a series of parts.

- a) Each part deals with a specific aspect of the subject and can stand alone.

EXAMPLE 1

Part 1: Vocabulary

Part 2: Requirements

Part 3: Test methods

Part 4: ...

EXAMPLE 2

Part 1: Vocabulary

Part 2: Harmonics

Part 3: Electrostatic discharge

Part 4: ...

- b) There are both common and specific aspects to the subject. The common aspects shall be given in Part 1. Specific aspects (which can modify or supplement the common aspects and therefore cannot stand alone) shall be given in separate individual parts.

EXAMPLE 3

Part 1: General requirements

Part 2: Thermal requirements

Part 3: Air purity requirements

Part 4: Acoustical requirements

EXAMPLE 4

Part 1: General requirements

Part 21: Particular requirements for electric irons

Part 22: Particular requirements for spin extractors

Part 23: Particular requirements for dishwashers

EXAMPLE 5 For IEC documents only

Part 1: General requirements

Part 2-1: Requirements for plasma displays

Part 2-2: Requirements for monitors

Part 2-3: Requirements for LCDs

Where the system described in b) is used, ensure that the references from one part to another are valid. There are two ways of achieving this.

- If reference is made to a particular element, the reference shall be dated (see [10.5](#)).
- The committee responsible shall validate the references at the time of review of the document.

Each part of a multipart series shall be drafted in accordance with the same rules as those used for an individual document.

The number of a part shall be in Arabic numerals, starting with 1, following the document number and preceded by a hyphen.

EXAMPLE 6 ISO 9999-1, ISO 9999-2

In ISO, parts cannot be further subdivided. In IEC, parts can be subdivided down to two levels. See the examples in [11.4](#).

EXAMPLE 7 IEC 60335-2-9

If a document is subdivided in a number of separate parts, the first part should include an explanation of the intended structure in its Introduction. When developing a series, consider reserving Part 1 for general aspects such as a vocabulary (see [11.5.2](#)).

In the Foreword to each part in the series, a reference may be made to the titles of all other parts that have been or are planned to be published.

EXAMPLE 8

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

A list of all parts in the IEC xxxx series, published under the general title xxx, can be found on the IEC website.

6.4 Subdivision of the subject matter within an individual document

An example of a typical arrangement is given in [Table 2](#).

Table 2 — Overview of the major subdivisions of a document and their arrangement in the text

Major subdivision	Mandatory/Optional/Conditional
Title	Mandatory
Table(s) of content	Optional ^a
Foreword	Mandatory
Introduction	Optional/Conditional ^b
Scope	Mandatory
Normative references	Mandatory ^c
Terms and definitions	Mandatory ^c
Symbols and abbreviated terms	Conditional
Technical content For example: test methods	Mandatory/Optional/Conditional
Annexes	Optional
Bibliography	Conditional
Indices	Optional
^a These may include a list of major subdivisions of the document and lists of figures, tables and similar numbered elements.	
^b See 13.3 .	
^c When no normative references or terms are listed, use the introductory texts provided in 15.5.2 and 16.5.3 .	

6.5 Supplementary content

Certain documents contain supplementary material that is best provided in electronic formats, which differs from that of the main content.

EXAMPLE 1 Data sets, code components, test forms.

This supplementary material can be provided as an attached file or a hyperlink (URN or URL).

Supplementary content shall only be provided in this way if it cannot reasonably be included in the main body of the text.

Each item of supplementary content shall be explicitly referred to within the text in order to explain its context and use.

EXAMPLE 2

"The conformance bitstreams are provided at:

<https://standards.iso.org/iso-iec/23008/-8/ed-2/en>"

EXAMPLE 3

"The supplementary files associated with this document are located at:

<https://www.iec.ch/tc82/supportingdocuments>"

6.6 Subdivision of the subject matter into profiles

One of the primary objectives of standardization is to minimize variation and encourage single common standards for worldwide use. However, in some cases, it is necessary to choose sets and subsets of characteristics from a common defined framework for specific applications.

EXAMPLE 1 Application-specific variants of a standard or set of standards.

EXAMPLE 2 User profiles, which are a defined subset that is valid for a specific type of user.

EXAMPLE 3 A subset of characteristics designed for one specific function.

In such cases, the subject matter may be subdivided and organized using profiles.

The number of profiles shall be limited, and profiles defined only when essential to meet technical, regional or application needs.

Profiles shall be specified in accordance with a defined scheme.

Each profile defined by the scheme shall be identified with a unique designator to allow products conforming to differing profiles to be clearly distinguished. The designator should be constructed using a system conforming to [Annex C](#).

Potential incompatibilities and non-interoperability of profiles should be addressed.

7 Verbal forms for expressions of provisions

7.1 General

The user of the document shall be able to identify the requirements he/she is obliged to satisfy in order to claim conformance to a document. The user shall also be able to distinguish these requirements from other types of provision (recommendations, permissions, possibilities and capabilities).

It is essential to follow rules for the use of verbal forms so that a clear distinction can be made between requirements, recommendations, permissions, possibilities and capabilities. To avoid risk of misinterpretation, verbal forms that are not defined in [Table 3](#) to [Table 7](#) shall not be used for the expression of provisions.

The first column in [Table 3](#) to [Table 7](#) shows the preferred verbal form to be used to express each type of provision. The equivalent expressions given in the second column shall be used only in certain cases when the form given in the first column cannot be used for linguistic reasons.

Only singular forms are shown in [Table 3](#) to [Table 7](#).

7.2 Requirement

See the definition given in [3.3.3](#).

The verbal forms shown in [Table 3](#) shall be used to express requirements.

Table 3 — Requirement

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
shall	is to is required to it is required that has to only ... is permitted it is necessary
shall not	is not allowed [permitted] [acceptable] [permissible] is required to be not is required that ... be not is not to be do not
EXAMPLE 1 Connectors shall conform to the electrical characteristics specified by IEC 60603-7-1.	
Imperative mood: The imperative mood is frequently used in English to express requirements in procedures or test methods. EXAMPLE 2 Switch on the recorder. EXAMPLE 3 Do not activate the mechanism before...	
Do not use “must” as an alternative for “shall”. This avoids confusion between the requirements of a document and external constraints (see 7.6). Do not use “may not” instead of “shall not” to express a prohibition.	

7.3 Recommendation

See the definition given in [3.3.4](#).

The verbal forms shown in [Table 4](#) shall be used to express recommendations.

Table 4 — Recommendation

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
should	it is recommended that ought to
should not	it is not recommended that ought not to
EXAMPLE Wiring of these connectors should take into account the wire and cable diameter of the cables defined in the IEC 61156 series.	
In French, do not use “devrait” in this context.	

7.4 Permission

See the definition given in [3.3.5](#).

The verbal forms shown in [Table 5](#) shall be used to express permission.

Table 5 — Permission

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
may	is permitted is allowed is permissible
(—)	(—)
EXAMPLE 1 IEC 60512-26-100 may be used as an alternative to IEC 60512-27-100 for connecting hardware that has been previously qualified to IEC 60603-7-3:2010.	
EXAMPLE 2 Within an EPB document, if the quantity is not passed to other EPB documents, one or more of the subscripts may be omitted provided that the meaning is clear from the context.	
Do not use “possible” or “impossible” in this context. Do not use “can” instead of “may” in this context. Do not use “might” instead of “may” in this context. “May” signifies a permission expressed by the document, whereas “can” refers to the ability of a user of the document or to a possibility open to him/her. The French verb “pouvoir” can indicate both a permission and a possibility. If there is a risk of misunderstanding, the use of other expressions is advisable. Negative permissions are ambiguous and should not be used. Rather than using negative permissions, either rewrite the sentence to state what is permitted, or rewrite as a requirement/recommendation not to do something.	

7.5 Possibility and capability

See the definitions given in [3.3.6](#) and [3.3.7](#).

The verbal forms shown in [Table 6](#) shall be used to express possibility and capability.

Table 6 — Possibility and capability

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
can	be able to there is a possibility of it is possible to
cannot	be unable to there is no possibility of it is not possible to
EXAMPLE 1 Use of this connector in corrosive atmospheric conditions can lead to failure of the locking mechanism. EXAMPLE 2 These measurements can be used to compare different sprayer setups on the same sprayer. EXAMPLE 3 Only the reverse calculation approach given in Clause E.3 can be used for calculated energy performance. EXAMPLE 4 The sum over time can be related either to consecutive readings or to readings on different time slots (e.g. peak versus off-peak). Do not use “may” instead of “can” in this context. “May” signifies a permission expressed by the document, whereas “can” refers to the ability of a user of the document or to a possibility open to him/her. The French verb “pouvoir” can indicate both permission and possibility. If there is a risk of misunderstanding, the use of other expressions is advisable.	

7.6 External constraint

See the definition given in [3.3.8](#).

External constraints are not requirements of the document. They are given for the information of the user.

The verbal form shown in [Table 7](#) shall be used to indicate constraints or obligations defined outside the document.

Table 7 — External constraint

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
must	
EXAMPLE 1 Particular conditions existing in a country: Because Japan is a seismically active country, all buildings must be earthquake-resistant. EXAMPLE 2 A law of nature: All fish must maintain a balance of salt and water in their bodies to stay healthy. Do not use “must” as an alternative for “shall”. This avoids confusion between the requirements of a document and external constraints (see 7.2).	

8 Language, spelling, abbreviated terms, style and basic reference works

8.1 Language versions

The general policy on languages is explained in the ISO/IEC Directives, Part 1.

The different language versions of documents shall be technically equivalent and structurally identical.

The use of bilingualism from the initial stage of drafting is of great assistance in the preparation of clear and unambiguous texts.

Documents containing text in languages additional to the official languages shall contain the following text (completed as appropriate) in the Foreword.

In addition to text written in the official ... [ISO or IEC] ... languages (English, French, Russian), this document gives text in ... [language] This text is published under the responsibility of the [Member Body/National Committee] for ... [country (acronym for Member Body/National Committee)] and is given for information only. Only the text given in the official languages can be considered as ... [ISO or IEC] ... text.

8.2 Spelling reference works

Spelling shall be consistent throughout a document. The following reference works for spelling are suggested:

- for English, the Shorter Oxford English Dictionary, the Concise Oxford English Dictionary, the Collins Concise English Dictionary, the Webster's New World College Dictionary or the Chambers Concise Dictionary;
- for French, Dictionnaire Le Robert, Dictionnaire Larousse and Dictionnaire des difficultés de la langue française (A.V. Thomas, Larousse).

8.3 Spelling and abbreviated forms of names of organizations

The names of organizations, and their abbreviated forms, shall be written as used by those organizations, in English, French or Russian.

8.4 Abbreviated terms

The use of abbreviated terms shall be consistent throughout the document.

If a list of abbreviated terms is not given in the document (see [Clause 17](#)), then the first time that an abbreviated term is used, the full term shall be given with the abbreviated term following in brackets.

EXAMPLE 1 ... the weighted root mean square (RMS) width of the active output interface optical spectrum ...

Any abbreviated term should be in uppercase letters, without a full stop after each letter.

EXAMPLE 2 "RH" for "relative humidity".

Occasionally, abbreviated terms in common use are written differently, either for historical or for technical reasons.

Technical specifications regarding marking may impose other requirements.

8.5 Linguistic style

To help users understand and use the document correctly, the linguistic style shall be as simple and concise as possible. This is particularly important for those users whose first language is not one of the official languages of ISO and IEC.

8.6 Inclusive terminology

Whenever possible, inclusive terminology shall be used to describe technical capabilities and relationships. Insensitive, archaic and non-inclusive terms shall be avoided. For the purposes of this principle, "inclusive terminology" means terminology perceived or likely to be perceived as welcoming by everyone, regardless of their sex, gender, race, colour, religion, etc.

New documents shall be developed using inclusive terminology. As feasible, existing and legacy documents shall be updated to identify and replace non-inclusive terms with alternatives that are more descriptive and tailored to the technical capability or relationship.

9 Numbers, quantities, units and values

9.1 Representation of numbers and numerical values

Numbers should be written in upright type, irrespective of the type used in the rest of the text.

The decimal sign shall be a comma on the line in all language versions.

If the magnitude (absolute value) of a number less than 1 is written in decimal form, the decimal sign shall be preceded by a zero.

EXAMPLE 1 0,001

Each group of three digits shall be separated by a small space from the preceding digits, counting from the decimal sign. This also applies to digits following the decimal sign. When there is no decimal sign, the counting shall be from the rightmost digit towards the left. The separation into groups of three digits does not apply to binary and hexadecimal numbers, numbers designating years or the numbering of standards.

EXAMPLE 2 23 456 2 345 2,345 2,345 6 2,345 67 but the year 2011

When numbers or numerical values have a decimal separator, their multiplication shall be indicated by the multiplication cross ($\times$), instead of a half-high dot.

EXAMPLE 3 $2 \cdot m$

EXAMPLE 4 $1,7 \times h$

ISO 80000-2 gives an overview of multiplication symbols for numbers.

9.2 Representation of numbers, symbols for variable quantities and numerical values for programming languages, pseudo-code and mark-up languages

Where the document defines, describes, refers to or contains programming language, pseudo-code or mark-up language text, the representation of the numbers, symbols for variable quantities and numerical values shall follow the syntax of the appropriate programming language, pseudo-code or mark-up language.

9.3 Quantities, units, symbols and signs

9.3.1 Quantities

Quantity symbols should be written in italic type, irrespective of the type used in the rest of the text.

Quantity symbols shall be chosen, wherever possible, from the various parts of the IEC 60027 series, the ISO 80000 series, the IEC 80000 series and ISO Guide 99.

Subscripts for quantity symbols are allowed and are printed in italic type when they represent a quantity or a mathematical variable. They are printed in upright type when they represent a word or a fixed number.

EXAMPLE 1	
Italic subscripts	Roman subscripts
C_p (p: pressure)	C_g (g: gas)
c_i (i: running number)	c_3 (3: third)

The symbol of the product of two or more quantities is indicated in one of the following ways:

$ab, a\ b, a \cdot b, a \times b, a * b$

$abc, a\ b\ c, a \cdot b \cdot c, a \times b \times c, a * b * c$

The multiplication cross ($\times$) may also be used to indicate vector products or cartesian products.

EXAMPLE 2	$\vec{I}_G = \vec{I}_1 \times \vec{I}_2$
-----------	--

The half-high dot ($\cdot$) may also be used to indicate a scalar product of vectors and comparable cases, and may also be used to indicate a product of scalars and in compound units.

EXAMPLE 3	$U = R \cdot I$
EXAMPLE 4	$\text{rad} \cdot \text{m}^2/\text{kg}$

The division of one quantity by another is indicated in one of the following ways:

$\frac{a}{b}, a/b, a\ b^{-1}, a \cdot b^{-1}$

A solidus (/) shall not be followed by a multiplication sign or a division sign on the same line unless parentheses are inserted to avoid any ambiguity:

$(a / b) / c = a / (bc)$, not $a / b / c$

Names of quantities or multiletter abbreviated terms, for example, presented in italics or with subscripts, shall not be used in the place of symbols.

EXAMPLE 5	Write $\rho = m / V$ and not <i>density = mass / volume</i> .
-----------	---

9.3.2 Units

The International System of units (SI) as set out in the ISO 80000 series and the IEC 80000 series shall be used.

The units in which any values are expressed shall be indicated.

It is not permitted to modify a unit symbol (e.g. by means of a subscript) to give information about the special nature of the quantity or context of measurement.

EXAMPLE 1	
Correct:	Incorrect:
$U_{\max} = 500\ \text{V}$	$U = 500\ \text{V}_{\max}$

Language-specific abbreviated terms such as “ppm” should not be used, if possible. If it is necessary to use language-specific abbreviated terms such as “ppm”, their meaning shall be explained.

Mathematical signs and symbols shall be in accordance with ISO 80000-2.

Use [Annex B](#) as a checklist of the quantities and units that shall be used.

9.4 Values, intervals and tolerances

9.4.1 General

To express values of physical quantities, Arabic numerals (called “numerical values”) followed by the international symbol for the unit shall be used (see the ISO 80000 series, the IEC 80000 series, the IEC 60027 series and ISO/IEC Guide 99).

EXAMPLE 1 80 mm × 25 mm × 50 mm (not 80 × 25 × 50 mm)

In the expression of a quantity value, there is always a space between the numerical value and the unit symbol. The only exception to this convention is for plane angles expressed with superscript-type unit symbols. However, the degree should preferably be subdivided decimally. In some fields of science, the usage of the units minute (') and second (") is preferred, e.g. for geographic coordinates.

EXAMPLE 2 $\theta = 1 \text{ rad} = 57,295 8^\circ$ instead of $\theta = 1 \text{ rad} = 57^\circ 17' 45''$

EXAMPLE 3 60°10'15"N 24°56'15"E (the position of Helsinki, Finland)

The quantity value is expressed with only one symbol unit, with the exception of sexagesimally divided units like the plane angle (in special fields like astronomy, cartography and navigation) and the time, although the seconds are decimally divided.

EXAMPLE 4 $L = 1,234 \text{ m}$ but $\Delta t = 10 \text{ h } 31 \text{ min } 19,93 \text{ s}$

To designate a set of values between a and b , where $a < b$, the symbol $[a, b]$ is used, designated by “interval”. The difference $r = b - a$, denoted $r[a, b]$, is designated by “the range of the interval $[a, b]$ ”.

EXAMPLE 5 The two end points 78 μF and 82 μF of the interval $[78, 82] \mu\text{F}$, also denoted $[78 \mu\text{F}, 82 \mu\text{F}]$, can be stated as $80 \mu\text{F} \pm 2 \mu\text{F}$ or $(80 \pm 2) \mu\text{F}$, although this expression is often used erroneously to denote the interval preferably denoted using brackets like $[80 \mu\text{F} \pm 2 \mu\text{F}]$, $[(80 \pm 2) \mu\text{F}]$ or even $[80 \pm 2] \mu\text{F}$.

EXAMPLE 6 Consequently, $\lambda = 220 \times (1 \pm 0,02) \text{ W}/(\text{m} \cdot \text{K})$ denotes the two end points $\lambda_1 = 220 \times 0,98 \text{ W}/(\text{m} \cdot \text{K})$ and $\lambda_2 = 220 \times 1,02 \text{ W}/(\text{m} \cdot \text{K})$.

EXAMPLE 7 10 kPa to 12 kPa (not 10 to 12 kPa or 10 – 12 kPa) is another way to denote the $[10, 12] \text{ kPa}$ interval.

EXAMPLE 8 0 °C to 10 °C (not 0 to 10 °C or 0 – 10 °C) is another way to denote the $[0, 10] \text{ °C}$ interval

To indicate that one of the end points is excluded from the interval, the square bracket may be replaced by a parenthesis.

EXAMPLE 9 $x \in [a, b]$ expresses $a \leq x \leq b$, while $[a, b)$ expresses $a \leq x < b$ and $(a, b]$ expresses $a < x \leq b$.

Values and dimensions shall be indicated as either nominal, ordinal, theoretically exact, or including a tolerance.

By the same token, their tolerances (if applicable) shall be specified in an unambiguous manner.

EXAMPLE 10 80^{+2}_0 (not 80^{+2}_{-0})

EXAMPLE 11 $80^{+0,05}_{-0,025} \text{ mm}$

In order to avoid misunderstanding, tolerances on values expressed in per cent shall be expressed in a mathematically correct form.

EXAMPLE 12 Write “from 63 % to 67 %” to express a range.

EXAMPLE 13 Write “ $(65 \pm 2) \%$ ” to express a centre value with a tolerance.

Any value or dimension that is mentioned for information only shall be clearly distinguishable from requirements.

9.4.2 Limiting values

For some purposes, it is necessary to specify limiting values (maximum, minimum). Usually one limiting value is specified for each characteristic. In the case of several widely used categories or levels, several limiting values are required.

Limiting values of strictly local importance shall not be included in a document.

9.4.3 Selected values

For some purposes, values or series of values may be selected, particularly for variety control and interface purposes. They may be selected in accordance with the series of preferred numbers given in ISO 3 (see also ISO 17 and ISO 497), or according to some modular system or other determining factors. For the electrotechnical field, recommended systems of dimensional sizes are given in IEC Guide 103.

Documents that have been established to specify selected values for equipment, or components that may be referred to in the provisions of other documents, shall be regarded, in this respect, as basic standards.

EXAMPLE 1 For electrotechnical work, IEC 60063 specifies series of preferred values for resistors and capacitors.

EXAMPLE 2 For chemical testing, ISO/TC 48 has developed standards for laboratory equipment.

Values of strictly local importance shall not be included in a document. In standardizing a rationalized series of values, existing series shall be examined to see whether any would be acceptable for international application.

If a series of preferred numbers is used, difficulties can arise if fractions such as “3,15” are introduced: these can sometimes be inconvenient or require unnecessarily high accuracy. In such cases, they should be rounded in accordance with ISO 497. The specification of different values for use in different countries (whereby both the precise value and the rounded value are contained in the document) shall be avoided.

10 Referencing

10.1 Purpose or rationale

The entire collection of International Standards published by ISO and IEC is interrelated and forms a system whose integrity has to be preserved.

Therefore, references to particular pieces of text should be used instead of repetition of the original source material. Repetition introduces the risk of error or inconsistency and increases the length of the document. However, if it is considered necessary to repeat such material, its source shall be referenced precisely.

Imprecise references such as “the following clause” or “the figure above” shall not be used.

References can be made

- to other parts of the document, e.g. a clause, table or figure (see [10.6](#)), or
- to other documents or publications (see [10.2](#)).

References can be

- informative (see [Clause 21](#)), or
- normative (see [Clause 15](#)).

References can be

- dated (see [10.5](#)), or
- undated (see [10.4](#)).

EXAMPLE 1

It is often useful to copy relevant terminological entries into the Terms and definitions clause, in which case the source is cited:

3.1

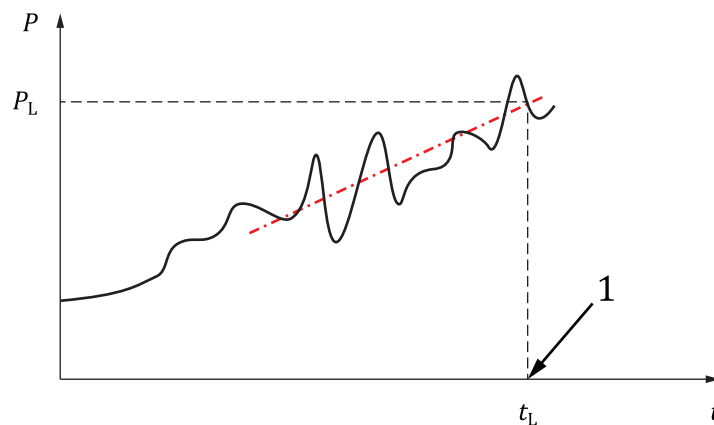
asset

item, thing or entity that has potential or actual value to an organization

[SOURCE: ISO 55000:2014, 3.2.1]

EXAMPLE 2

Material copied from an external document:



Key

1 life; maintenance time

SOURCE: Reference [5], reproduced with the permission of the authors

Figure A.6 — Property versus time behaviour, detection of threshold (end point, P_L) and maintenance time

For management system standards, the rules of the ISO/IEC Directives, Part 1, Consolidated ISO Supplement apply.

10.2 Permitted referenced documents

Normatively referenced documents shall be documents published by ISO or IEC. In the absence of appropriate ISO or IEC documents, those published by other bodies may be listed as normative references provided that

- a) the referenced document is recognized by the committee as having wide acceptance and authoritative status,
- b) the committee has the agreement of the authors or publishers (where known) of the referenced document for its inclusion as a reference,
- c) the authors or publishers (where known) have also agreed to inform the committee of their intention to revise the referenced document and what points the revision will affect,
- d) the document is available under commercial terms which are fair, reasonable and non-discriminatory, and