General principles for preparing a standard

المبادئ العامة لإعداد المواصفة

welcome

Content

Objective of standardization

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

- be complete within the limits specified by their scope
- be consistent, clear and accurate;
- be written using all available knowledge about the state of the art
- take into account the current market conditions
- provide a framework for future technological development
- be comprehensible to qualified people who have not participated in their preparation
- conform to the ISO/IEC Directives, Part 2.

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

Principles of standard preparation

1- Planning and preparation

In order to ensure the timely publication of a standard or of a series of associated standards, the following shall be determined before drafting begins

- o the intended structure
- o any interrelationships
- o the organization and subdivision of the subject matter

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

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 standard (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 standard.

Principles of standard preparation

3- Fitness for implementation as a regional or national standard

The content of a standard 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).

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.

EXAMPLE

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

o Design requirements: The table shall have four wooden legs.

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

Principles of standard preparation

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.

6- Consistency

Consistency should be maintained within each standard and within a series of associated standards.

- o The structure of associated standards and the numbering of their clauses should, as far as possible, be identical.

- o Identical wording should be used to express identical provisions.

- o The same terminology should be used throughout. The use of synonyms should be avoided.

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

## 7- Avoidance of duplication and unnecessary deviations

standards 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

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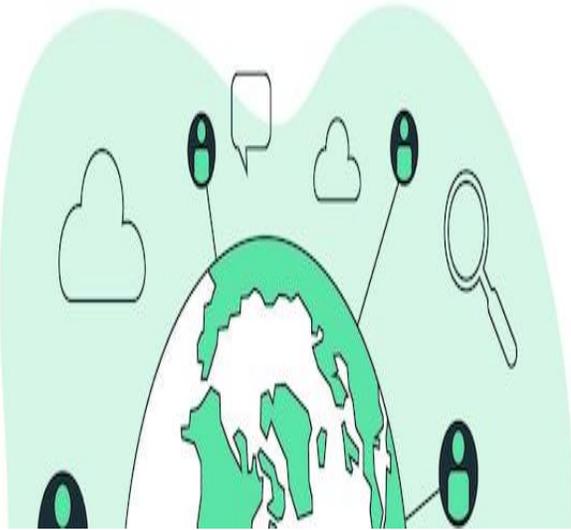
If the aim of a standard is standardization of a single size for a product, but there is more than one widely accepted size in international use, a committee may decide to include alternative product sizes in the standard. However, in such cases, every effort shall be made to reduce the number of alternatives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

o 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;

o 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 standard

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:

term	Example of numbering
Part	9999-1
Clause	1
Subclause	1.1
Subclause	1.1.1
Paragraph	[no number]
Annex	A

2- Subdivision of the subject matter within an individual standard

An example of a typical arrangement is given in Table:

Major subdivision	Mandatory/Optional/Conditional
Title	Mandatory
Foreword	Mandatory
Introduction	Optional/Conditional
Scope	Mandatory
Normative references	Mandatory
Terms and definitions	Mandatory
Symbols and abbreviated terms	Conditional
Technical content, For example: test methods	Mandatory/Optional/Conditional
Annexes	Optional
Bibliography	Conditional

mandatory: element that has to be present in a *standard*

Conditional: element that is present depending on the provisions of the particular standard

optional: element that the writer of a standard may choose to include or not

The user of the standard shall be able to identify the requirements he/she is obliged to satisfy in order to claim conformance to a standard.

The user shall also be able to distinguish these requirements from other types of provision (recommendations, permissions, possibilities and capabilities).

01
Requirement

expression, in the content of a standard , that conveys objectively verifiable criteria to be fulfilled and from which no deviation is permitted if conformance with the standard is to be claimed.

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
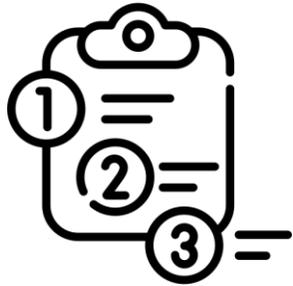
01
Requirement

The imperative mood: is frequently used in English to express requirements in procedures or test methods.

EXAMPLE :Switch on the recorder

EXAMPLE : Do not activate the mechanism before

Do not use "must" as an alternative for "shall". This avoids confusion between the requirements of a standard and external constraints .

Do not use "may not" instead of "shall not" to express a prohibition

02
Recommendation

expression, in the content of a standard, that conveys a suggested possible choice or course of action deemed to be particularly suitable without necessarily mentioning or excluding others

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

03

permission

expression, in the content of a standard, that conveys consent or liberty (or opportunity) to do something.

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
may	is permitted
	is allowed
	is permissible

03
permission

o **Do not use "possible" or "impossible" in this context.**
o **Do not use "can" instead of "may" in this context.**
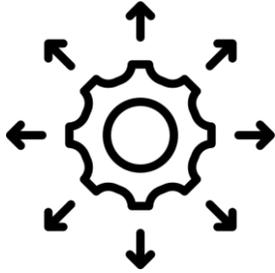o **Do not use "might" instead of "may" in this context.**

"**May**" signifies a permission expressed by the standard, whereas "can" refers to the ability of a user of the standard or to a possibility open to him/her.
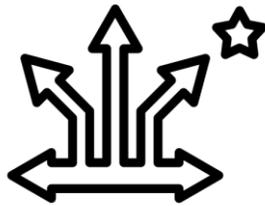
04
possibility

expression, in the content of a standard , that conveys expected or conceivable material, physical or causal outcome.

05
capability

expression, in the content of a standard, that conveys the ability, fitness, or quality necessary to do or achieve a specified thing.

Table — 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

Do not use "**may**" instead of "can" in this context. "**May**" signifies a permission expressed by the standard, whereas "**can**" refers to the ability of a user of the standard or to a possibility open to him/her

06

external constraint

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

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

Preferred verbal form	Equivalent phrases or expressions for use in certain cases
must	

Do not use **"must"** as an alternative for **"shall".** This avoids confusion between the requirements of a standard and external constraints .

01

Language versions

The different language versions of standards 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.

02

Spelling reference works

Spelling shall be consistent throughout a standard.

03

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 **(ISO,IEC).**

04

Abbreviated terms

The use of abbreviated terms shall be consistent throughout the standard. **EXAMPLE** "RH" for "relative humidity".

05

Linguistic style

To help users understand and use the standard 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
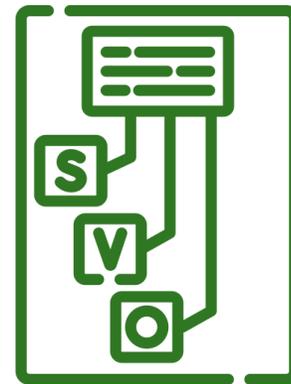
06

Numbers, quantities, units and 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.

اسم المواصفة (ع)		اسم المواصفة (E)	المرجع الدولي	م ق س
1	الكميات والوحدات – الجزء 1 : عام	Quantities and units - Part 1: General	ISO 80000-1:2009	SASO ISO 80000-1:2012
2	الكميات والوحدات – الجزء 2 : الإشارات والرموز الرياضية المستخدمة في العلوم الطبيعية والفنية	Quantities and units - Part 2: Mathematical signs and symbols to be used in the natural sciences and technology	ISO 80000-2: 2009	SASO ISO 80000-2:2012
3	الكميات والوحدات – الجزء 3: الفضاء والزمن	Quantities and units - Part 3: Space and time	ISO 80000-3:2006	SASO ISO 80000-3:2006
4	الكميات والوحدات – الجزء 4: الديناميكا الحرارية	Quantities and units - Part 4: Mechanics	ISO 80000-4:2006	SASO ISO 80000-4:2006
5	الكميات والوحدات – الجزء 5 : الثرموديناميكا	Quantities and units - Part 5: Thermodynamics	ISO 80000-5: 2007	SASO ISO 80000-5: 2007
6	الكميات والوحدات – الجزء 6 : الكهرومغناطيسية	Quantities and units - Part 6: Electromagnetism	IEC 80000-6:2008	SASO IEC 80000-6:2008
7	الكميات والوحدات – الجزء 7 : الضوء	Quantities and units - Part 7: Light	ISO 80000-7:2008	SASO ISO 80000-7:2010
8	الكميات والوحدات – الجزء 8 : الصوتيات	Quantities and units - Part 8: Acoustics	ISO 80000-8:2007	SASO ISO 80000-8:2008
9	الكميات والوحدات – الجزء 9 : الكيمياء الفيزيائية والفيزياء الذرية	Quantities and units - Part 9: Physical chemistry and molecular physics	ISO 80000-9:2009 & am1 :2011	SASO ISO 80000-9:2009&am1:2011
10	الكميات والوحدات – الجزء 10 : الفيزياء الذرية والنووية	Quantities and units - Part 10: Atomic and nuclear physics	ISO 80000-10:2009	SASO ISO 80000-10:2009
11	الكميات والوحدات – الجزء 11 : الأعداد المميزة	Quantities and units - Part 11: Characteristic numbers	ISO 80000-11:2008	SASO ISO 80000-11:2009
12	الكميات والوحدات – الجزء 12 : فيزياء الحالة الصلبة	Quantities and units - Part 12: Solid state physics	ISO 80000-12:2009	SASO ISO 80000-12:2009
13	الكميات والوحدات – الجزء 13 : علوم وتقنية المعلومات	Quantities and units - Part 13: Information science and technology	ISO 80000-13:2008	SASO ISO 80000-13:2009
14	الكميات والوحدات – الجزء 14 : القياسات الحيوية عن بُعد المتعلقة بعلم وظائف أعضاء الإنسان	Quantities and units - Part 14: Telebiometrics related to human physiology	ISO 80000-14:2008	SASO ISO 80000-14:2009
15	وحدات القياس القانونية	Legal units of metrology	OIML D 2: 2007	GSO SASO OIML D 2:2007

07

Values, dimensions and tolerances

Values and dimensions shall be indicated as being minimum or maximum. Their tolerances (if applicable) shall be specified in an unambiguous manner.

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

$$\frac{75\%}{25\%}$$

EXAMPLE: Write "from 63 % to 67 %" to express a range.

EXAMPLE: Write "(65 ± 2) %" to express a center value with tolerance
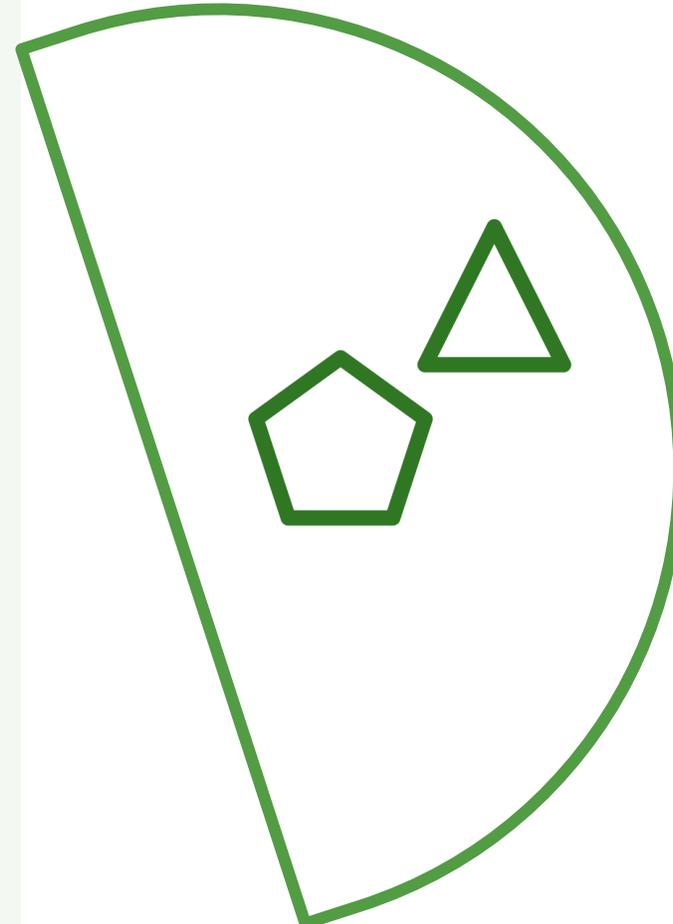The form "65 ± 2 %" shall not be used.

08

Quantities, units, symbols

o The International System of units (SI) shall be used.

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

o all other unit symbols shall be preceded by a space.

09

Referencing

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 standard. 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

- ISO/IEC Directives, Part 2,
- Quantities and units of Standards

Thank you!