

API Document Format and Style Manual

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Introduction

This manual establishes the preferred API style for the preparation of new and revised standards. This manual is not intended to be a guide to the procedural development of standards. This information can be found in the *Procedures for Standards Development* issued by the API Standards Department.

For this document only, a box is placed around examples in order to distinguish them from the rest of the text (see 6.7.3 for information on how to format examples in new and revised standards).

API Document Format and Style Manual

1 Scope

This document covers only the most basic information about the API format as it has been adapted to API layout and U.S. conventions, and should be used as a guide by API standards development committees. These guidelines are intended to ensure that API standards are presented as uniform as practicable, irrespective of the technical content.

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 addenda) applies.

API Procedures for Standards Development

3 Terms and Definitions

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

3.1

consensus

Substantial agreement has been reached by directly and materially affected interests, which signifies the concurrence of more than a simple majority, but not necessarily unanimity.

NOTE Consensus requires that all views and objections be considered, and that an effort be made toward their resolution. [ANSI Essential Requirements, Annex A]

[SOURCE: ANSI Essential Requirements, Annex A]

3.2

informative

Elements or provisions intended to assist in the understanding or use of the document or provide contextual information about its content, background, or relationship with other documents.

3.3

informative elements

Elements that: a) identify the document, introduce its content, and explain its background, development, and its relationship with other documents; or b) provide additional information intended to assist the understanding or use of the document.

3.4

normative

Elements or provisions that are mandatory to claim compliance with the standard.

3.5

normative elements

Elements that describe the scope of the document and set out provisions that are required to implement the document.

3.6

page proof review

The process involving the critical review of edited standards by the industry subject-matter experts prior to publication.

3.7

provision

Expression in the content of a normative document that takes the form of a statement, an instruction, a recommendation, or a requirement.

3.8

recommendation

Expression in the content of a document conveying a suggested possible choice or course of action deemed to be particularly suitable, without necessarily mentioning or excluding others.

NOTE 1 Recommendations are expressed using the verbal forms specified in Table 2.

NOTE 2 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.

[SOURCE: ISO Directives Part 2, 7th edition]

3.9

requirement

Expression in the content of a document conveying objectively verifiable criteria to be fulfilled and from which no deviation is permitted if compliance with the document is to be claimed.

[SOURCE: ISO Directives Part 2, 7th edition]

NOTE Table 1 specifies the verbal forms for the expression of requirements.

3.10

statement

Expression in the content of a document conveying information.

NOTE Table 3 specifies the verbal forms for indicating a course of action permissible within the limits of the document. Table 4 specifies the verbal forms to be used for statements of possibility and capability.

4 General Principles

4.1 Document Types

4.1.1 Bulletin

Documents that convey technical information on a specific subject or topic and are generally issued on a one-time basis, are not standards, and are not addressed by the API *Procedures for Standards Development*.

4.1.2 Code

A document intended for adoption by regulatory agencies or authorities having jurisdiction.

4.1.3 Recommended Practice

A document that communicates recognized industry practices.

4.1.4 Specification

Documents that are written in such a way as to facilitate communications between purchasers, manufacturers, and/or service suppliers. Specifications may include datasheets that may be used in industrial transactions.

4.1.5 Standard

A document, 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. Standards typically include elements of specifications and recommended practices.

NOTE For the purposes of this document, the term “standard” or “document” is used as a generic description for all document types.

4.1.6 Technical Report

See 4.1.1.

4.2 Expression of Provisions

4.2.1 General

Every document contains terms that express the provisions the reader needs to demonstrate compliance with the requirements. A document does not in itself impose any obligation upon anyone to follow it. However, such an obligation may be imposed, for example, by legislation or by a contract. Consistent use of the correct verbal form in every provision avoids ambiguity and simplifies the task of the user of the document. The user will know exactly what has to be done to claim conformance with the document, what should be done to facilitate the procedure, and what can be done if desired. The verbal forms necessary to express these provisions are specified as being “shall” (requirement), “should” (recommendation), “may” (permission), and “can” (possibility and capability). These terms are defined as:

- a) shall—is used to indicate that a provision is mandatory;
- b) should—is used to indicate that a provision is not mandatory, but recommended as good practice;
- c) may—is used to indicate that a provision is optional;
- d) can—is used for statements of possibility or capability.

See Annex A for additional information and examples to help in the writing of API documents.

4.2.2 Expressing Mandatory Provisions (Requirements)

4.2.2.1 General

A clear distinction shall be made between requirements, statements, and recommendations. Contractual requirements (concerning claims, guarantees, covering of expenses, etc.) and legal or statutory requirements shall not be included.

In some product standards, it may be necessary to specify that the product shall be accompanied by warning notices or by instructions to the installer or user, and to specify their nature.

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

Table 1 summarizes the verbal forms of expression that shall be used to indicate requirements to be followed in order to conform to the document and from which no deviation is permitted.

Table 1—Verbal Forms to Express Mandatory Provisions (Requirements)

Verbal Form	Equivalent Expressions for Use in Exceptional Cases^a
shall ^{b, c}	is to is required to it is required that has to only...is permitted it is necessary needs to
shall not	is not allowed (permitted) (acceptable) (permissible) is required to be not is required that...be not is not to be need not do not
<p>^a The equivalent expressions given the second column shall be used only in exceptional cases when the form given in the first column cannot be used for linguistic reasons.</p> <p>^b Do not use “must” as an alternative for “shall” (this will avoid any confusion between the requirements of a document and jurisdictional regulatory obligations).</p> <p>^c Do not use “may not” when “shall not” is meant, i.e. to express a prohibition.</p>	

Avoid using vague expressions that are not truly informative and may cause the reader to make an incorrect assumption. Words like “very,” “all,” “every,” “never,” “excessive,” “slightly,” “approximately,” “nearly,” or “significant” are not useful.

The use of bullets to indicate purchaser decisions is addressed in Annex F.

4.2.3 Expressing Recommendations

Table 2 summarizes the verbal forms that shall be used to indicate:

- a) that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding the others;
- b) that a certain course of action is preferred, but not necessarily required; or
- c) that (in the negative form) a certain possibility or course of action is discouraged but not prohibited.

Table 2—Verbal Forms to Express Recommendations

Verbal Form	Equivalent Expressions for Use in <i>Exceptional</i> Cases ^a
should	it is recommended that ought to
should not	it is not recommended that ought not to
<p>^a The equivalent expressions given in the second column shall be used only in exceptional cases when the form given in the first column cannot be used for linguistic reasons.</p>	

4.2.4 Expressing Permission

Table 3 summarizes the verbal forms that shall be used to indicate a course of action permissible within the limits of the document.

Table 3—Verbal Forms to Express Permission

Verbal Form	Equivalent Expressions for Use in <i>Exceptional Cases</i> ^a
may	is permitted to is allowed is permissible
need not	it is not required that no...is required
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. NOTE "May" signifies 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.	
^a The equivalent expressions given in the second column shall be used only in exceptional cases when the form given in the first column cannot be used for linguistic reasons.	

4.2.5 Expressing Statements of Possibility and Capability

Table 4 summarizes the verbal forms that shall be used for statements of possibility and capability, whether material, physical, or causal.

Table 4—Verbal Forms to Express Possibility and Capability

Verbal Form	Equivalent Expressions for Use in <i>Exceptional Cases</i> ^a
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
NOTE See Note in Table 3.	
^a The equivalent expressions given in the second column shall be used only in exceptional cases when the form given in the first column cannot be used for linguistic reasons.	

4.3 Homogeneity

Uniformity of structure, style, and terminology shall be maintained not only within each document, but also within a series of associated documents. The structure of associated documents and the numbering of their sections shall, as far as possible, be identical. Analogous wording shall be used to express analogous provisions; identical wording shall be used to express identical provisions.

The same term shall be used throughout each document or series of associated documents to designate a given concept. The use of an alternative term (synonym) for a concept already defined shall be avoided. As far as possible, only one meaning shall be attributed to each term chosen.

4.4 Units and Quantities

4.4.1 Units

In recognition of the international use and applicability of API standards, measured and calculated values should be expressed in metric (SI) units and U.S. customary (USC) units. When citing units in dual units, the SI unit should be listed first, with the corresponding USC unit listed either in parentheses in the text or on separate tables, figures, or datasheets, or in separate annexes. When dual units are used, the same order for the units shall be used throughout the document.

Do not use periods within units [pounds (lb), feet (ft), seconds (s), hours (h), minutes (min), year (yr)]. The exception to this is inches (in.). See API *MPMS* Ch. 15 for guidelines on the API-preferred units for quantities involved in the petroleum industry.

4.4.2 Quantities

The following rules should be observed:

- a) For numbers between -1.0 and 1.0 , a zero shall be placed in front of the decimal (e.g. 0.0525).
- b) For clarity, the symbol \times shall be used to indicate multiplication rather than a dot (\cdot).
- c) In general text, isolated number less than 10 shall be spelled out. However, in equations, tables, figures and other display elements numerals should be used.
- d) The value of a quantity is expressed by a numeral followed by a space and the appropriate unit symbol.
- e) If tolerances are provided, the unit shall be given with both the basic value and the tolerance (e.g. $1\text{ mm} \pm 0.05\text{ mm}$);
- f) Ranges should repeat the unit (e.g. 2 psi to 12.5 psi, 0 mph to 6 mph).

NOTE Dashes should not be used since they can be misinterpreted as subtraction signs.

- g) The abbreviation for inches shall include a period (in.) to avoid confusion with the word "in."
- h) Units shall be spelled out when not used with a number ("...2 gal/min" vs "...they are measured in gallons per minute.")

4.5 Digitization

As industry moves from "narrative-based" type standards to requirement-based documents that will allow for a transition to digitization, standards-developing organizations and the subject-matter experts who develop industry standards should exhibit care in ensuring a requirement is appropriately crafted.

Characteristics of requirements statements are covered in Table 5.

Table 5—Characteristics of Requirement Statements

Characteristic	Definition	Rules
Necessary	Adds specific value to business delivery. If not included, a deficiency in capability will exist that cannot be fulfilled by implementing other requirements.	<ul style="list-style-type: none"> — Does this prevent a major accident or reduce major accident risk? — Can this prevent a fatality? — Does this prevent a safety incident? — What would happen if this was removed from our practice, i.e. what would be the impact on safety, reliability, operational performance, lifecycle reliability? — Does this make industry more competitive and improve sustainability? — Is it personal preference? Reference to an internal organization or role may indicate this.
Feasible	Can be realized within known constraints (e.g. cost, schedule, technical, legal, regulatory) with acceptable risks. Avoid aspirational requirements.	<ul style="list-style-type: none"> — Can this requirement be implemented? — Is this requirement applicable in all cases?
Verifiable	Structured and worded such that its realization can be proven (verified) to the customer's satisfaction.	<ul style="list-style-type: none"> — Each requirement has a precise and verifiable outcome. — Avoid non-specific terms, e.g. "readily," "clearly," "proven," or "early life." If a term is not defined precisely, risk and cost may increase, particularly if the requirement is used in a contract.
Unique	Requirements cannot contradict or repeat other requirements in your requirements architecture.	<ul style="list-style-type: none"> — Is it repeated elsewhere? — In terms of the specification, is the requirement global, or specific, e.g. to an item of equipment, environment, or asset? If global, it only needs to be mentioned once, in a general section, rather than in specific subsections. <ul style="list-style-type: none"> — Global requirement example: HP/LP interfaces shall be protected from all credible causes of overpressure. — Is there another document type or discipline area that is more appropriate for this requirement?
Subject	The single thing to which the requirement refers. This can include the function, person, system, or sub-system.	
Singular	State a single capability, characteristic, constraint, or quality factor. A good requirement has a single requirement. Avoid use of "and".	<p>A single requirement reduces ambiguity and conflict. It is also essential for digitalization, where verification, information, and attributes are linked to requirements.</p> <ul style="list-style-type: none"> — Each requirement usually has one "shall" statement. There may be two "shalls" if they relate to one requirement, but this would be exceptional. — Each requirement has a unique ID. — Maximum of one requirement per sentence. — Lists: <ul style="list-style-type: none"> — Lists of multiple independent "shall" requirements should be avoided, e.g. "The system shall contain the following:" and then list 10 different independent "shall" requirements. — Lists are acceptable in other circumstances, e.g. listing options: "The system shall meet one of the following:" then list some options or list a set of closely related aspects that need to be met to achieve one requirement.

Characteristic	Definition	Rules
Unambiguous	Clear and concise	<p>Avoid complex sentences and other sources of ambiguity. Complex sentences are prone to misinterpretation at point of use.</p> <ul style="list-style-type: none"> — Use short active forms with clarity on subject and outcome. Guidance for the number of words per sentence is 25. More than this is OK, but clarity should be checked. — Additional guidance is that if a user needs to read a sentence twice to understand it, the sentence needs to be rewritten. — Conditional construct (if, for, etc.) should be avoided if possible. If conditional construct is used, the condition should be at the beginning of the sentence. If conditional construct is necessary, use “if” rather than “when” or “where.” “When” shall be used only to specify time-dependent requirements. “Where” shall be used only to specify location-dependent requirements. — Avoid ambiguity, e.g. multiple conjunctions. <ul style="list-style-type: none"> — Example before: The flange shall be fastened either by gluing and clamping or riveting. — Example after: The flange shall be fastened by one of the following: <ol style="list-style-type: none"> 1) Gluing and clamping. 2) Riveting. — Limit use of unnecessary words, such as “a,” “all,” “any,” “each,” “every,” or “the”. <ul style="list-style-type: none"> — Examples before: <ul style="list-style-type: none"> — Every high-voltage switching device shall have sets of volt-free auxiliary contacts. — Any main circuit hardware or equipment that is withdrawable shall be fitted with a panel number locator label. — Examples after: <ul style="list-style-type: none"> — High-voltage switching devices shall have sets of volt-free auxiliary contacts. — Main circuit hardware or equipment that is withdrawable shall be fitted with a panel number locator label. — Avoid use of “etc.” because it is inherently ambiguous.

[REFERENCE: INCOSE-TP-2010-006-2, *INCOSE Guide for Writing Requirements*, Rev. 2, as amended for API.]

4.6 Page Proof Review Guidelines

Typical time for page proof review based on API’s Editorial Complexity Formula is as follows:

- Level 1 standards: those with **up to 10** figures, **up to 10** tables, **up to 10** equations, and **up to 50** pages—7 to 10 business days
- Level 2 standards: those with **10 to 20** figures, **10 to 20** tables, **10 to 20** equations, and **50 to 150** pages—11 to 14 business days
- Level 3 standards: those with **20+** figures, **20+** tables, **20+** equations, and **150+** pages—15 to 21 business days.

Page proof reviews should be conducted by the standard’s subcommittee, task group, or work group leadership in conjunction with the standard’s master editor if one exists.

5 Document Structure

5.1 General

Final formatting is performed by API staff before publication; therefore, it is unnecessary for a committee to make the document look like a published document. However, the amount of staff effort required to prepare the document for publication can be reduced if the committee adopts the proper numbering format when the draft is prepared.

5.2 Normative and Informative Text

Normative text denotes information that is required to implement the document. Informative text is provided for information only.

The document shall contain normative text in the main sections of the document, including footnotes to tables (see Annex B), and in normative annexes. Informative text should be placed in notes (to text, tables, and figures), in footnotes within text, and in informative annexes.

5.3 Subdivision of Subject Matter

5.3.1 Descriptions of Divisions and Subdivisions

Terms to be used to designate the divisions and subdivisions of a document are shown in Table 5.

Table 6—Names of Divisions and Subdivisions

Term	Example of Numbering
Part	9999-1
Section	1
Subsection	1.1
Subsection	1.1.1
Paragraph	(no number)
Annex	A

5.3.2 Part

An individual document shall be prepared for each subject to be standardized and published as a complete entity. However, in specific cases and for practical reasons, the document may be split into separate parts under the same number if, for example:

- a) the document is likely to become too voluminous,
- b) subsequent portions of the content are interlinked,
- c) portions of the document could be referred to in regulations, or
- d) portions of the document are intended to serve for certification purposes.

This has the advantage that each part can be changed separately when the need arises. In particular, the aspects of a product which will be of separate interest to different parties (e.g. manufacturers, certification bodies, legislative bodies) shall be clearly distinguished, preferably as parts of a document or as separate documents.

Such individual aspects are, for example,

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

The terms used to designate the divisions and subdivisions that a document may have are shown in Table 1.

5.3.3 Section

A section is the basic component in the subdivision of the content of a document. The sections in each document or part shall be numbered with Arabic numerals, beginning with 1 for the “Scope” section. The numbering shall be continuous, up to but excluding any annexes.

Each section shall have a title, placed immediately after its number, on a line separate from the text that follows it.

5.3.4 Subsection

A subsection is a numbered subdivision of a section. A primary subsection (e.g. 5.1, 5.2, etc.) may be subdivided into secondary subsections (e.g. 5.1.1, 5.1.2, etc.), and this process of subdivision may be continued as far as the fifth level (e.g. 5.1.1.1.1.1, 5.1.1.1.1.2, etc.). Subsections within the document are not referenced as “Section X.X,” unless the reference is to a subsection of a different document (e.g. “See 5.2 of this document for more information, or reference ASME BXX.X—Section 6.1”); however, whole sections are always referenced (e.g. “See Section 5 of this document for more information, or reference ASME B13.1—Section 6.1”).

A subsection shall not be created unless there is at least one further subsection at the same level. For example, text in Section 10 shall not be designated subsection “10.1” unless there is also a subsection “10.2.”

Each primary subsection should preferably be given a title, which shall be placed immediately after its number, on a line separate from the text that follows it. Secondary subsections may be treated in the same way. Within a section or subsection, the use of titles shall be uniform for subsections at the same level (e.g. if 10.1 has a title, 10.2 shall also have a title). In the absence of titles, key terms or phrases (composed in distinctive type) appearing at the beginning of the text of the subsection may be used to call attention to the subject matter addressed. Such terms or phrases shall not be listed in the table of contents.

Subheadings that are not numbered should be in title case and followed by an em dash (—), and the first word after the em dash should be capitalized.

EXAMPLE Conventional Methods—The vast majority of inspections...

5.3.5 Paragraph

A paragraph is an unnumbered subdivision of a section or subsection.

Hanging paragraphs, such as those shown in Table 6, shall be avoided since reference to them is ambiguous.

Table 7—Examples of Hanging Paragraphs

Incorrect	Correct
<p>5 Designation</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>5.1 XXXXXXXXXXXXX</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>5.2 XXXXXXXXXXXXX</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The</p> <p>quick brown fox jumps over the lazy dog.</p> <p>6 Test Report</p>	<p>5 Designation</p> <p>5.1 General</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>5.2 XXXXXXXXXXXXX</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>5.3 XXXXXXXXXXXXX</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The quick brown fox jumps over the lazy dog.</p> <p>The quick brown fox jumps over the lazy dog. The quick brown fox jumps over the lazy dog.</p> <p>6 Test Report</p>
<p>NOTE The hanging paragraphs indicated cannot be uniquely identified as being in Section 5 since, strictly speaking, the paragraphs in 5.1 and 5.2 are also in Section 5. To avoid this problem, it is necessary to identify the unnumbered paragraphs as subsection “5.1 General” (or other suitable title) and to renumber the existing 5.1 and 5.2 accordingly (as shown), to move the hanging paragraphs elsewhere, or to delete them.</p>	

5.3.6 Annex

5.3.6.1 General

Annexes, if included, shall appear in the order in which they are cited in the text unless a document with existing annexes is under revision, and in which case, any new annexes may be inserted after the existing annexes even if this is not the order in which they are cited in the text. Each annex shall be designated by a heading comprising the word “Annex,” followed by a capital letter designating its serial order, beginning with “A”; e.g. “Annex A”. The annex heading shall be followed by the indication “(normative)” or “(informative),” and by the title, each on a separate line. Numbers given to the sections, subsections, tables, figures, and mathematical equations of an annex shall be preceded by the letter designating that annex, followed by a full stop. The numbering shall start anew with each annex. A single annex shall be designated “Annex A”.

EXAMPLE Sections in Annex A are designated “A.1”, “A.2”, “A.3”, etc.

5.3.6.2 Normative Annexes

Normative annexes, if included, give provisions additional to those in the body of the document. An annex’s normative status (as opposed to informative—see 5.3.6.3) shall be made clear by the way in which it is referred to in the text, by an indication in the table of contents, and under the heading of the annex.

5.3.6.3 Informative Annexes

5.3.6.3.1 Informative annexes, if included, give additional information intended to assist the understanding or use of the document. They shall not contain requirements, except as described in 5.3.6.3.2. An annex’s informative status (as opposed to normative—see 5.3.6.2) shall be made clear by the way in which it is referred to in the text, by an indication in the table of contents, and under the heading of the annex.

5.3.6.3.2 Informative annexes may contain optional requirements. For example, a test method that is optional may contain requirements, but there is no need to comply with these requirements to claim compliance with the document.

5.3.7 Bibliography

A bibliography, if present, shall appear after the last annex. See 6.6.9 for additional information.

6 Document Elements

6.1 Lists

Lists in a subsection may be ordered (prefixed by a number or a letter) or unordered (not prefixed by a number or a letter); however, ordered lists are recommended to facilitate ease of reference. An ordered list of items within a subsection should be presented in outline form, with items lettered a), b), c), etc. If a further subdivision of the items is necessary, 1), 2), 3); i), ii), iii); dashed subdivision items; etc., should be used to form a tiered list.

If possible, only one ordered list may be presented in any subsection to avoid confusing cross-references. A dashed list can be used instead of an ordered list, where applicable. However, if inclusion of more than one ordered list within a subsection is necessary, with text introducing each list, the separate lists shall have different sets of numbers or letters prefixing each list; e.g. items within the first ordered list are numbered 1), 2), 3), and within the second ordered list a), b), c) or 4), 5), 6). Under no circumstances shall letters or numbers prefixing separate ordered lists within the same subsection have the same numbers or letters.

Bullets (•) shall not be used in unordered lists, to avoid confusion with bullets used to denote a purchaser's decision (see 6.6.7.2).

Annex C provides examples of ordered and unordered lists.

6.2 Tables

6.2.1 Usage

Tables should be used when they are the most efficient means of presenting information in an easily comprehensible form. All tables shall be referenced in the text of the document. A table within a table is not permitted. Subdivision of a table into subsidiary tables is not permitted.

See Annex B for details on creating tables.

6.2.2 Designation

Tables shall be designated "Table" and numbered consecutively with Arabic numerals, beginning with 1. This numbering shall be independent of the numbering of the sections and of any figures. A single table shall be designated "Table 1".

Tables included in annexes shall include the identifying letter of the annex in which they appear.

EXAMPLE The first table in Annex A would be identified as Table A.1.

For documents maintained under the continuous-maintenance option, a table may be identified by the section number preceding the table number, separated by a period.

EXAMPLE Tables in Section 4 of a document would be identified as Table 4.1, Table 4.2, Table 4.3, etc.

6.3 Figures

6.3.1 Usage

Figures should be used when they are the most efficient means of presenting information in an easily comprehensible form. All figures shall be referenced in the text of the document.

Figures included in annexes shall include the identifying letter of the annex in which they appear.

See Annex D for details on creating figures, including obtaining the necessary permissions.

6.3.2 Designation

Figures shall be designated "Figure" and numbered with Arabic numerals, beginning with 1. This numbering shall be independent of the numbering of the sections and of any tables. A single figure shall be designated "Figure 1".

Figures included in annexes shall include the identifying letter of the annex in which they appear.

EXAMPLE The first figure in Annex A would be identified as Figure A.1.

For documents maintained under the continuous-maintenance option, a figure may be identified by the section number preceding the figure number, separated by a period.

EXAMPLE Figures in Section 4 of a document would be identified as Figure 4.1, Figure 4.2, Figure 4.3, etc.

6.4 Equations

6.4.1 General

Equations should be presented consistently throughout the document. The equation shall be introduced with a phrase or sentence, followed by the equation on the next line. The equation shall be followed on the next line with the list of variables and their definitions in the order in which they appear in the equation. Units in the equation list that are not grouped with a number should be spelled out with the abbreviation in parentheses (see Example 1). Sometimes, it is not necessary to spell out the units, in order to make the list more readable (see Example 2, where both SI units and USC units are shown, and the units for k are fairly long). The editor should use their best judgment and remain consistent throughout the document.

EXAMPLE 1

The maximum allowable residual unbalance per plane (journal) shall be calculated as follows:

$$U = \frac{4W}{N} \quad (15)$$

where

U is the unbalance per plane in inches (in.);

W is the load per journal in pounds (lb);

N is the rotative speed in revolutions per minute (r/min).

EXAMPLE 2

For insulated vessels, the environment factor for insulation is given as follows:

In SI units:

$$F = \frac{k(904 - T_f)}{66,570\delta_{\text{ins}}} \quad (\text{A.1})$$

In USC units:

$$F = \frac{k(1660 - T_f)}{21,000\delta_{\text{ins}}} \quad (\text{A.2})$$

where

k is the thermal conductivity of insulation at mean temperature, expressed in W/m K (Btu·in./h·ft²·°F);

δ_{ins} is the thickness of insulation, expressed in m (in.);

T_f is the temperature of vessel contents at relieving conditions, expressed in °C (°F).

6.4.2 Numbering

If it is necessary to number some or all of the equations in a document in order to facilitate cross-reference, Arabic numbers in parentheses shall be used, beginning with 1:

$$w_{\text{max}} = m_1 / (m_1 + m_2) \times 100 \% \quad (1)$$

The numbering shall be continuous and independent of the numbering of sections, tables, and figures. Subdivision of equations [e.g. (2a), (2b), etc.] is not permitted. The numbering is permitted to start anew with each annex.

EXAMPLE Equations in Annex A may be designated "(A.1)", "(A.2)", "(A.3)", etc.

6.5 References**6.5.1 General**

References to a particular portion of text should be used instead of repetition of the original source material. Repetition involves the risk of error or inconsistency and increases the length of the document.

References shall be made in the forms indicated in 6.5.2 through 6.5.4.3, and shall not be made to page numbers.

6.5.2 References to Elements of Text

Use, for example, the following forms:

- “in accordance with Section 3;”
- “according to 3.1;”
- “as specified in 3.1 b);
- “details as given in 3.1.1;”
- “see Annex B;”
- “the requirements given in B.2;”
- “see the Note in Table 2;”
- see Note 2;
- “see A.6.3, Example 2;”
- “see Item a) above;”
- “repeat Step 4);”
- “see 3.1, Equation (3).”

It is unnecessary to use the term “subsection” or “clause” (see 5.3.4).

6.5.3 References to Figures and Tables

Every figure and table included in the document shall normally be referred to in the text.

Use, for example, the following forms:

- “shown in Figure A.6 and Figure A.7,”
- “(see Figure 3),”
- “given in Table 2,”
- “(see Table B.2).”

6.5.4 References to Other Documents

6.5.4.1 General

All normative references, undated and dated, shall be given in the “Normative References” section (see 6.6.4).

6.5.4.2 Undated References

Undated references may be made only to a complete document and only in the following cases:

- a) if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document,

NOTE For undated references, the latest edition of the referenced document (including any addenda) applies.

b) for informative references.

Undated references shall be understood to include all amendments to and revisions of the referenced document.

Use the following forms:

- “...as specified in API 5L and API 5L3..,”
- “...see API 653...”

6.5.4.3 Dated References

Dated references are references to a specific edition, indicated by the year of publication. References to specific sections or subsections, tables, and figures of another document shall always be dated.

Use the following forms:

- “...evaluate using the methods specified in API *MPMS* Ch. 13.2, First Edition...” (dated reference to a published document);
- “...as specified in API 1104, 20th Edition—Table 1...” (dated reference to a specific table in another published document);

NOTE For documents without an edition number, the year of publication may be used.

6.6 Order of Sections within a Document

6.6.1 Foreword

The foreword shall appear in each document. It shall not contain requirements, recommendations, figures, or tables. It is a general description of the contents of the document.

The foreword can consist of a specific part and a general part. The specific part (supplied by the committee) should contain any specific information a committee wants to convey to the public, such as a statement of significant technical changes from any previous edition of the document or the relationship of the document to other documents. The general part (supplied by API staff) gives information relating to the document, such as the committee responsible for preparing the document, the effective date, terms of use, and contact information to submit suggested revisions.

6.6.2 Introduction

The introduction is an optional informative preliminary element used to give specific information or commentary about the technical content of the document, and about the reasons prompting its preparation. When used, the introduction shall not contain requirements (“shall” statements) or recommendations (“should” statements).

The introduction shall be on a separate page immediately prior to the page on which the Scope appears. The introduction shall not be numbered unless there is a need to create numbered subdivisions. In this case, it shall be numbered 0, with subsections being numbered 0.1, 0.2, etc. Any numbered figure, table, displayed equation, or footnote shall be numbered beginning with 1.

6.6.3 Scope

This normative element shall appear at the beginning of each document and define without ambiguity the subject of the document and the aspects covered, thereby indicating the limits of applicability of the document or particular parts of it. The scope shall not contain requirements (“shall” statements) or recommendations (“should” statements).

In documents that are subdivided into parts, the scope of each part shall define the subject of that part only.

The scope shall be succinct so that it can be used as a summary for bibliographic purposes and the API Publications Catalog (www.api.org/publications).

6.6.4 Normative References

This optional informative element provides a list of the references cited in the document in such a way that some or all of their content constitutes requirements of the document. It is recommended that undated references be used unless there are technical reasons why a specific edition must be referenced. Each dated reference shall include its edition number (or year of publication). The year of publication shall not be given for undated references.

NOTE References may be dated or undated.

The list shall be introduced by the following wording:

“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 addenda) applies.”

Insert the footnote for the address of the referenced organization after the publication number of the first document of that organization. API references do not require a footnote since this address is always included in the API Foreword. API references shall be listed first, and subsequent references, if any, follow in alphabetical order.

The following referenced documents are **for example** only, to demonstrate how normative references should be formatted in the section.

API Manual of Petroleum Measurement Standards (MPMS) Chapter 3.2, Standard Practice for Gauging Petroleum and Petroleum Products in Tank Cars

API MPMS Chapter 4 (all sections), Proving Systems

API MPMS Chapter 14.3, Parts 1 to 4, Concentric, Square-edged Orifice Meters

API Specification 5L, Specification for Line Pipe

API Recommended Practice 520 (all parts), Sizing, Selection, and Installation of Pressure-relieving Devices in Refineries

ANSI B16.5¹, Pipe Flanges and Flanged Fittings

ASME Boiler and Pressure Vessel Code², Section II: Materials

ASME Boiler and Pressure Vessel Code, Section VIII: Pressure Vessels; Division 2: Alternative Rules

ASTM A105³, Standard Specification for Carbon Steel Forgings for Piping Applications

AWS A5.1 ⁴, *Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding*

ISO 7-1 ⁵, *Pipe threads where pressure-tight joints are made on the threads—Part 1: Dimensions, tolerances and designation*

ISO 261, *ISO general-purpose metric screw threads—General plan*

NACE RP 0372 ⁶, *Method for Lining Lease Production Tanks with Coal Tar Epoxy*

U.S. DOT Title 49, CFR Part 192 ⁷, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*

¹ American National Standards Institute, 25 West 43rd Street, 4th floor, New York, New York 10036, www.ansi.org.

² ASME International, 3 Park Avenue, New York, New York 10016, www.asme.org.

³ ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.

⁴ American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126, www.aws.org.

⁵ International Organization for Standardization, 1, ch. de la Voie-Creuse, Case postale 56, CH-1211, Geneva, Switzerland, www.iso.org.

⁶ NACE International (formerly the National Association of Corrosion Engineers), 1440 South Creek Drive, Houston, Texas 77218-8340, www.nace.org.

⁷ U.S. Department of Transportation 1200 New Jersey Ave, SE, Washington, D.C. 20590, www.dot.gov.

6.6.5 Terms and Definitions

This is an optional normative element providing definitions necessary for the understanding of certain terms used in the document. Only terms actually used in the document shall be defined. The following introductory wording shall be used where all terms and definitions are given in the document itself:

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

In the case where terms defined in one or more other documents also apply (e.g. in the case of a series of associated documents where Part 1 specifies the terms and definitions for several or all of the parts), the following introductory wording shall be used, altered as necessary:

“For the purposes of this document, the terms and definitions given in... and the following apply.”

Rules for the presentation of terms and definitions are provided in Annex E.

6.6.6 Symbols and Abbreviations

This is an optional element providing a list of the symbols and abbreviations necessary for the understanding of the document (see E.5.). Only symbols and abbreviations actually used in the document shall be included in the list. Unless there is a need to list symbols in a specific order to reflect technical criteria, all symbols should be listed in alphabetical order in the following sequence:

- uppercase Latin letter followed by lowercase Latin letter (*A, a, B, b*, etc.);
- letters without indices preceding letters with indices, and with letter indices preceding numerical ones (*B, b, C, C_m, C₂, c, d, d_{ext}, d_{int}, d₁*, etc.);

- Greek letters following Latin letters (*A, B, ...Z, α, β, ...z, etc.*);
- any other special symbols.

Variables are set in Times New Roman/Italic in the equations and when referenced in the text; however, symbols, numbers, abbreviations, and acronyms are not italicized. Subscripts are only italicized if they are referenced as a variable. For example, C_x (“*x*” is a variable) vs C_m (“*m*” denotes that *C* is measured in meters).

For convenience, this element may be combined with the Terms and Definitions element in order to bring together terms and their definitions, abbreviated terms, symbols, and perhaps units under an appropriate composite title, e.g. “Terms, Definitions, Abbreviations, Symbols, and Units.”

See E.5 for additional information on symbols and abbreviated terms.

6.6.7 Annexes

Annexes should appear in the order in which they are referenced in the body of the document (see also 5.3.6.1); e.g. the first annex mentioned should be Annex A, the second Annex B, and so on. Note that this rule means that normative and informative annexes will be intermixed. An exception to this rule is the bibliography (see 6.6.9). See 5.3.6 for more information on annexes.

6.6.8 Bibliography

6.6.8.1 A bibliography, if present, shall appear after the last annex. The bibliography should include the following:

- a) referenced documents that are cited in an informative manner,
- b) referenced documents that are bibliographic or background material in the preparation and application of the document.

6.6.8.2 If bibliographic items are cited in text, figures, or notes, the citation shall be superscript and placed in square brackets at the point where reference is made and shall be numbered consecutively; e.g. [1], but is not superscript when the reference is in the following form: “See Reference [1] in the bibliography.” Lists of bibliographic references are arranged in numeric sequence corresponding to the order of citation in the text (e.g. “Single Citation ^[1],” “Multiple Citations ^[2, 4, 9 to 22]”).

NOTE 1 Document titles should be set in italics.

NOTE 2 Names of the months are always spelled out in text, whether alone or in dates.

The following referenced documents are **for example** only, to demonstrate how documents in the Bibliography should be formatted.

- | |
|---|
| <p>[1] Robert F. Herbert III, “Can Duplex Stainless Steels Improve the Key Performance Indicators of an Operating Unit,” Duplex America 2000 Conference, Houston, Texas, Paper DA2 101, March 2000</p> <p>[2] Ralph M. Davison and James D. Redmond, “Practical Guide to Using Duplex Stainless Steels,” <i>Materials Performance</i>, January 1990, pp. 57–62</p> <p>[3] J.M.A. Quik and M. Geudeke, “Switch to Duplex Stainless Steels,” <i>Chemical Engineering Progress</i>, November 1994, pp. 49–53</p> |
|---|

- [4] Julio G. Maldonado and Russell D. Kane, "Failure Analysis Investigation of Super Duplex Stainless Steel Tubing," Stainless Steel World Conference, Paper P0240, Houston, Texas, February 12–14, 2002
- [5] Sandvik Steel Brochure, S-51-51-ENG, *Duplex Stainless Steels for Demanding Applications*, December 1993
- [6] JIP Prospectus, "Prediction and Assessment of Ammonium Bisulfide Corrosion Under Refinery Sour Water Service Conditions," Prepared by Dr. Russell D. Kane and Dr. Michael S. Cayard, InterCorr International, Inc., Houston, Texas, March 20, 2001, www.intercorr.com/SourWater3580.htm
- [7] Cathy Shargay, James Turner, Barry Messer, Deyuan Fan, and William Fort, "Design Considerations to Minimize Chloride Corrosion in Hydrotreater REACs," NACE International Corrosion/2001, Paper 01543, Houston, Texas, March 2001
- [8] Bluhm W.C., "Safe Operation of Refinery Flare Systems," API Proceedings, Vol. 41, 1961, API, Washington, DC

¹⁰ Insert the footnote for the address of the referenced organization after the publication number of the first document of that organization.

6.6.8.3 Documents already listed in the normative references section shall not be included in the Bibliography.

6.7 Other Informative Elements

6.7.1 General

There are other informative elements in API documents that are used to assist the reader in understanding the concepts presented in the document. These include: a) notes, b) examples, c) cautionary statements, and d) footnotes. These elements shall not contain requirements or any other information indispensable for the use of the document.

6.7.2 Notes

Explanatory statements may be used in the text for emphasis or to offer informative suggestions about the technical content of the document. These notes provide additional information to assist the reader with a particular passage and shall not include mandatory requirements.

Notes shall not contain requirements, instructions, or recommendations; they are informative only. Guidance: You should be able to delete the note without damaging the validity of the document.

A single note in a section or subsection shall be preceded by "NOTE," placed at the beginning of the first line of the text of the note. When several notes occur within the same section or subsection, they shall be designated "NOTE 1," "NOTE 2," "NOTE 3," etc.

These requirements shall apply to NOTES located in tables (see B.2.4) and figures (see D.3).

6.7.3 Examples and Steps

A single example or step in a section or subsection shall be preceded by "EXAMPLE" or "STEP" placed at the beginning of the first line of the text of the example. When several examples or steps occur within the same section or subsection, they shall be designated "EXAMPLE 1 or STEP 1," "EXAMPLE 2 or STEP 2," "EXAMPLE 3 or STEP 3," etc.

6.7.4 Warning and Cautionary Statements

Warnings call attention to the use of materials, processes, methods, procedures, or limits that have to be followed precisely to avoid injury or death. Cautions call attention to methods and procedures that may cause damage to equipment. A warning is more important than a caution. If both are to be written for the same related section or subsection, the warning shall precede the caution (see the following example).

Warning—Add warning statement here.

Caution—Add caution statement here.

Warnings and cautions should start with a clear instruction, followed with a short explanation (if necessary). If the warning or caution is of a general nature (and is applicable throughout the text), it should be placed at the start of the text. This avoids the necessity of repeating the same warning or caution frequently throughout the text. Warnings and cautions shall not be placed in informative text or notes. See ISO/IEC Guide 51 for more details regarding the inclusion of safety aspects in standards.

6.7.5 Footnotes

Footnotes to the text give additional information; their use shall be kept to a minimum. A footnote shall not contain requirements or any information considered indispensable for the use of the document. Footnotes to tables and figures follow different rules (see B.2.5 and D.4). Footnotes to the text shall be placed at the foot of the relevant page and be separated from the text by a short, thin, horizontal line on the left of the page. Footnotes to the text should be distinguished by Arabic numerals, beginning with 1, followed by one parenthesis and forming a continuous numerical sequence throughout the document: 1), 2), 3), etc. The footnotes shall be referred to in the text by inserting the same numerals, as superscripts, after the word or sentence in question. In certain cases—for example, in order to avoid confusion with superscript numbers—one or more asterisks or other appropriate symbols may be used instead: *, **, ***, etc.; †, ‡, etc. Footnotes in the text shall have a space before the superscript. Furthermore, the footnote on the bottom-left side of the page should have a tab between the superscript and the text. See the following example:

EXAMPLE⁹

6.8 Use of Trade Names

Generally, it is not acceptable to include proper names or trademarks of specific companies or organizations in the text of a publication. It is not acceptable to include manufacturer lists, service provider lists, or similar material in the text of a document.

Where a sole source exists for essential equipment, materials, or services necessary to determine compliance with the document, it is permissible to supply the name and address of the source in a footnote or informative annex as long as the words “or the equivalent” are added to the reference.

In connection with documents that relate to the determination of whether products or services conform to one or more documents, the process or criteria for determining conformity can be standardized as long as the description of the process or criteria is limited to technical and engineering concerns, and does not include what would otherwise be a commercial term or proper name.

Wherever a term/phrase appears that is a registered trademark, the following text shall be included as a footnote:

“This term is used as an example only, and does not constitute an endorsement of this product by API.”

Annex A (informative)

Writing Tips

A.1 General

This annex provides guidelines and examples to help maintain consistency in written materials produced by API committees and staff. It covers some of the common rules; however, it is not meant to be all-inclusive. The most important point to remember is to be consistent when drafting or revising a document.

A.2 Capitalization

The full rules of capitalization for English are complicated. The rules have also changed over time, generally to capitalize fewer terms. It is an important function of English style guides to describe the complete current rules, although there is some variation from one guide to another. Basic conventions of capitalization are provided in the following list.

- Capitalize formal names of tests (Charpy Impact Test, Wenner Four-pin Method).
- Capitalize names of conditions, groups, effects, and variables only when definite and specific. (Group A was the control group; an Age × Weight interaction showed lower weight with age.)
- Capitalize the first word after a comma or colon if, and only if, it begins a complete sentence. For example, “This is a complete sentence, so it is capitalized.” As a counterexample, “no capitalization here.”
- Do not capitalize generic names of tests (Stroop color test). “Stroop” is a name, so it remains capitalized.
- Capitalize nouns before numbers, but not before variables (Trial 2, trial x).

A.3 Hyphenation

A definitive collection of hyphenation rules does not exist. There is a wide range of variation in the use of hyphens to join compound words. No rules govern all combinations, and the possible combinations are virtually limitless, so many of them will not be found in a dictionary. General rules to consider are provided in the following.

- Do not hyphenate common prefixes (posttest; prewar; multiphase; nonsignificant) unless needed for clarity (preexisting).
- Do not hyphenate foreign, letter, numeral terms (a priori hypothesis; Type A behavior) when the meaning is clear without it (least squares solution; heart rate scores).
- Do not hyphenate if a noun comes first (a therapy was client centered; results of t tests).
- Hyphenate adjectival phrases (role-playing technique; high-anxiety group; two-way analysis).
- Hyphenate compound adjectives preceding nouns (client-centered therapy, t-test scores) unless the compound adjective involves a superlative (best written paper).
- Hyphenate if the base is an abbreviation or compounded (pre-UCS, non-college bound).
- Hyphenate if the base word is capitalized or a number (pre-Freudian, post-1960).
- Hyphenate if the words could be misunderstood without a hyphen (re-pair, un-ionized, co-worker).

- If in doubt, consult the Merriam-Webster dictionary online (www.m-w.com). Standards change. For example, “data base” is now “database,” “data sheet” is now “datasheet,” “name plate” is now “nameplate,” and “life-style” is now “lifestyle.”

A.4 Use of Numbers

The following are general guidelines for the use of numbers in text.

- Spell out numbers that are less than 10, not followed by a unit of measurement, and not grouped with numbers over 10 (e.g. one-tailed t-test; eight items; nine pages; three-way interaction; five trials; First Edition; two years).
- Use numerals for numbers 10 and above, or numbers under 10 grouped with numbers 10 and above (e.g. from 6 to 12 hours of sleep; 20th Edition; 20 years).
- Spell out common fractions and common expressions (e.g. one-half; Fourth of July).
- When a number is at the beginning of a sentence, it is always spelled out. If this rule produces a result that looks awkward, it may be better to rewrite the sentence to avoid starting with a number.
- Use numerals for exact statistical measures, scores, sample sizes, and sums (e.g. multiplied by 3, or 5 % of the sample). Another example: “We studied 30 subjects, all two-year-olds, and they spent an average of 1 hr 20 min per day crying.”
- To make plurals out of numbers, add “s” only, with no apostrophe (e.g. the 1950s).
- Use combinations of written and Arabic numerals for back-to-back numbers (e.g. five 4-point scales).
- Use combinations of numerals and written numbers for large sums (e.g. over 3 million people).
- Use a comma in numbers that are $\geq 10,000$ (e.g. 5000 items; 12,500 bags).
- Use a non-breaking space between the degrees sign and the number for temperature references (e.g. 98 °C, 100 °F). Do not use a space between the degrees sign and number when referring to an angle (e.g. 90° angle).
- Use the percent symbol (%) only with numbers (e.g. 5 %), not with written numbers (e.g. five percent).

NOTE Use a non-breaking space before the percent sign.

A.5 Common Misuse of Words in English

The following are common misuses of some English words:

- “affect” is usually a verb that means “to influence,” as in: Will bad grammar affect my grade?;
- “criteria” is a plural noun; “criterion” is the singular form of “criteria;”

EXAMPLE “These criteria are...” and “This criterion is...”

- “data” is a plural noun; “datum” is the singular form of “data;”

EXAMPLE “These data are...” and “This datum is...”

- “effect” is usually a noun that means “result,” as in: cause-and-effect relationship;
- to “insure” means that money is paid by an insurance company if the event that is insured against occurs;

- to “assure” is to convince or promise someone;
- to “ensure” is to do something that will cause a particular result or outcome;
- avoid an isolated use of the word “this,” as in: This is discussed later.

Instead, add a word to specifically indicate what “this” refers to:

- this feature;
- this circuit;
- this problem;
- this approach.

The word “that” properly introduces restrictive sections, while “which” introduces nonrestrictive sections. A more helpful statement of the rule is:

- use “which,” which is always preceded by a comma, when introducing nonessential information;
- use “that,” never preceded by a comma, when introducing essential information.

EXAMPLE 1 *Resistors, which often have pretty color bands, are common elements in electronic circuits.* In this example, “pretty color bands” are irrelevant to the functioning of the circuit or whether resistors are commonly used.

EXAMPLE 2 *A resistor that has smoke rising from it is in danger of failing.* Here, “that has smoke rising from it” identifies specific resistor(s) that are essential to the meaning of the sentence.

- “Its” is a possessive form, meaning to own or possess. Some people want to make a possessive form of it by adding an apostrophe followed by an “s.” However, “it’s” is not possessive; it’s a contraction of “it is” or “it has” (the apostrophe means that letters or characters have been omitted).
- “There” refers to a place (indicates where) or can be used as a pronoun that introduces a clause or sentence; “their” is a plural possessive noun.

EXAMPLE 1 Put your wet gloves over there near the fireplace. (indicates where)

EXAMPLE 2 Their schedules all have Monday, Wednesday, and Friday classes. (possessive)

- The term “and/or” should be avoided and, wherever possible, the statement should be rewritten to clarify the meaning.

EXAMPLE The statement “nuts, or screws, and/or bolts” can be rewritten to read: “nuts, or screws, or a combination thereof.”

A.6 Needless Words

Omit needless words. Many words can be omitted from a first draft without affecting the meaning of sentences. The following italicized words are examples of needless words:

- a) *definitely* proved,
- b) orange *in color*,
- c) *viable* alternative (it is not an alternative if it is nonviable!)
- d) worst-case *maximum possible* error,
- e) because *of the fact that*.

Annex B (normative)

Tables

B.1 Table Designation

Tables should be given a number and a concise title, and should be cited in the text with the word “Table” followed by the number. This numbering shall be independent of the numbering of the sections and figures. A single table shall be designated “Table 1.” See 6.2 for more information.

B.2 Table Headings

The first word in the heading of each column or row shall begin with a capital letter. The units used in a given column shall be unbolded and indicated under the column heading. Variables, symbols, and dimensions are also unbolded.

EXAMPLE 1

Type	Linear Density	Inside Diameter	Outside Diameter
	μ kg/m (lb/ft)	d mm (in.)	D mm (in.)

As an alternative, when all units are the same, a suitable statement (e.g. “Dimensions in millimeters”) may instead be placed above the right-hand corner of the table.

EXAMPLE 2

Dimensions in millimeters			
Type	Length	Inside Diameter	Outside Diameter

Tables with subheadings shall be presented as shown in Example 3.

EXAMPLE 3

Dimension	Type		
A	A	B	C

B.3 Layout

B.3.1 The table title and designation shall be centered horizontally above the table, as shown in the following example.

Table #—Title

B.3.2 Whenever possible, tables should be organized to fit on a single page. When a table must carry over for more than one page, complete column headings should be repeated at the top of successive pages. The table number and title should be repeated at the top of the page as follows:

Table #—Title (Continued)

B.4 Notes to Tables

Notes in tables shall be treated independently from notes integrated in the text (see 6.7.2). They shall be located within the frame of the relevant table and shall precede table footnotes (see the following example). A single note in a table shall be preceded by “NOTE,” placed at the beginning of the first line of the text of the note. When several notes occur in the same table, they shall be designated “NOTE 1,” “NOTE 2,” “NOTE 3,” etc. A separate numbering sequence shall be used for each table.

Notes to tables shall not contain requirements or any information considered indispensable for the use of the document. Any requirements relating to the content of a table shall be given in the text, in a footnote to the table, or as a paragraph within the table. It is not necessary that notes in tables are referenced in the body of the table.

EXAMPLE

Dimensions in millimeters

Type	Length	Inside Diameter	Outside Diameter
A	l_1^a	d_1	
B	l_2	$d_2^{b\ c}$	
A paragraph containing a requirement. NOTE 1 Table note. NOTE 2 Table note.			
a Table footnote. b Table footnote. c Table footnote.			

B.4.1 Footnotes to Tables

Footnotes to tables shall be treated independently from footnotes to the text (see 6.7.5). They shall be located within the frame of the relevant table, and shall appear at the foot of the table (see the example in B.2.4).

Footnotes to tables shall be distinguished by superscript lowercase letters, beginning with “a”. The footnotes shall be referred to in the table by inserting the same superscript lowercase letter.

Footnotes to tables may contain requirements.

Annex C (normative)

Lists

Lists may be introduced by:

- a) a full sentence ending in a period (see Example 1) and completed by the items in the list that are full sentences and end in periods;
- b) a complete grammatical proposition followed by a colon (see Example 2) and completed by the items in the list that begin with a lowercase letter and end in a semicolon or comma (except for the last item); if there are commas within the list;
- c) the first part of a proposition followed by a colon (see Example 3) and completed by the items in the list that begin with a lowercase letter and end in a semicolon or comma (except for the last item).

Each item in a list shall be preceded by a dash or, if necessary for identification, by a lowercase letter followed by a parenthesis. If it is necessary to subdivide further an item in the latter type of list, Arabic numerals followed by a parenthesis shall be used (see Example 1).

EXAMPLE 1 The following basic principles shall apply to the drafting of definitions.

a) The definition shall have the same grammatical form as the term:

- 1) to define a verb, a verbal phrase shall be used;
- 2) to define a singular noun, the singular shall be used

b) The *preferred structure* of a definition is a basic part stating the class to which the concept belongs, and another part enumerating the characteristics that distinguish the concept from other members of the class.

c) The *definition of a quantity* shall be formulated in accordance with the provisions of ISO.

EXAMPLE 2 No switch is required for any of the following categories of apparatus:

- apparatus having a power consumption, not exceeding 50 W, measured 2 min after the application of any of the fault conditions;
- apparatus intended for continuous operation.

EXAMPLE 3 Vibrations in the apparatus may be caused by:

- unbalance in the rotating elements,
- the rolling bearings, and
- aerodynamic loads.

To aid comprehension, it may be preferable not to continue a sentence after the end of the type of list given in Example 3. Key terms or phrases may be composed in distinctive type to call attention to the subject matter dealt with in the various list items (see Example 1). Such terms or phrases shall not be listed in the table of contents; if it is necessary that they be included in the table of contents, they shall not be presented as list items, but as subsection titles.

Annex D (normative)

Figures

D.1 General

Figures may be graphs, charts, diagrams, schematic drawings, or photographs. All figures shall be called out (referred to) in the text of the document. See 6.3 for more information.

D.2 Permissions

Figures should be original and specifically created by the standards drafting group for the API standard.

In the instance that figures are being used in the standard that have been previously published (licensed) in other sources, permission shall be obtained from an individual having the authority and rights to grant API a nonexclusive, perpetual, irrevocable, royalty-free worldwide license to use, copy, publish, and otherwise display the figure.

New licensed figures shall not be published without having a completed permission form submitted. Licensed figures shall not (1) contain any process or product protected by patent rights, or (2) infringe on the rights of third parties or contain any information that is unlawful, libelous, or violative of any person's right to privacy and/or publicity.

D.3 Layout

D.2.1 The figure designation and title shall be centered horizontally below the figure. Textual descriptions should be replaced by item references and explained in a key, or figure footnote, depending on their content. In graphs, labeling on the axis should not be replaced by item references to avoid any confusion between the number representing the item reference and a number representing a value on the axis. Labeling of curves, lines, etc., on the graphs should be replaced by item references.

D.2.2 When a figure is continued over several pages, it may be useful to repeat the figure designation, followed by the title and by “**(Continued)**”, as in the following example:

Figure #—Title (Continued)

Any statements concerning units shall be repeated on all pages after the first, where applicable.

D.2.3 Font type should be Arial and font size should be as follows:

- a) statement containing units—9 pt,
- b) table text—9 pt (header row should be in bold font),
- c) key (heading should be in bold font)—9 pt,
- d) notes and paragraphs containing requirements—9 pt,
- e) subtitles—10 pt and bold,
- f) footnotes to the figure—9 pt (superscript—8 pt).

D.4 Notes to Figures

Notes to figures shall be treated independently from notes in the text (see 6.7.2). They shall be located immediately above the figure title and shall precede figure footnotes.

A single note in a figure shall be preceded by “NOTE” and placed at the beginning of the first line of the text of the note. When several notes occur in the same figure, they shall be designated “NOTE 1”, “NOTE 2”, “NOTE 3”, etc. A separate numbering sequence shall be used for each figure (see Table 1).

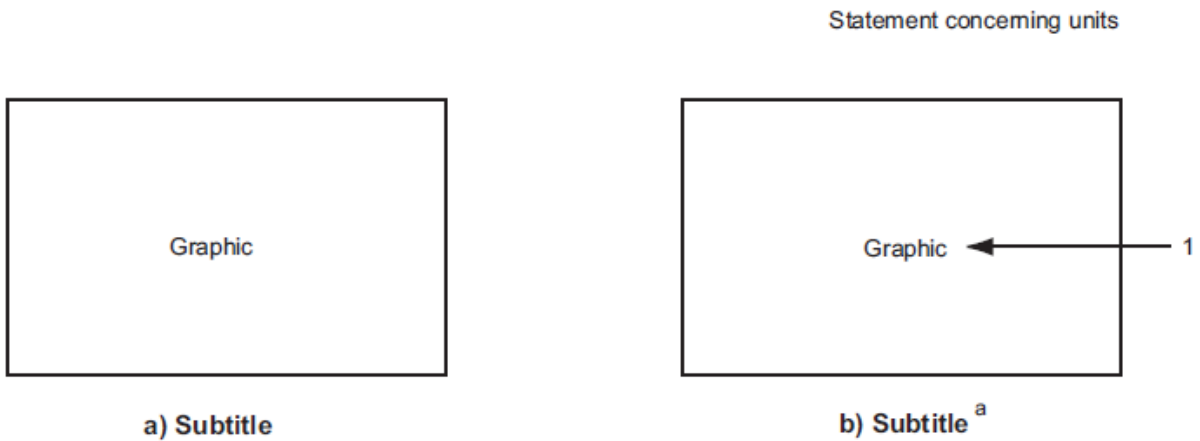
Notes to figures shall not contain requirements or any information considered indispensable for the use of the document. Any requirements relating to the content of a figure shall be included in the text, in a footnote to the figure, or as a paragraph between the figure and its title. It is not necessary to reference notes to figures.

D.5 Footnotes to Figures

Footnotes to figures shall be treated independently from footnotes to the text (see 6.7.5). They shall be located immediately above the figure title. Footnotes to figures shall be distinguished by superscript lowercase letters, beginning with “a”. The footnotes shall be referred to in the figure by inserting the same superscript lowercase letter (see Figure 1).

Footnotes to figures may contain requirements.

EXAMPLE



Key

1 example (lowercase)

2 example

Paragraph containing requirement(s).

NOTE

^a Footnote to the figure (period at the end).

heading	heading
table text	table text
table text	table text

Figure #—Title

Annex E (normative)

Drafting Terms and Definitions

E.1 General

A definitions section, typically Section 3 (unless the document does not contain references), is provided for those not familiar with the terminology in question. Definitions should appear in alphabetical order and the term defined should be written out completely. Each term should be numbered as a subsection of the definitions section.

Each definition should be a brief, self-contained description of the term in question, and shall not contain any other information, such as requirements and elaborative text. The term should not be used in its own definition.

The form of a definition shall be such that it can replace the term in context. Additional information shall be given only in the form of examples or notes (see E.4.3).

E.2 Choice of Concepts to be Defined

Any term that is not self-explanatory or commonly known and that can be differently interpreted in different contexts shall be clarified by defining the relevant concept.

Common dictionary or current technical terms shall be included only if they are used with a specific meaning in the relevant context.

Trade names (brand names) and archaic and colloquial terms shall be avoided.

Obsolete terms may be included after the preferred term, but their nature shall be indicated (see E.4.2).

E.3 Avoidance of Duplications and Contradictions

Before a term and a definition are established for a concept, it should be determined that no other term and definition for that concept exist in another recognized industry standard.

If the concept is used in several documents, it should be defined in the most general of those documents, or in an independent terminology document. The other documents should then refer to this document, without repeating the definition of the concept.

E.4 Presentation

E.4.1 Layout

The preferred term (set in bold type) shall be placed on a new line, after its reference number, starting with a lowercase letter (except for any capital letters required by the normal written form in running text). The definition shall be placed on a new line, as shown below.

3.2

administrative controls

Procedures intended to ensure that personnel actions do not compromise the overpressure protection of the equipment.

E.4.2 Synonyms

The preferred term (set in bold type) shall be followed by the nonpreferred term on a new line (set in normal type), as shown below.

3.14

burning velocity

flame velocity

Speed at which a flame front travels into an unburned combustible mixture.

Obsolete or superseded terms (set in normal type) shall each be placed on a new line, after the preferred term (set in bold type), and shall be followed by an indication of their status in parentheses.

5.38

radix

base (obsolete)

Positive integer by which the weight of any digit place is multiplied to obtain the weight of the digit place with the next higher weight.

E.4.3 Examples and Notes

Examples of term usage and notes concerning entries shall be presented as shown.

EXAMPLE 1 inserted text

3.1.122

riser system

Comprises the riser and all integrated components including subsea and surface equipment.

NOTE In tubing hanger mode, the system includes all components from tubing hanger to the top drive; in tree mode, the system includes all components from the wellhead to the top drive.

EXAMPLE 2 inserted text

3.1.86

lower marine riser package

LMRP

Upper section of a two-section subsea BOP stack consisting of the hydraulic connector, annular BOP, ball/flex joint, riser adapter, jumper hoses for the choke, kill and auxiliary lines and subsea control modules.

NOTE The LMRP interfaces with the BOP stack.

E.5 Acronyms, Abbreviations, and Symbols

E.5.1 General

E.5.1.1 This subsection applies to abbreviations and symbols only. If the document makes extensive use of abbreviations or symbols, subsection(s) within the definitions section may be provided. If acronyms, abbreviations, and symbols are included in the definitions section, the section title should be "Terms, Definitions, Abbreviations, and Symbols." Subsections 3.1, 3.2, and 3.3 would be titled "Terms and Definitions," "Abbreviations," and "Symbols" respectively.

E.5.1.2 The abbreviations and symbols subsection is not meant to take the place of the definitions section. If a definition is needed, the term should be added to the definitions section, as well. Abbreviations followed by the full term only should be listed in alphanumeric order.

E.5.1.3 Technical abbreviations should be used to save time and space, but only if their meaning is unquestionably clear to the reader. The first use should be spelled out, followed by the abbreviation or acronym itself in parentheses. The abbreviation does not need to be spelled out in the definitions section [see E.4.3, Example 2, where BOP (blowout preventer) is not spelled out], unless it is only referenced in that section (e.g. if BOP is only referenced in this definition and not elsewhere in the document, it would be spelled out after first use in the definitions section) (see Example below). SI and USC units are not considered abbreviations and should not be included in a list of abbreviations and acronyms.

EXAMPLE

3.1.86

lower marine riser package

LMRP

Upper section of a two-section subsea blowout preventer (BOP) stack consisting of the hydraulic connector, annular BOP, ball/flex joint, riser adapter, jumper hoses for the choke, kill and auxiliary lines and subsea control modules.

The LMRP interfaces with the BOP stack.

E.5.2 Layout

The acronym or abbreviation shall be placed on the left-hand side, and the definition shall be on the same line, with adequate spacing between the acronym/abbreviation and the definition. The definition shall be listed in lowercase letters, except for any capital letters required by the normal written form in running text.

EXAMPLE

3.2 Acronyms and Abbreviations

CFR	<i>Code of Federal Regulations</i>
LFL	lower flammable limit
MAWP	maximum allowable working pressure
NEC	National Electric Code
TLP	tension leg platform

Annex F **(normative)**

Use of Bullets to Indicate Purchaser Decision

A bullet (•) in the margin at the beginning of a subsection or paragraph can be used to indicate that either a decision is required or further information is to be provided by the purchaser. This information should be indicated on the datasheet(s), otherwise it should be stated in the quotation request or in the order.

Each bulleted item in the text should have a provision in a datasheet for the purchaser's decision. The datasheet item does not require a bullet in the text. Items on the datasheet that require the purchaser to read the text in order to make a decision or to allow him to find additional technical information on the item should include a reference to the applicable numbered paragraph.

Bullets appear when the wording "when specified," "if specified," or "the purchaser will specify" appears in the paragraph. A bullet is not required for "unless otherwise specified" or when a decision has been previously made and the phrase "when XXX has been specified" is used.

In order to indicate to the user the special meaning of the margin bullet, the following text shall be included in the Introduction of all documents using bullets:

"A bullet (•) at the beginning of a subsection or paragraph indicates that either a decision is required or further information is to be provided by the purchaser."

Optionally, the following phrase can be added for the purpose of relating bulleted provisions to datasheets or orders: "This information should be indicated on the datasheet(s), otherwise it should be stated in the quotation request or in the order."

Bibliography

- [1] *API Procedures for Standards Development*
- [2] *API Manual of Petroleum Measurement Standards (MPMS) Chapter 15, Guidelines for the Use of the International System of Units (SI) in the Petroleum and Allied Industries*
- [3] *ISO/IEC Directives, Part 2*¹, *Rules for the structure and drafting of International Standards*
- [4] *ISO/IEC Guide 51, Safety aspects—Guidelines for their inclusion in standards*

¹ International Organization for Standardization, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, www.iso.org.