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STS: Standards Tag Suite

Abstract: The Standards Tag Suite (STS) provides a common XML format that developers, publishers, and distributors of standards, including national standards bodies, regional and international standards bodies, and standards development organizations, can use to publish and exchange full-text content and metadata of standards. STS is based on ANSI/NISO Z39.96 (JATS). Structures are provided to encode both the normative and non-normative content of: standards, adoptions of standards, and standards-like documents that are produced by standards organizations.

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Foreword

(This Foreword is not part of ANSI/NISO Z39.102-2017, STS: Standards Tag Suite (Version 1.0). It is included for information only.)

About This Standard

This is the first edition of this standard. In addition to the element and attribute descriptions, two standards tag sets have been provided as part of NISO STS.

This NISO STS standard is based on the International Organization for Standardization (ISO) Standard Tag Set (ISO STS, version 1.1). NISO STS 1.0 is a fully backwards-compatible superset of ISO STS 1.1. Therefore, any document that is valid to ISO STS 1.1 will be valid to NISO STS 1.0, by changing only the document type declaration (or other schema identification mechanism) and the attribute on the top level element (`<standard>`).

ISO STS was based on version 0.4 (Publishing) of the Journal Article Tag Suite (JATS), now known in its updated form as ANSI/NISO Z39.96. The current NISO STS standard is based on ANSI/NISO Z39.96-2015, which is based on the National Library of Medicine (NLM) Journal Archiving and Interchange Tag Suite, created by The National Center for Biotechnology Information (NCBI): <https://www.ncbi.nlm.nih.gov> of the National Library of Medicine (NLM): <https://www.nlm.nih.gov>. The NLM Tag Suite was developed as an update of a Document Type Definition (DTD) used by the NCBI/NLM PubMed Central project to archive life science journals from a variety of sources. Input and support from Harvard University Libraries, as well as support from The Andrew W. Mellon Foundation and collaboration with Inera, Inc. and Mulberry Technologies, Inc., allowed the scope of that project to be broadened and resulted in the NLM Journal Archiving and Interchange Tag Suite.

Work on the NISO STS models and documentation, in support of NISO and the NISO STS Committee, was performed by Mulberry Technologies, Inc. Mulberry Technologies' work was supported by ASME (American Society of Mechanical Engineers) and ASTM International.

STS 1.0 and Continuous Maintenance

As JATS 1.0 was released by ANSI/NISO in August 2012 and immediately put into continuous maintenance mode, so is the intent with NISO STS. Information, including action minutes from the meetings that have led to the release of STS version 1.0, may be found at: <http://www.niso.org/workrooms/sts/>.

Instructions for Submittal of Proposed Changes to ANSI/NISO Z39.102-2017 Under Continuous Maintenance

If a provision of the standard is proposed for addition, deletion, or modification, the text of the provision must be submitted in writing. Comments or proposals for revision to any part of the standard may be submitted to NISO at any time. When possible, such proposals should be accompanied by examples. Submissions must be accompanied by the submitter's name, affiliation, telephone number, and email address. Comments may be submitted to NISO online at: <http://www.niso.org/workrooms/sts/>. The STS Standing Committee will review suggestions at least once a year.

Trademarks, Service Marks

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Acknowledgments

During the course of the NISO STS Committee work, a few committee members departed for various reasons. We would like to acknowledge appreciation for their contributions, and for contributions by all the NISO STS Committee Members. Original members who were no longer with the Steering or Technical Committees at the time of the vote include Matt Brown, BSI Standards Limited; Keith Doubleday, IHS; Becky Fadik, SAE International; and Karen Reczek, National Institute of Standards & Technology (NIST). The STS Working Group particularly

appreciates the helpful contributions of the late Linda Guard of U.S. Pharmacopeial Convention, who was a member of the group for several months at the start of the work. NISO and the working group are grateful to ISO for its support of this project. Special thanks are due to Trevor Vyze, David Ratcliffe, Laurent Galichet, and Serge Juillerat. The working group thanks Todd Carpenter, Nettie Lagace, and the staff of NISO for their help and support in this project.

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At the time NISO approved this standard, the following organizations were members of the NISO voting pool that approved this standard.

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NISO STS: Standards Tag Suite

1 Purpose

The purpose of the NISO Standards Tag Suite (NISO STS) standard is to define a suite of XML elements and attributes that describes the full-text content and metadata of standards—including co-produced standards and standards bodies' adoptions of existing standards—with the intent of providing a common format in which standards organizations, publishers, disseminators, archives, and any lawful user can publish and exchange standards content.

The intent of the Tag Suite is to preserve the intellectual content of standards independent of the form in which that content was originally delivered. The Tag Suite enables the capture of structural and semantic components of material without modeling any particular sequence or textual format.

This standard includes two implementations of the suite, called “Tag Sets”—the Interchange Tag Set and the Extended Tag Set. These tag sets are built from the elements and attributes defined in the Suite and are intended to provide models for standards publishing and interoperability.

2 Background

At the end of 2011, the International Organization for Standardization (ISO) revamped its publishing systems and together with Mulberry Technologies, Inc., developed a derivative of JATS to be used for ISO standards publishing: the ISO STS (ISO Standard Tag Set). This DTD has been in full production since, with few changes. The DTD and documentation were made openly available at: <http://www.iso.org/schema/isosts/> and their open use was and is encouraged.

By 2015, several XML models were in use at different organizations to tag standards and standards-type information, including multiple models based on JATS (ANSI/NISO Z39.96-2012, JATS: Journal Article Tag Suite) and a number of other XML models that had been independently developed. This proliferation of non-standardized XML models for Standards made interoperability between organizations difficult, increased development costs, and required custom tools.

It was agreed that it would be beneficial to all stakeholders to move ISO STS toward standardization and create an official relationship with JATS. The two standards would then remain coupled and an XML solution for standards could be more easily adopted. It was considered that this initiative would result in greater interoperability and create a foundation for standards utility development, which in turn would aid stakeholders and end users and improve the overall future of standards publishing.

The NISO STS work item was approved by the NISO Content and Collections Management Topic Committee on June 26, 2015 and by NISO Voting Members on July 31, 2015.

3 Scope

The Standards Tag Suite defines elements and attributes that describe both the metadata and the full content of published normative standards documents. The Suite, while not specifically designed to describe handbooks, guidelines, other non-normative materials, or any particular publishing formats, may be usable for XML publication of some of these document types if an individual standards organization reviews their structures and determines that they can properly be tagged with STS. While some structures in these non-standards documents may be similar to structures in standards (and journal articles, since STS is based on JATS), other structures may be distinctly different and may not be handled by existing elements and attributes defined in the Tag Suite.

The Steering Committee made some early scope decisions:

- Make all reasonable efforts to keep NISO STS 1.0 backwards compatible with ISO STS version 1.1
- Version 1.0/Phase I of the Tag Suite will consider only normative documents (use of NISO STS for non-normative materials is not precluded, but work was not done to support non-normative documents)
- Version 1.0/Phase I of the Tag Suite will only consider current content/standards, not historical or back-content standards

- Work will be focused on the requirements of published documents (it will not focus on the needs of XML authoring or production, should they differ from final publication requirements)
- Design will not consider formatting, branding, or publisher-specific look and feel
- Supporting non-normative material for the Tag Suite will be available in DTD, XSD, and RelaxNG formats as well as Tag Library documentation (as has been the case for JATS and BITS)
- NISO STS will be based on the JATS 1.1 Publishing Model
- Separate tag sets will be available with MathML 2.0 and MathML 3.0 (because MathML 3.0 is not fully backwards compatible with MathML 2.0)
- There will be an XHTML-table-only tag set (the Interchange Tag Set) and an XHTML-and-CALS-table tag set (the Extended Tag Set)

The Tag Suite is the complete set of elements and attributes described in the standard. Along with these descriptions, the standard includes two discrete standards models or Tag Sets:

- The Interchange Tag Set (in MathML 2.0 and MathML 3.0 variants)
- The Extended Tag Set (in MathML 2.0 and MathML 3.0 variants)

The Tag Suite has been designed to be extensible. Any of the tag sets may be extended or restricted to meet the needs of a given project. A new tag set that is a subset of one of the tag sets described in the standard should be considered “conforming” to the standard. By definition, documents valid to such a conforming subset would also be valid according to the STS model on which the subset is based.

New tag sets may be built from the elements and attributes in the Tag Suite. Tag sets that add structures (elements and/or attributes) to those defined in the standard (leading to documents not valid according to one of the models in the standard) should be called “based on STS.” Such tag sets are not considered “conforming” to the standard.

Similarly, tag sets that extend or loosen the models described in the standard, such that documents valid to these new tag sets may not be valid according to one of the models in the standard, should be called “based on STS.” Such tag sets are also not considered “conforming” to the standard.

There are a number of items that have not been included in this standard but are included in the non-normative supporting information:

1. Schemas—The non-normative schemas (available in DTD, W3C Schema, and RELAX NG syntax) that represent the two Tag Sets in both MathML variants can be found on the STS hosted site: <http://www.niso-sts.org>
2. Detailed Usage Information—A non-normative Tag Library will be produced and maintained to support the two NISO STS Tag Sets. The Tag Library will describe all of the structures in the Tag Suite. The structures that are available only in the Extended Tag Set will be identified each place that they are mentioned. The Tag Library can be found at: <http://www.niso-sts.org>
3. Non-normative XML-tagged examples are included in the Tag Library just described.
4. Details concerning MathML, the OASIS XML Exchange table model (based on the CALS table elements), and TBX are described in other standards. Specific instructions for using these elements should be retrieved from the original standards referenced in Section 5, Normative References. The default table model for both the NISO STS Tag Sets is based on, and designed to be converted easily to, the XHTML 1.1 table model. Details for the elements and attributes in the XHTML-inspired NISO STS/NISO JATS tables are provided in the STS Tag Library.

3.1 The Interchange Tag Set

The STS Interchange Tag Set provides a format in which standards organizations and publishers can deliver content to a range of other standards bodies and disseminators and into which distributors and licensees/users can more easily translate content from many standards organizations and publishers.

3.2 The Extended Tag Set

The STS Extended Tag Set builds slightly on the Interchange Tag Set, allowing both the XHTML and CALS table models to account for legacy publishing of intensive table information.

4 Application Note: Namespace for STS Elements

There is no default namespace required for the elements and attributes in the Standards Tag Suite. This has been done for two reasons:

1. The majority of the publishing consumers of STS are not using namespaces except for included vocabularies such as MathML; and
2. Introducing a default namespace would not be backwards compatible with ISO STS and would break the majority of existing ISO STS applications.

Although a default namespace is not required for STS, some users may wish to namespace STS elements and attributes in their application of the standard.

If a namespace is to be applied, the namespace URI should be "http://www.niso-sts.org", and the namespace prefix should be "niso-sts" or similar.

Using a namespace with STS will require a certain level of namespace and general XML sophistication. If it is done, it should be done in a manner that best facilitates interchange. The following items should be considered:

- The MathML namespace (and the OASIS Exchange table model namespace if appropriate) should be retained.
- When making HTML from STS, the STS table elements will need to be either stripped of the STS namespace or given their own HTML namespace. STS does not incorporate the XHTML 1.1 table model; it uses elements, attributes, and models inspired by and based on the XHTML 1.1 table model.

5 Normative References

This standard relies on the following documents. When cited in the text of this standard, a standard may be referenced solely by its number. Where no date is supplied, the most current version of the standard should be used.

OASIS TR 9901:1999, XML Exchange Table Model Document Type Definition, 29 September 1999.
<http://www.oasis-open.org/specs/tm9901.htm>

W3C. Extensible Markup Language (XML) 1.0, 10 February 1998.
<https://www.w3.org/TR/1998/REC-xml-19980210>

W3C. Mathematical Markup Language (MathML) Version 2.0 (Second Edition), 21 October 2003.
<https://www.w3.org/TR/2003/REC-MathML2-20031021/>

W3C. Mathematical Markup Language (MathML) Version 3.0 (Second Edition), 10 April 2014.
<https://www.w3.org/TR/2014/REC-MathML3-20140410/>

6 References

This standard references the following documents. When cited in the text of this standard, the referenced standard may be referred to by its number only or an abbreviated title. Where no date is supplied, the most current version of the standard should be used.

ISO 30042, Systems to manage terminology, knowledge and content -- TermBase eXchange (TBX).
<https://www.iso.org/standard/45797.html>

NISO RP-22-2015, Access License and Indicators, 5 January 2015.
http://www.niso.org/apps/group_public/download.php/14226/rp-22-2015_ALI.pdf

W3C. Namespaces in XML 1.0 (Third Edition). <https://www.w3.org/TR/REC-xml-names/>

W3C. XHTML Modularization 1.1, Section 5.6.2. Tables Modules, 13 February 2006.

<https://www.w3.org/TR/2006/PR-xhtml-modularization-20060213/>

W3C. XML Linking Language (XLink) Version 1.0, 27 June 2001. <https://www.w3.org/TR/xlink/>

W3C. XML Schema Part 1: Structures Second Edition, 28 October 2004. <https://www.w3.org/TR/xmlschema-1/>

7 Definitions

Term/Acronym	Definition
ANSI	American National Standards Institute. ANSI is a private nonprofit organization that oversees the development of voluntary consensus standards in the U.S.
ASCII	ASCII is a character-encoding scheme based on the English alphabet. It defines the encoding for 128 characters including A-Z, a-z, 0-9, some symbols, and some control characters. It is sometimes used to refer to “plain text,” i.e., text without special characters or equations.
attribute (an XML term)	An attribute is a name-value pair associated with an XML element that modifies certain features of the element. Attributes hold facts about an element, such as which type of list (e.g., numbered, bulleted, or plain) is being requested when using the List <list> element. Each attribute has both a name (e.g., @list-type) and a value (e.g., “bullet”).
container element (an XML term)	An XML term of art that indicates that one element has only other elements inside it, in a parent/child or ancestor/descendent relationship.
Crossref	Crossref is an independent membership association appointed as an official DOI® Registration Agency for scholarly and professional publications.
document type (an XML term)	A class of documents, for example, “standards,” that can be described with a single XML model.
DOI®	Digital Object Identifier. A DOI® is a character string used to identify an electronic document or other object persistently (over changes in time, location, and ownership).
DTD (an XML term)	Document Type Definition. A DTD is a set of markup declarations that define a type of document in XML. DTDs are one type of XML schema language, see also XSD schema and RELAX NG schema.
element (an XML term)	Elements are nouns, such as “section” and “non normative example,” that represent components of standards documents, the standards themselves, and accompanying metadata.
element content (an XML term)	The content of an element that contains only other elements. For example, the element for List (<list>) is a container element for the elements that make up the structure of a list, such as the list title (<title>) and list items (<list-item>). The List element contains no text directly inside it, all list text is inside the contained elements.
emoticon	An icon or small graphic used to depict emotion (for example, a “smiley face” to indicate happiness or laughter).
ftp	File Transfer Protocol. An Internet Engineering Task Force standard (RFC 959) that defines a protocol for transferring files between two hosts over a network.
glyph	A graphical element used to represent a character.
JATS	ANSI/NISO Z39.96 Journal Article Tag Suite.
LaTeX	A document preparation system for the TeX typesetting program.
MathML	A specification of the World Wide Web Consortium (W3C) for describing mathematical notation and capturing both its structure and content in XML.
metadata	Metadata are data about data, such as bibliographic information. Metadata elements that describe a standard (such as the date on which the standard was approved) are distinct from elements that contain the textual narrative and graphical content of the standard.

Term/Acronym	Definition
milestone	A milestone is a marker for the beginning or end of a non-hierarchically nested object, that is, a textual component that cannot be expressed in the normal, non-overlapping, tree structure of an XML document.
mixed content (an XML term)	The content of an element that may contain embedded elements as well as text (letters, numbers, and special characters). For example, a mixed content element may contain the highlighting elements such as bold and italic interspersed in the text.
pixel	In digital imaging, a pixel is a single point in a bitmap.
RELAX NG schema (RNG)	A schema language for XML.
Schematron	A rule-based validation language used for making and testing assertions about an XML instance.
tag set	A model for a particular document type, built from the XML elements and attributes defined in the Tag Suite. Many tag sets can be made from the elements and attributes of the full Tag Suite.
Tag Suite	All of the XML elements and attributes defined as part of this NISO standard. From this Suite of components, individual tag sets for a particular document type may be constructed.
TeX	A typesetting system popular for setting mathematics and physical sciences content.
Unicode®	Used to represent both the Unicode® Standard, which specifies the representation of text in modern software products and standards, and The Unicode Consortium, which is the organization responsible for developing and maintaining the Unicode® Standard.
Unicode Private Use Area	Blocks of characters that are officially not defined by the Unicode standard but are reserved for an organization's private use. Users must understand that characters within the private use area must be defined within a system and that they have no meaning outside of that system.
URI	Uniform Resource Identifier. An identifier (such as a URL) that may be used as a live link, typically naming a website, such as: https://www.mulberrytech.com
wrapper element (an XML term)	An element that contains a series of elements that make up a whole unit; it acts as a single wrapper around all the elements that are part of a single logical component.
XML (Extensible Markup Language)	A specification of the World Wide Web Consortium (W3C) for creating custom markup languages that enable information systems to share structured information.
XML term	A term defined in the XML specification or commonly used by the XML community in the context of XML applications.
XSD schema	XML Schema Definition. A recommendation of the World Wide Web Consortium (W3C) that defines a language for creating XML Schemas: https://www.w3.org/TR/xmlschema-1

8 ANSI/NISO Z39.102-2017 STS (Version 1.0)

8.1 Elements

This standard defines the elements for the two specific NISO STS Tag Sets. By default, all elements are included in both Tag Sets; the few elements that are used only in the Extended Tag Set are so identified.

Each element entry contains:

The XML Name (tag or generic identifier) of the element that is used in tagging XML files, e.g., <comm-ref>.

- The informational name of the element, e.g., “Committee Reference”.
- A description of the element, e.g., for the element <comm-ref>: “Identifies the Technical Committee, Subcommittee, and optionally Working Group responsible for the standard, for example, “ISO/TC 27/SC 4””.

- A list of all of the attributes that may be applied to the element, with first the attribute name and then the attribute's informal expanded name. In this documentation, attribute names will be prefixed with an at sign (“@”), for example:
 - @content-type Type of Content
 - @id Document Internal Identifier
 - @specific-use Specific Use
- An English-language description of the content model of the element in this Tag Set. Each element is identified by its <tag>s and Element Names. The relationships among elements or groups of elements are specified, for example, “Any combination of” if the structures may occur zero or more times in any sequence, or “The following, in order” if the structures must appear in the specified sequence. For example, the model for the element Standards Document (<standard>):
 - The following in order:
 - <front> Front Matter
 - <body> Body of the Standards Document
 - <back> Back Matter, zero or more

8.1.1 <abbrev> Abbreviation or Acronym

Abbreviation, acronym, or emoticon used in the text of a document, possibly including an expansion of the acronym.

Attributes:

@alt **Alternative Text**
 @content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xlink:actuate **Actuating the XLink Link**
 @xlink:href **Href (XLink Linking Mechanism)**
 @xlink:role **XLink Linking Role**
 @xlink:show **Showing the XLink Link**
 @xlink:title **Title of the XLink Link**
 @xlink:type **Type of XLink Link**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xmlns:xlink **XLink Namespace Declaration**

Content model:

Any combination of:

- Text, numbers, or special characters
- <def> **Definition**

8.1.2 <abstract> Abstract

Summarized description of the content of a standards document.

Attributes:

@abstract-type **Abstract Type**
 @id **Document Internal Identifier**
 @originator **Originator**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

The following, in order:

- <editing-instruction> **Editing Instruction**, zero or more
- <label> **Label of a Figure, Reference, Etc.**, zero or one
- <title> **Title**, zero or one

- Any combination of:
 - <p> **Paragraph**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**
- Any combination of:
 - Section Elements
 - <sec> **Section**
 - <term-sec> **Terms and Definitions Container/Section**

8.1.3 <access-date> Access Date For Cited Work (deprecated)

The date on which the work which is cited was examined.

This element comes from an older version of JATS and is now deprecated in JATS; therefore, NISO STS users should avoid using it. Use the <date-in-citation> element to record the access date for a citation.

Attributes:

@calendar **calendar**
 @content-type **Type of Content**
 @id **Document Internal Identifier**
 @iso-8601-date **ISO-8601 Formatted Date**
 @specific-use **Specific Use**
 @xml:base **Base**

Content model:

Text, numbers, or special characters, zero or more

8.1.4 <accrediting-organization> Accrediting Organization

Records the fact that the SDO producing this standard has been accredited, and by which accrediting agency. The content of this element is typically a phrase, which may or may not be displayed as part of the standards document, such as: “Accredited by the American National Standards Institute”.

Attributes:

@accredit-acronym **Accreditation Acronym**
 @id **Document Internal Identifier**
 @xml:base **Base**

Content model:

Text, numbers, or special characters, zero or more

8.1.5 <ack> Acknowledgments

Textual material that names the parties which the standards organization wishes to thank or recognize for their assistance in, for example, producing the standard, funding the standard or tests for it, inspiring the standard, or assisting in the research on which the standard is based or tested.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

The following, in order:

- <label> **Label of a Figure, Reference, Etc.**, zero or one
- <title> **Title**, zero or one
- Any combination of:

- Paragraph-level Display Elements
 - `<address>` **Address/Contact Information**
 - `<array>` **Array (Simple Tabular Array)**
 - `<boxed-text>` **Boxed Text**
 - `<chem-struct-wrap>` **Chemical Structure Wrapper**
 - `<code>` **Code Text**
 - `<fig>` **Figure**
 - `<fig-group>` **Figure Group**
 - `<graphic>` **Graphic**
 - `<media>` **Media Object**
 - `<preformat>` **Preformatted Text**
 - `<supplementary-material>` **Supplementary Material**
 - `<table-wrap>` **Table Wrapper**
 - `<table-wrap-group>` **Table Wrapper Group**
- `<alternatives>` **Alternatives For Processing**
- Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**
 - `<normative-note>` **Normative-Note**
 - `<notes-group>` **Notes Group**
- `<disp-formula>` **Formula, Display**
- `<disp-formula-group>` **Formula, Display Group**
- `<editing-instruction>` **Editing Instruction**
- Lists
 - `<def-list>` **Definition List**
 - `<list>` **List**
- Math Elements
 - `<mml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
- `<p>` **Paragraph**
- Related Material Elements
 - `<related-article>` **Related Journal Article Information**
 - `<related-object>` **Related Non-standards Object Information**
- `<disp-quote>` **Quote, Displayed**
- `<speech>` **Speech**
- `<statement>` **Statement, Formal**
- `<verse-group>` **Verse Form For Poetry**
- `<fn-group>` **Footnote Group**
- `<glossary>` **Glossary Elements**
- `<ref-list>` **Reference List (Bibliographic Reference List)**
- Optionally, the following sequence (in order):
 - One or more of any of:
 - Section Elements
 - `<sec>` **Section**
 - `<term-sec>` **Terms and Definitions Container/Section**
 - Any combination of:
 - `<fn-group>` **Footnote Group**
 - `<glossary>` **Glossary Elements**
 - `<ref-list>` **Reference List (Bibliographic Reference List)**
 - Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**
 - `<normative-note>` **Normative-Note**
 - `<notes-group>` **Notes Group**

8.1.6 `<addr-line>` Address Line

One physical or logical line of an address.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <alternatives> **Alternatives For Processing**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <chem-struct> **Chemical Structure (Display)**
- <inline-formula> **Formula, Inline**
- Other Inline Elements
 - <abbrev> **Abbreviation or Acronym**
 - <index-term> **Index Term**
 - <index-term-range-end> **Index Term Range End**
 - <milestone-end> **Milestone End**
 - <milestone-start> **Milestone Start**
 - <named-content> **Named Special (Subject) Content**
 - <styled-content> **Styled Special (Subject) Content**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**
- <city> **City (in an address)**
- <country> **Country (in an address)**
- <fax> **Fax Number (in address)**
- <institution> **Institution Name**
- <institution-wrap> **Institution Wrapper**
- <phone> **Phone Number: in an Address**
- <postal-code> **Postal Code: in an Address**
- <state> **State or Province (in an address)**

8.1.7 <address> Address/Contact Information

Container element for contact information such as a postal address for a person or organization.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @originator **Originator**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Address Elements
 - <addr-line> **Address Line**
 - <city> **City (in an address)**
 - <country> **Country (in an address)**
 - <fax> **Fax Number (in address)**
 - <institution> **Institution Name**
 - <institution-wrap> **Institution Wrapper**
 - <phone> **Phone Number: in an Address**
 - <postal-code> **Postal Code: in an Address**
 - <state> **State or Province (in an address)**
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**

8.1.8 <adoption> Standard Adoption Document

A wrapper for a document-level element that may contain its own metadata, front matter, and back matter, and that will contain, in addition, one or more complete standards (<standard>) or other adoptions. When a standard is adopted, sometimes the adopting organization wraps their own metadata, front matter, and back matter around a standard, producing a combined, nested document.

Attributes:

@dtd-version **Version of the Tag Set (DTD)**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xmlns:ali **NISO ALI Namespace (NISO Access License and Indicators)**
 @xmlns:mml **MathML Namespace Declaration**
 @xmlns:oasis **OASIS Namespace Declaration**
 @xmlns:tbx **TBX Namespace Declaration**
 @xmlns:xi **XInclude Namespace Declaration**
 @xmlns:xlink **XLink Namespace Declaration**
 @xmlns:xsi **XML Schema Namespace Declaration**

Content model:

The following, in order:

- <adoption-front> **Front Matter, Adoption**
- Any one of:
 - The following, in order:
 - <back> **Back Matter**
 - One or more of any of:
 - <standard> **Standards Document**
 - <adoption> **Standard Adoption Document**
 - <std-xref> **Cross-Reference to a Standard**
 - <xi:include> **XInclude**
 - The following, in order:
 - One or more of any of:
 - <standard> **Standards Document**
 - <adoption> **Standard Adoption Document**
 - <std-xref> **Cross-Reference to a Standard**
 - <xi:include> **XInclude**
 - <back> **Back Matter**, zero or one

8.1.9 <adoption-front> Front Matter, Adoption

When a standard is adopted, sometimes the adopting organization wraps their own metadata, front matter, and back matter around a standard, producing a combined, nested document. The <adoption-front> element contains the metadata, any beginning narrative material, and possible back matter that describes the adopting standard (<adoption>).

Content model:

The following, in order:

- <std-doc-meta> **Standards Document Metadata**, zero or one
- <std-meta> **NISO STS Standard Metadata**, zero or one
- Any combination of:
 - <ack> **Acknowledgments**
 - <notes> **Notes Section**
 - <toc> **Table of Contents**
 - <toc-group> **Table of Contents Group**
 - <sec> **Section**
 - <xi:include> **XInclude**

8.1.10 <aff> Affiliation

Name of an institution or organization (for example, university, corporation) with which a contributor is affiliated.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @rid **Reference to an Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- Address Elements
 - <addr-line> **Address Line**
 - <city> **City (in an address)**
 - <country> **Country (in an address)**
 - <fax> **Fax Number (in address)**
 - <institution> **Institution Name**
 - <institution-wrap> **Institution Wrapper**
 - <phone> **Phone Number: in an Address**
 - <postal-code> **Postal Code: in an Address**
 - <state> **State or Province (in an address)**
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- <inline-supplementary-material> **Inline Supplementary Material**
- Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
- <break> **Line Break**
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**

- `<sans-serif>` **Sans Serif**
- `<sc>` **Small Caps**
- `<strike>` **Strike Through**
- `<underline>` **Underline**
- `<label>` **Label of a Figure, Reference, Etc.**
- **Inline Display Elements**
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- `<fn>` **Footnote**
- `<target>` **Target of an Internal Link**
- `<tbx:entailedTerm>` **Entailed Term**
- `<xref>` **X(cross) Reference**
- **Baseline Change Elements**
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**

8.1.11 `<aff-alternatives>` Affiliation Alternatives

Container element to hold two or more representations of a single affiliation (for example, the name of a university in two or more languages such as both German and English).

Attributes:

`@id` **Document Internal Identifier**
`@xml:base` **Base**

Content model:

`<aff>` **Affiliation**, one or more

8.1.12 `<ali:free_to_read>` Free to Read (NISO ALI)

A flag indicating that the document content can be read or viewed at its current location by any user without payment or authentication; it is free to be read.

Attributes:

`@content-type` **Type of Content**
`@end_date` **NISO ALI End Date**
`@id` **Document Internal Identifier**
`@specific-use` **Specific Use**
`@start_date` **Start Date**
`@xml:base` **Base**
`@xmlns:ali` **NISO ALI Namespace (NISO Access License and Indicators)**

Content model:

This is an EMPTY element

8.1.13 `<ali:license_ref>` License Reference (NISO ALI)

A URI that is a pointer to a public license or waiver. If the element has content, it must be a URI.

Attributes:

`@content-type` **Type of Content**
`@id` **Document Internal Identifier**
`@specific-use` **Specific Use**
`@start_date` **Start Date**
`@xml:base` **Base**
`@xmlns:ali` **NISO ALI Namespace (NISO Access License and Indicators)**

Content model:

Text, numbers, or special characters

8.1.14 <alt-text> Alternate Title Text For a Figure, Etc.

Short phrase used for pronunciation or as an alternative display for a structure or graphical object, typically for reasons of accessibility or graphic-limited devices. For example, <alt-text> may be used to display “behind” a figure, table, graphic, or other structure.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Text, numbers, or special characters

8.1.15 <alt-title> Alternate Title (in an Index)

An alternative version of the title of an Index or a grouping in an Index. Such a “different” title is typically created so that it can be processed in a special way, for example, a short version of a title, an ASCII-only title, a right-running-head title, etc.

Attributes:

@alt-title-type **Type of Alternate Title**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- <inline-supplementary-material> **Inline Supplementary Material**
- Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <alternatives> **Alternatives For Processing**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <chem-struct> **Chemical Structure (Display)**
- <inline-formula> **Formula, Inline**
- Math Elements
 - <mml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**

- Other Inline Elements
 - <abbrev> **Abbreviation or Acronym**
 - <index-term> **Index Term**
 - <index-term-range-end> **Index Term Range End**
 - <milestone-end> **Milestone End**
 - <milestone-start> **Milestone Start**
 - <named-content> **Named Special (Subject) Content**
 - <styled-content> **Styled Special (Subject) Content**
- <fn> **Footnote**
- <target> **Target of an Internal Link**
- <tbx:entailedTerm> **Entailed Term**
- <xref> **X(cross) Reference**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**
- <break> **Line Break**

8.1.16 <alternatives> Alternatives For Processing

Container element used to hold a group of processing alternatives, for example, a single <graphic> that ships in several formats (tif, gif, and jpeg) or in different resolutions. This element is a physical grouping to contain multiple logically equivalent (substitutable) versions of the same information object. Typically these are processing alternatives, and the reader is expected to see only one version of the object.

Attributes:

@id **Document Internal Identifier**
 @originator **Originator**
 @xml:base **Base**

Content model:

One or more of any of:

- <array> **Array (Simple Tabular Array)**
- <chem-struct> **Chemical Structure (Display)**
- <code> **Code Text**
- <graphic> **Graphic**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <inline-supplementary-material> **Inline Supplementary Material**
- <media> **Media Object**
- <preformat> **Preformatted Text**
- <supplementary-material> **Supplementary Material**
- <table> **Table (NISO JATS table model)**
- <oasis:table> **OASIS XML Exchange (CALs) Table (In STS Extended ONLY)**
- <textual-form> **Textual Form**
- Math Elements
 - <mmml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**

8.1.17 <annex-type> Type of Annex

This element acts as a flag whose content can be both interrogated and displayed. It answers the question, “Is this Annex (<app>) normative or informative (non-normative)?”. The element content is expected to be “(normative)” or “(informative)”.

Content model:

Text, numbers, or special characters

8.1.18 <annotation> Annotation (in a citation)

Commentary, summary, review, or similar non-bibliographic information concerning the cited work that is found in a citation.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any one of:

- One or more of any of:
 - <p> **Paragraph**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**

8.1.19 <anonymous> Anonymous

Place holder for the name of a contributor whose name is unknown or not disclosed.

Attributes:

@id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

This is an EMPTY element

8.1.20 <app> Appendix

Contains an Annex (normative or informative) to a standards document.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @originator **Originator**
 @specific-use **Specific Use**
 @xlink:actuate **Actuating the XLink Link**
 @xlink:href **Href (XLink Linking Mechanism)**
 @xlink:role **XLink Linking Role**
 @xlink:show **Showing the XLink Link**
 @xlink:title **Title of the XLink Link**
 @xlink:type **Type of XLink Link**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xmlns:mml **MathML Namespace Declaration**
 @xmlns:tbx **TBX Namespace Declaration**
 @xmlns:xi **XInclude Namespace Declaration**
 @xmlns:xlink **XLink Namespace Declaration**

Content model:

The following, in order:

- <editing-instruction> **Editing Instruction**, zero or more
- Any one of:
 - The following, in order:

- `<label>` **Label of a Figure, Reference, Etc.**
- `<annex-type>` **Type of Annex**, zero or one
- `<title>` **Title**, zero or one
- The following, in order:
 - `<annex-type>` **Type of Annex**, zero or one
 - `<title>` **Title**
- Any combination of:
 - Paragraph-level Display Elements
 - `<address>` **Address/Contact Information**
 - `<array>` **Array (Simple Tabular Array)**
 - `<boxed-text>` **Boxed Text**
 - `<chem-struct-wrap>` **Chemical Structure Wrapper**
 - `<code>` **Code Text**
 - `<fig>` **Figure**
 - `<fig-group>` **Figure Group**
 - `<graphic>` **Graphic**
 - `<media>` **Media Object**
 - `<preformat>` **Preformatted Text**
 - `<supplementary-material>` **Supplementary Material**
 - `<table-wrap>` **Table Wrapper**
 - `<table-wrap-group>` **Table Wrapper Group**
 - `<alternatives>` **Alternatives For Processing**
 - Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**
 - `<normative-note>` **Normative-Note**
 - `<notes-group>` **Notes Group**
 - `<disp-formula>` **Formula, Display**
 - `<disp-formula-group>` **Formula, Display Group**
 - `<editing-instruction>` **Editing Instruction**
 - Lists
 - `<def-list>` **Definition List**
 - `<list>` **List**
 - Math Elements
 - `<mml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
 - `<p>` **Paragraph**
 - Related Material Elements
 - `<related-article>` **Related Journal Article Information**
 - `<related-object>` **Related Non-standards Object Information**
 - `<disp-quote>` **Quote, Displayed**
 - `<speech>` **Speech**
 - `<statement>` **Statement, Formal**
 - `<verse-group>` **Verse Form For Poetry**
 - `<fn-group>` **Footnote Group**
 - `<glossary>` **Glossary Elements**
 - `<ref-list>` **Reference List (Bibliographic Reference List)**
- Optionally, the following sequence (in order):
 - One or more of any of:
 - Section Elements
 - `<sec>` **Section**
 - `<term-sec>` **Terms and Definitions Container/Section**
 - Any combination of:
 - `<fn-group>` **Footnote Group**
 - `<glossary>` **Glossary Elements**
 - `<ref-list>` **Reference List (Bibliographic Reference List)**
 - Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**

- <normative-note> **Normative-Note**
- <notes-group> **Notes Group**
- <permissions> **Permissions**, zero or one

8.1.21 <app-group> Appendix Group

Container element for one or more Annexes (<app> elements).

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xmlns:mml **MathML Namespace Declaration**
 @xmlns:tbx **TBX Namespace Declaration**
 @xmlns:xi **XInclude Namespace Declaration**

Content model:

The following, in order:

- <label> **Label of a Figure, Reference, Etc.**, zero or one
- <title> **Title**, zero or one
- <abstract> **Abstract**, zero or more
- <kwd-group> **Keyword Group**, zero or more
- Any combination of:
 - Paragraph-level Display Elements
 - <address> **Address/Contact Information**
 - <array> **Array (Simple Tabular Array)**
 - <boxed-text> **Boxed Text**
 - <chem-struct-wrap> **Chemical Structure Wrapper**
 - <code> **Code Text**
 - <fig> **Figure**
 - <fig-group> **Figure Group**
 - <graphic> **Graphic**
 - <media> **Media Object**
 - <preformat> **Preformatted Text**
 - <supplementary-material> **Supplementary Material**
 - <table-wrap> **Table Wrapper**
 - <table-wrap-group> **Table Wrapper Group**
 - <alternatives> **Alternatives For Processing**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**
 - <disp-formula> **Formula, Display**
 - <disp-formula-group> **Formula, Display Group**
 - <editing-instruction> **Editing Instruction**
 - Lists
 - <def-list> **Definition List**
 - <list> **List**
 - Math Elements
 - <mml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**
 - <p> **Paragraph**
 - Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
 - <disp-quote> **Quote, Displayed**
 - <speech> **Speech**

- <statement> **Statement, Formal**
- <verse-group> **Verse Form For Poetry**
- Any combination of:
 - <app> **Appendix**
 - <ref-list> **Reference List (Bibliographic Reference List)**
 - <xi:include> **XInclude**

8.1.22 <array> Array (Simple Tabular Array)

Used to define a *brief* tabular arrangement of text in the narrative flow of the document. An array should not be a full table, and does not typically contain a title, caption, or table headings (column heads). Tabular material which does use a label, title, caption, or table headings should be tagged using a table wrapper (<table-wrap>) element.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @orientation **Orientation**
 @originator **Originator**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

The following, in order:

- <editing-instruction> **Editing Instruction**, zero or more
- <label> **Label of a Figure, Reference, Etc.**, zero or one
- Any combination of:
 - Accessibility Elements
 - <alt-text> **Alternate Title Text For a Figure, Etc.**
 - <long-desc> **Long Description**
 - External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- Any combination of:
 - <alternatives> **Alternatives For Processing**
 - <graphic> **Graphic**
 - <media> **Media Object**
 - <table> **Table (NISO JATS table model)**
 - <oasis:table> **OASIS XML Exchange (CALIS) Table (In STS Extended ONLY)**
 - <tbody> **Table Body for an XHTML Table**
 - <oasis:tbody> **Table Body for an OASIS XML Exchange (CALIS) Table (In STS Extended ONLY)**
- Any combination of:
 - Ownership Elements
 - <attrib> **Attribution**
 - <permissions> **Permissions**

8.1.23 <article-title> Article Title (in a citation)

The title of a journal article in the language in which the article was originally published, for use inside citations and <related-article> elements.

Attributes:

@id **Document Internal Identifier**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - <email> **Email Address**

- `<ext-link>` **External Link**
- `<uri>` **Uniform Resource Identifier (URI)**
- `<inline-supplementary-material>` **Inline Supplementary Material**
- **Related Material Elements**
 - `<related-article>` **Related Journal Article Information**
 - `<related-object>` **Related Non-standards Object Information**
- **Emphasis Elements**
 - `<bold>` **Bold**
 - `<fixed-case>` **Fixed Case**
 - `<italic>` **Italic**
 - `<monospace>` **Monospace Text (Typewriter Text)**
 - `<num>` **ISO Numeric Emphasis**
 - `<overline>` **Overline**
 - `<roman>` **Roman**
 - `<ruby>` **Ruby Wrapper**
 - `<sans-serif>` **Sans Serif**
 - `<sc>` **Small Caps**
 - `<strike>` **Strike Through**
 - `<underline>` **Underline**
- `<alternatives>` **Alternatives For Processing**
- **Inline Display Elements**
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- `<chem-struct>` **Chemical Structure (Display)**
- `<inline-formula>` **Formula, Inline**
- **Math Elements**
 - `<mml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
- **Other Inline Elements**
 - `<abbrev>` **Abbreviation or Acronym**
 - `<index-term>` **Index Term**
 - `<index-term-range-end>` **Index Term Range End**
 - `<milestone-end>` **Milestone End**
 - `<milestone-start>` **Milestone Start**
 - `<named-content>` **Named Special (Subject) Content**
 - `<styled-content>` **Styled Special (Subject) Content**
- `<fn>` **Footnote**
- `<target>` **Target of an Internal Link**
- `<tbx:entailedTerm>` **Entailed Term**
- `<xref>` **X(cross) Reference**
- **Baseline Change Elements**
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**
- `<break>` **Line Break**

8.1.24 `<attrib>` Attribution

Source, author, formal thanks, or other information (other than copyright material) concerning the origins of an extract, a table, a figure, a poem, or similar element.

Attributes:

- `@id` **Document Internal Identifier**
- `@specific-use` **Specific Use**
- `@xml:base` **Base**
- `@xml:lang` **Language of an Element**

Content model:

- Any combination of:
- Text, numbers, or special characters
 - External Linking Elements
 - `<email>` **Email Address**

- `<ext-link>` **External Link**
- `<uri>` **Uniform Resource Identifier (URI)**
- `<inline-supplementary-material>` **Inline Supplementary Material**
- **Related Material Elements**
 - `<related-article>` **Related Journal Article Information**
 - `<related-object>` **Related Non-standards Object Information**
- **Citation Elements**
 - `<citation-alternatives>` **Citation Alternatives**
 - `<element-citation>` **Element Citation**
 - `<mixed-citation>` **Mixed Citation**
 - `<std>` **Citation to a Standard**
- **Emphasis Elements**
 - `<bold>` **Bold**
 - `<fixed-case>` **Fixed Case**
 - `<italic>` **Italic**
 - `<monospace>` **Monospace Text (Typewriter Text)**
 - `<num>` **ISO Numeric Emphasis**
 - `<overline>` **Overline**
 - `<roman>` **Roman**
 - `<ruby>` **Ruby Wrapper**
 - `<sans-serif>` **Sans Serif**
 - `<sc>` **Small Caps**
 - `<strike>` **Strike Through**
 - `<underline>` **Underline**
- `<alternatives>` **Alternatives For Processing**
- **Inline Display Elements**
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- `<chem-struct>` **Chemical Structure (Display)**
- `<inline-formula>` **Formula, Inline**
- **Math Elements**
 - `<mmml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
- **Other Inline Elements**
 - `<abbrev>` **Abbreviation or Acronym**
 - `<index-term>` **Index Term**
 - `<index-term-range-end>` **Index Term Range End**
 - `<milestone-end>` **Milestone End**
 - `<milestone-start>` **Milestone Start**
 - `<named-content>` **Named Special (Subject) Content**
 - `<styled-content>` **Styled Special (Subject) Content**
- `<fn>` **Footnote**
- `<target>` **Target of an Internal Link**
- `<tbx:entailedTerm>` **Entailed Term**
- `<xref>` **X(cross) Reference**
- `<std-ref>` **Standard Reference Designation**
- **Baseline Change Elements**
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**

8.1.25 `<author-comment>` Author Comment

Used for extra textual material associated with a contributor such as an author or editor.

Attributes:

- `@content-type` **Type of Content**
- `@id` **Document Internal Identifier**
- `@specific-use` **Specific Use**
- `@xml:base` **Base**
- `@xml:lang` **Language of an Element**

Content model:

The following, in order:

- <title> **Title**, zero or one
- One or more of any of:
 - <p> **Paragraph**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**

8.1.26 <authorization> Authorization

Captures the standards authority/process under which *this* standard has been developed. The element's content is typically a text phrase that may be, but need not be, displayed as part of the standards document, such as "An American National Standard".

Attributes:

@authorize-acronym **Authorization Acronym**
 @id **Document Internal Identifier**
 @xml:base **Base**

Content model:

Text, numbers, or special characters, zero or more

8.1.27 <award-id> Award Identifier

An identifier that has been assigned to the award, for example, a grant number, a grant reference number, or a contract number.

Attributes:

@id **Document Internal Identifier**
 @rid **Reference to an Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <alternatives> **Alternatives For Processing**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <chem-struct> **Chemical Structure (Display)**
- <inline-formula> **Formula, Inline**
- Other Inline Elements
 - <abbrev> **Abbreviation or Acronym**

- `<index-term>` **Index Term**
- `<index-term-range-end>` **Index Term Range End**
- `<milestone-end>` **Milestone End**
- `<milestone-start>` **Milestone Start**
- `<named-content>` **Named Special (Subject) Content**
- `<styled-content>` **Styled Special (Subject) Content**
- Baseline Change Elements
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**

8.1.28 `<back>` Back Matter

Ancillary or supporting material not included as part of the main textual content of a standards document or adoption, for example, annexes.

Attributes:

`@id` **Document Internal Identifier**
`@rid` **Reference to an Identifier**
`@xml:base` **Base**

Content model:

The following, in order:

- `<editing-instruction>` **Editing Instruction**, zero or more
- `<label>` **Label of a Figure, Reference, Etc.**, zero or one
- `<title>` **Title**, zero or more
- Any combination of:
 - `<app-group>` **Appendix Group**
 - `<bio>` **Biography**
 - `<fn-group>` **Footnote Group**
 - `<glossary>` **Glossary Elements**
 - `<ref-list>` **Reference List (Bibliographic Reference List)**
 - `<ack>` **Acknowledgments**
 - `<notes>` **Notes Section**
 - `<toc>` **Table of Contents**
 - `<toc-group>` **Table of Contents Group**
 - `<index>` **Index**
 - `<index-group>` **Index Group**
 - Section Elements
 - `<sec>` **Section**
 - `<term-sec>` **Terms and Definitions Container/Section**
 - `<xi:include>` **XInclude**

8.1.29 `<bio>` Biography

Biographical data concerning a contributor or the description of a collaboration.

Attributes:

`@content-type` **Type of Content**
`@id` **Document Internal Identifier**
`@rid` **Reference to an Identifier**
`@specific-use` **Specific Use**
`@xlink:actuate` **Actuating the XLink Link**
`@xlink:href` **Href (XLink Linking Mechanism)**
`@xlink:role` **XLink Linking Role**
`@xlink:show` **Showing the XLink Link**
`@xlink:title` **Title of the XLink Link**
`@xlink:type` **Type of XLink Link**
`@xml:base` **Base**
`@xml:lang` **Language of an Element**
`@xmlns:xlink` **XLink Namespace Declaration**

Content model:

The following, in order:

- <label> **Label of a Figure, Reference, Etc.**, zero or one
- <title> **Title**, zero or one
- Any combination of:
 - Paragraph-level Display Elements
 - <address> **Address/Contact Information**
 - <array> **Array (Simple Tabular Array)**
 - <boxed-text> **Boxed Text**
 - <chem-struct-wrap> **Chemical Structure Wrapper**
 - <code> **Code Text**
 - <fig> **Figure**
 - <fig-group> **Figure Group**
 - <graphic> **Graphic**
 - <media> **Media Object**
 - <preformat> **Preformatted Text**
 - <supplementary-material> **Supplementary Material**
 - <table-wrap> **Table Wrapper**
 - <table-wrap-group> **Table Wrapper Group**
 - <alternatives> **Alternatives For Processing**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**
 - <disp-formula> **Formula, Display**
 - <disp-formula-group> **Formula, Display Group**
 - <editing-instruction> **Editing Instruction**
 - Lists
 - <def-list> **Definition List**
 - <list> **List**
 - Math Elements
 - <mml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**
 - <p> **Paragraph**
 - Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
 - <disp-quote> **Quote, Displayed**
 - <speech> **Speech**
 - <statement> **Statement, Formal**
 - <verse-group> **Verse Form For Poetry**
 - <fn-group> **Footnote Group**
 - <glossary> **Glossary Elements**
 - <ref-list> **Reference List (Bibliographic Reference List)**
- Optionally, the following sequence (in order):
 - One or more of any of:
 - Section Elements
 - <sec> **Section**
 - <term-sec> **Terms and Definitions Container/Section**
 - Any combination of:
 - <fn-group> **Footnote Group**
 - <glossary> **Glossary Elements**
 - <ref-list> **Reference List (Bibliographic Reference List)**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**

8.1.30 <body> Body of the Standards Document

The main textual portion of the standards document.

Attributes:

@id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**

Content model:

The following, in order:

- Any combination of:
 - Paragraph-level Display Elements
 - <address> **Address/Contact Information**
 - <array> **Array (Simple Tabular Array)**
 - <boxed-text> **Boxed Text**
 - <chem-struct-wrap> **Chemical Structure Wrapper**
 - <code> **Code Text**
 - <fig> **Figure**
 - <fig-group> **Figure Group**
 - <graphic> **Graphic**
 - <media> **Media Object**
 - <preformat> **Preformatted Text**
 - <supplementary-material> **Supplementary Material**
 - <table-wrap> **Table Wrapper**
 - <table-wrap-group> **Table Wrapper Group**
 - <alternatives> **Alternatives For Processing**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**
 - <disp-formula> **Formula, Display**
 - <disp-formula-group> **Formula, Display Group**
 - <editing-instruction> **Editing Instruction**
 - Lists
 - <def-list> **Definition List**
 - <list> **List**
 - Math Elements
 - <mml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**
 - <p> **Paragraph**
 - Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
 - <disp-quote> **Quote, Displayed**
 - <speech> **Speech**
 - <statement> **Statement, Formal**
 - <verse-group> **Verse Form For Poetry**
 - <ref-list> **Reference List (Bibliographic Reference List)**
- Any combination of:
 - Section Elements
 - <sec> **Section**
 - <term-sec> **Terms and Definitions Container/Section**
 - <sub-part> **Sub-Part of a Standard**
 - <xi:include> **XInclude**
- <sig-block> **Signature Block**, zero or one

8.1.31 Bold

Used to mark text that should appear in bold face for print or display.

Attributes:

@id **Document Internal Identifier**
 @specific-use **Specific Use**
 @toggle **Toggle Switch**
 @xml:base **Base**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- <inline-supplementary-material> **Inline Supplementary Material**
- Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
- Citation Elements
 - <citation-alternatives> **Citation Alternatives**
 - <element-citation> **Element Citation**
 - <mixed-citation> **Mixed Citation**
 - <std> **Citation to a Standard**
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <alternatives> **Alternatives For Processing**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <chem-struct> **Chemical Structure (Display)**
- <inline-formula> **Formula, Inline**
- Math Elements
 - <mml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**
- Other Inline Elements
 - <abbrev> **Abbreviation or Acronym**
 - <index-term> **Index Term**
 - <index-term-range-end> **Index Term Range End**
 - <milestone-end> **Milestone End**
 - <milestone-start> **Milestone Start**
 - <named-content> **Named Special (Subject) Content**
 - <styled-content> **Styled Special (Subject) Content**
- <fn> **Footnote**
- <target> **Target of an Internal Link**
- <tbx:entailedTerm> **Entailed Term**
- <xref> **X(cross) Reference**
- <std-ref> **Standard Reference Designation**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.32 <boxed-text> Boxed Text

Textual material that is part of the body of a standards document but is outside the flow of the narrative text (for example, a sidebar).

Attributes:

@content-type **Type of Content**
 @form-type **Form Type**
 @id **Document Internal Identifier**
 @is-form **Is Object a Form**
 @orientation **Orientation**
 @originator **Originator**
 @position **Position**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

The following, in order:

- <object-id> **Object Identifier**, zero or more
- <label> **Label of a Figure, Reference, Etc.**, zero or one
- <caption> **Caption of a Figure, Table, Etc.**, zero or one
- Any combination of:
 - Paragraph-level Display Elements
 - <address> **Address/Contact Information**
 - <array> **Array (Simple Tabular Array)**
 - <boxed-text> **Boxed Text**
 - <chem-struct-wrap> **Chemical Structure Wrapper**
 - <code> **Code Text**
 - <fig> **Figure**
 - <fig-group> **Figure Group**
 - <graphic> **Graphic**
 - <media> **Media Object**
 - <preformat> **Preformatted Text**
 - <supplementary-material> **Supplementary Material**
 - <table-wrap> **Table Wrapper**
 - <table-wrap-group> **Table Wrapper Group**
 - <alternatives> **Alternatives For Processing**
 - Standards Note and Example Elements
 - <non-normative-example> **Non-Normative-Example**
 - <non-normative-note> **Non-Normative-Note**
 - <normative-example> **Normative-Example**
 - <normative-note> **Normative-Note**
 - <notes-group> **Notes Group**
 - <disp-formula> **Formula, Display**
 - <disp-formula-group> **Formula, Display Group**
 - <editing-instruction> **Editing Instruction**
 - Lists
 - <def-list> **Definition List**
 - <list> **List**
 - Math Elements
 - <mml:math> **Math (MathML Tag Set)**
 - <tex-math> **TeX Math Equation**
 - <p> **Paragraph**
 - Related Material Elements
 - <related-article> **Related Journal Article Information**
 - <related-object> **Related Non-standards Object Information**
 - <disp-quote> **Quote, Displayed**
 - <speech> **Speech**
 - <statement> **Statement, Formal**
 - <verse-group> **Verse Form For Poetry**

- `<fn-group>` **Footnote Group**
- `<glossary>` **Glossary Elements**
- `<ref-list>` **Reference List (Bibliographic Reference List)**
- Optionally, the following sequence (in order):
 - One or more of any of:
 - Section Elements
 - `<sec>` **Section**
 - `<term-sec>` **Terms and Definitions Container/Section**
 - Any combination of:
 - `<fn-group>` **Footnote Group**
 - `<glossary>` **Glossary Elements**
 - `<ref-list>` **Reference List (Bibliographic Reference List)**
 - Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**
 - `<normative-note>` **Normative-Note**
 - `<notes-group>` **Notes Group**
- Any combination of:
 - Ownership Elements
 - `<attrib>` **Attribution**
 - `<permissions>` **Permissions**

8.1.33 `<break>` Line Break

Defined to allow the standards-producing organization to specify an explicit (non machine-generated) line break.

Attributes:

`@id` **Document Internal Identifier**
`@xml:base` **Base**

Content model:

This is an EMPTY element

8.1.34 `<caption>` Caption of a Figure, Table, Etc.

Container element for the textual description and title that are associated with an object, for example, with a figure (`<fig>`) or a table (`<table-wrap>`).

Attributes:

`@content-type` **Type of Content**
`@id` **Document Internal Identifier**
`@specific-use` **Specific Use**
`@style` **Style (NISO JATS table model)**
`@xml:base` **Base**
`@xml:lang` **Language of an Element**

Content model:

The following, in order:

- `<editing-instruction>` **Editing Instruction**, zero or more
- `<title>` **Title**, zero or one
- Any combination of:
 - `<p>` **Paragraph**
 - Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**
 - `<normative-note>` **Normative-Note**
 - `<notes-group>` **Notes Group**

8.1.35 `<chapter-title>` Chapter Title (in a citation)

Title of a cited book chapter.

Attributes:

@id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <named-content> **Named Special (Subject) Content**
- <styled-content> **Styled Special (Subject) Content**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.36 <chem-struct> Chemical Structure (Display)

Chemical expression, reaction, equation, etc. that is set apart within the text.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xlink:actuate **Actuating the XLink Link**
 @xlink:href **Href (XLink Linking Mechanism)**
 @xlink:role **XLink Linking Role**
 @xlink:show **Showing the XLink Link**
 @xlink:title **Title of the XLink Link**
 @xlink:type **Type of XLink Link**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xmlns:xlink **XLink Namespace Declaration**

Content model:

Any combination of:

- Text, numbers, or special characters
- Accessibility Elements
 - <alt-text> **Alternate Title Text For a Figure, Etc.**
 - <long-desc> **Long Description**
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- <break> **Line Break**
- Emphasis Elements

- `<bold>` **Bold**
- `<fixed-case>` **Fixed Case**
- `<italic>` **Italic**
- `<monospace>` **Monospace Text (Typewriter Text)**
- `<num>` **ISO Numeric Emphasis**
- `<overline>` **Overline**
- `<roman>` **Roman**
- `<ruby>` **Ruby Wrapper**
- `<sans-serif>` **Sans Serif**
- `<sc>` **Small Caps**
- `<strike>` **Strike Through**
- `<underline>` **Underline**
- `<label>` **Label of a Figure, Reference, Etc.**
- Inline Display Elements
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- Lists
 - `<def-list>` **Definition List**
 - `<list>` **List**
- Math Elements
 - `<mml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
- `<named-content>` **Named Special (Subject) Content**
- `<styled-content>` **Styled Special (Subject) Content**
- `<alternatives>` **Alternatives For Processing**
- `<array>` **Array (Simple Tabular Array)**
- `<code>` **Code Text**
- `<graphic>` **Graphic**
- `<media>` **Media Object**
- `<preformat>` **Preformatted Text**
- `<fn>` **Footnote**
- `<target>` **Target of an Internal Link**
- `<tbx:entailedTerm>` **Entailed Term**
- `<xref>` **X(cross) Reference**
- Baseline Change Elements
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**

8.1.37 `<chem-struct-wrap>` Chemical Structure Wrapper

Wrapper element for a chemical expression, reaction, equation, etc. that is set apart from the text; this element includes any number, label, or caption that accompanies the chemical expression.

Attributes:

`@content-type` **Type of Content**
`@id` **Document Internal Identifier**
`@orientation` **Orientation**
`@originator` **Originator**
`@position` **Position**
`@specific-use` **Specific Use**
`@xml:base` **Base**
`@xml:lang` **Language of an Element**

Content model:

The following, in order:

- `<editing-instruction>` **Editing Instruction**, zero or more
- `<object-id>` **Object Identifier**, zero or more
- `<label>` **Label of a Figure, Reference, Etc.**, zero or one
- `<caption>` **Caption of a Figure, Table, Etc.**, zero or one
- Any combination of:
 - Accessibility Elements

- `<alt-text>` **Alternate Title Text For a Figure, Etc.**
- `<long-desc>` **Long Description**
- External Linking Elements
 - `<email>` **Email Address**
 - `<ext-link>` **External Link**
 - `<uri>` **Uniform Resource Identifier (URI)**
- One or more of any of:
 - `<alternatives>` **Alternatives For Processing**
 - `<chem-struct>` **Chemical Structure (Display)**
 - `<code>` **Code Text**
 - `<graphic>` **Graphic**
 - `<media>` **Media Object**
 - `<preformat>` **Preformatted Text**
 - `<textual-form>` **Textual Form**
 - Standards Note and Example Elements
 - `<non-normative-example>` **Non-Normative-Example**
 - `<non-normative-note>` **Non-Normative-Note**
 - `<normative-example>` **Normative-Example**
 - `<normative-note>` **Normative-Note**
 - `<notes-group>` **Notes Group**
- Any combination of:
 - Ownership Elements
 - `<attrib>` **Attribution**
 - `<permissions>` **Permissions**

8.1.38 `<citation-alternatives>` Citation Alternatives

Holds alternative versions of a single citation, for example, the same citation in multiple languages or a single citation tagged as both a `<mixed-citation>`, complete with punctuation and spacing preserved, and as an `<element-citation>`, with punctuation and spacing removed.

Attributes:

`@id` **Document Internal Identifier**
`@xml:base` **Base**

Content model:

- One or more of any of:
- `<element-citation>` **Element Citation**
 - `<mixed-citation>` **Mixed Citation**
 - `<nlm-citation>` **NLM Citation Model (deprecated)**

8.1.39 `<city>` City (in an address)

The name of a city.

Attributes:

`@content-type` **Type of Content**
`@id` **Document Internal Identifier**
`@specific-use` **Specific Use**
`@xml:base` **Base**
`@xml:lang` **Language of an Element**

Content model:

Text, numbers, or special characters, zero or more

8.1.40 `<code>` Code Text

A container element for technical content such as programming language code, pseudo-code, schemas and DTDs, or a markup fragment.

Attributes:

`@code-type` **Type of Code**
`@code-version` **Code Version**

@executable **Executable**
 @id **Document Internal Identifier**
 @language **Code Language**
 @language-version **Code Language Version**
 @orientation **Orientation**
 @platforms **Platforms**
 @position **Position**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xml:space **Space**

Content model:

Any combination of:

- Text, numbers, or special characters
- Accessibility Elements
 - <alt-text> **Alternate Title Text For a Figure, Etc.**
 - <long-desc> **Long Description**
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- Citation Elements
 - <citation-alternatives> **Citation Alternatives**
 - <element-citation> **Element Citation**
 - <mixed-citation> **Mixed Citation**
 - <std> **Citation to a Standard**
- Ownership Elements
 - <attrib> **Attribution**
 - <permissions> **Permissions**
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- Other Inline Elements
 - <abbrev> **Abbreviation or Acronym**
 - <index-term> **Index Term**
 - <index-term-range-end> **Index Term Range End**
 - <milestone-end> **Milestone End**
 - <milestone-start> **Milestone Start**
 - <named-content> **Named Special (Subject) Content**
 - <styled-content> **Styled Special (Subject) Content**
- <fn> **Footnote**
- <target> **Target of an Internal Link**
- <tbx:entailedTerm> **Entailed Term**
- <xref> **X(cross) Reference**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.41 <col> Table Column (NISO JATS table model)

The description of one column of a table, used to provide attributes relating to a specific column. If there is no <col> these attributes will be inherited from the associated <colgroup>. (This element is based on and intended to be converted easily to the XHMTL col element.)

Attributes:

@align **Horizontal Alignment (NISO JATS table model)**
 @char **Table Cell Alignment Character (NISO JATS table model)**
 @charoff **Table Character Offset (NISO JATS table model)**
 @content-type **Type of Content**
 @id **Document Internal Identifier**
 @span **Span (NISO JATS table model)**
 @style **Style (NISO JATS table model)**
 @valign **Vertical Alignment (NISO JATS table model)**
 @width **Width (NISO JATS table model)**
 @xml:base **Base**

Content model:

This is an EMPTY element

8.1.42 <colgroup> Table Column Group (NISO JATS table model)

A container element to hold column descriptions (element <col>) for a group of columns in a table—or for all of the columns in the table if there is only one <colgroup> in the table. Attributes on the <colgroup> apply to all of the columns in the group unless over-ridden on the <col>. (This element is based on and intended to be converted easily to the XHMTL colgroup element.)

Attributes:

@align **Horizontal Alignment (NISO JATS table model)**
 @char **Table Cell Alignment Character (NISO JATS table model)**
 @charoff **Table Character Offset (NISO JATS table model)**
 @content-type **Type of Content**
 @id **Document Internal Identifier**
 @span **Span (NISO JATS table model)**
 @style **Style (NISO JATS table model)**
 @valign **Vertical Alignment (NISO JATS table model)**
 @width **Width (NISO JATS table model)**
 @xml:base **Base**

Content model:

<col> **Table Column (NISO JATS table model)**, zero or more

8.1.43 <collab> Collaborative (Group) Author

Group of contributors credited under a single name, such as an organization credited as a contributor.

Attributes:

@collab-type **Type of Collaboration**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @symbol **Symbol**
 @xlink:actuate **Actuating the XLink Link**
 @xlink:href **Href (XLink Linking Mechanism)**
 @xlink:role **XLink Linking Role**
 @xlink:show **Showing the XLink Link**
 @xlink:title **Title of the XLink Link**
 @xlink:type **Type of XLink Link**
 @xml:base **Base**
 @xml:lang **Language of an Element**
 @xmlns:xlink **XLink Namespace Declaration**

Content model:

Any combination of:

- Text, numbers, or special characters
- Emphasis Elements
 - `<bold>` **Bold**
 - `<fixed-case>` **Fixed Case**
 - `<italic>` **Italic**
 - `<monospace>` **Monospace Text (Typewriter Text)**
 - `<num>` **ISO Numeric Emphasis**
 - `<overline>` **Overline**
 - `<roman>` **Roman**
 - `<ruby>` **Ruby Wrapper**
 - `<sans-serif>` **Sans Serif**
 - `<sc>` **Small Caps**
 - `<strike>` **Strike Through**
 - `<underline>` **Underline**
- `<alternatives>` **Alternatives For Processing**
- Inline Display Elements
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- `<chem-struct>` **Chemical Structure (Display)**
- `<inline-formula>` **Formula, Inline**
- Other Inline Elements
 - `<abbrev>` **Abbreviation or Acronym**
 - `<index-term>` **Index Term**
 - `<index-term-range-end>` **Index Term Range End**
 - `<milestone-end>` **Milestone End**
 - `<milestone-start>` **Milestone Start**
 - `<named-content>` **Named Special (Subject) Content**
 - `<styled-content>` **Styled Special (Subject) Content**
- Baseline Change Elements
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**
- Address Elements
 - `<addr-line>` **Address Line**
 - `<city>` **City (in an address)**
 - `<country>` **Country (in an address)**
 - `<fax>` **Fax Number (in address)**
 - `<institution>` **Institution Name**
 - `<institution-wrap>` **Institution Wrapper**
 - `<phone>` **Phone Number: in an Address**
 - `<postal-code>` **Postal Code: in an Address**
 - `<state>` **State or Province (in an address)**
- `<contrib-group>` **Contributor Group**
- `<address>` **Address/Contact Information**
- `<aff>` **Affiliation**
- `<aff-alternatives>` **Affiliation Alternatives**
- `<author-comment>` **Author Comment**
- `<bio>` **Biography**
- External Linking Elements
 - `<email>` **Email Address**
 - `<ext-link>` **External Link**
 - `<uri>` **Uniform Resource Identifier (URI)**
- `<on-behalf-of>` **On Behalf of**
- `<role>` **Role or Function Title of Contributor**
- `<xref>` **X(cross) Reference**
- `<fn>` **Footnote**

8.1.44 <collab-alternatives> Collaboration Alternatives

Wrapper element for more than one version of a collaboration, for example, the name of a laboratory in more than one language such as the lab name in Japanese kana characters and a transliterated form of the lab name in Latin alphabet.

Attributes:

@id **Document Internal Identifier**
@xml:base **Base**

Content model:

<collab> **Collaborative (Group) Author**, one or more

8.1.45 <comm-ref> Committee Reference

Identifies the Technical Committee, Subcommittee, and optionally Working Group responsible for the standard, or example, “ISO/TC 27/SC 4”.

Attributes:

@id **Document Internal Identifier**
@xml:base **Base**

Content model:

Text, numbers, or special characters, zero or more

8.1.46 <comm-ref-group> Committee Reference Group

A grouping element to hold the names of multiple standards-producing groups (such as Committees and Subcommittees) that are responsible for the standards document (tagged as <comm-ref>s). A hierarchy of groups is possible as this element may contain a <comm-ref> element to name the top-level group as well as lower-level <comm-ref-group> elements to name subgroups.

Attributes:

@comm-ref-group-type **Committee Reference Group Type**
@id **Document Internal Identifier**
@level **Hierarchical Level**
@originator **Originator**
@xml:base **Base**

Content model:

The following, in order:

- <comm-ref> **Committee Reference**, one or more
- <comm-ref-group> **Committee Reference Group**, zero or more

8.1.47 <comment> Comment (in a citation)

Used to mark unstructured text within an otherwise element structured bibliographic citation. In an unstructured reference, this text would merely be data characters. Typical comments could include: “<comment>[Abstract]</comment>” and “<comment> translated from Russian</comment>”.

Attributes:

@content-type **Type of Content**
@id **Document Internal Identifier**
@specific-use **Specific Use**
@xml:base **Base**
@xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**

- `<uri>` **Uniform Resource Identifier (URI)**
- `<inline-supplementary-material>` **Inline Supplementary Material**
- **Related Material Elements**
 - `<related-article>` **Related Journal Article Information**
 - `<related-object>` **Related Non-standards Object Information**
- **Emphasis Elements**
 - `<bold>` **Bold**
 - `<fixed-case>` **Fixed Case**
 - `<italic>` **Italic**
 - `<monospace>` **Monospace Text (Typewriter Text)**
 - `<num>` **ISO Numeric Emphasis**
 - `<overline>` **Overline**
 - `<roman>` **Roman**
 - `<ruby>` **Ruby Wrapper**
 - `<sans-serif>` **Sans Serif**
 - `<sc>` **Small Caps**
 - `<strike>` **Strike Through**
 - `<underline>` **Underline**
- `<alternatives>` **Alternatives For Processing**
- **Inline Display Elements**
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- `<chem-struct>` **Chemical Structure (Display)**
- `<inline-formula>` **Formula, Inline**
- **Math Elements**
 - `<mml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
- **Other Inline Elements**
 - `<abbrev>` **Abbreviation or Acronym**
 - `<index-term>` **Index Term**
 - `<index-term-range-end>` **Index Term Range End**
 - `<milestone-end>` **Milestone End**
 - `<milestone-start>` **Milestone Start**
 - `<named-content>` **Named Special (Subject) Content**
 - `<styled-content>` **Styled Special (Subject) Content**
- `<fn>` **Footnote**
- `<target>` **Target of an Internal Link**
- `<tbx:entailedTerm>` **Entailed Term**
- `<xref>` **X(cross) Reference**
- **Baseline Change Elements**
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**

8.1.48 `<comp1>` Complementary Title Part

The optional complementary title(s) are the final part(s) of a standard's title. Complementary titles follow the main part of the title (`<main>`) and (typically) provide details concerning which particular aspect of the general topic is treated by the standards document.

Attributes:

- `@id` **Document Internal Identifier**
- `@level` **Hierarchical Level**
- `@xml:base` **Base**
- `@xml:lang` **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - `<email>` **Email Address**
 - `<ext-link>` **External Link**

- `<uri>` **Uniform Resource Identifier (URI)**
- `<inline-supplementary-material>` **Inline Supplementary Material**
- **Related Material Elements**
 - `<related-article>` **Related Journal Article Information**
 - `<related-object>` **Related Non-standards Object Information**
- **Emphasis Elements**
 - `<bold>` **Bold**
 - `<fixed-case>` **Fixed Case**
 - `<italic>` **Italic**
 - `<monospace>` **Monospace Text (Typewriter Text)**
 - `<num>` **ISO Numeric Emphasis**
 - `<overline>` **Overline**
 - `<roman>` **Roman**
 - `<ruby>` **Ruby Wrapper**
 - `<sans-serif>` **Sans Serif**
 - `<sc>` **Small Caps**
 - `<strike>` **Strike Through**
 - `<underline>` **Underline**
- `<alternatives>` **Alternatives For Processing**
- **Inline Display Elements**
 - `<inline-graphic>` **Inline Graphic**
 - `<private-char>` **Private Character (Custom or Unicode)**
- `<chem-struct>` **Chemical Structure (Display)**
- `<inline-formula>` **Formula, Inline**
- **Math Elements**
 - `<mml:math>` **Math (MathML Tag Set)**
 - `<tex-math>` **TeX Math Equation**
- **Other Inline Elements**
 - `<abbrev>` **Abbreviation or Acronym**
 - `<index-term>` **Index Term**
 - `<index-term-range-end>` **Index Term Range End**
 - `<milestone-end>` **Milestone End**
 - `<milestone-start>` **Milestone Start**
 - `<named-content>` **Named Special (Subject) Content**
 - `<styled-content>` **Styled Special (Subject) Content**
- `<fn>` **Footnote**
- `<target>` **Target of an Internal Link**
- `<tbx:entailedTerm>` **Entailed Term**
- `<xref>` **X(cross) Reference**
- **Baseline Change Elements**
 - `<sub>` **Subscript**
 - `<sup>` **Superscript**
- `<break>` **Line Break**
- **Citation Elements**
 - `<citation-alternatives>` **Citation Alternatives**
 - `<element-citation>` **Element Citation**
 - `<mixed-citation>` **Mixed Citation**
 - `<std>` **Citation to a Standard**

8.1.49 `<compl-title-wrap>` **Complementary Title Wrapper**

Wrapper element to collect together the `<compl>` title of the standard and its related component parts, such as a label or subtitle(s).

Attributes:

- `@id` **Document Internal Identifier**
- `@level` **Hierarchical Level**
- `@xml:base` **Base**
- `@xml:lang` **Language of an Element**

Content model:

The following, in order:

- <label> **Label of a Figure, Reference, Etc.**, zero or one
- <compl> **Complementary Title Part**
- <subtitle> **Article Subtitle**, zero or more

8.1.50 <compound-kwd> Compound Keyword

Wrapper element for multi-part keywords (for example, a code and its description/title/meaning).

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @vocab-term **Vocabulary/Taxonomy Term**
 @vocab-term-identifier **Vocabulary/Taxonomy Term Identifier**
 @xml:base **Base**

Content model:

<compound-kwd-part> **Compound Keyword Part**, one or more

8.1.51 <compound-kwd-part> Compound Keyword Part

Individual component of a multi-part keyword (for example, a code, the code's meaning).

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @xml:base **Base**

Content model:

Any combination of:

- Text, numbers, or special characters
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <alternatives> **Alternatives For Processing**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <chem-struct> **Chemical Structure (Display)**
- <inline-formula> **Formula, Inline**
- <named-content> **Named Special (Subject) Content**
- <styled-content> **Styled Special (Subject) Content**
- <fn> **Footnote**
- <target> **Target of an Internal Link**
- <tbx:entailedTerm> **Entailed Term**
- <xref> **X(cross) Reference**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.52 <compound-subject> Compound Subject Name

Wrapper element to hold all the parts of a multi-part subject (for example, a subject term and the code representing that term).

Attributes:

@content-type **Type of Content**
@id **Document Internal Identifier**
@specific-use **Specific Use**
@vocab-term **Vocabulary/Taxonomy Term**
@vocab-term-identifier **Vocabulary/Taxonomy Term Identifier**
@xml:base **Base**

Content model:

<compound-subject-part> **Compound Subject Part Name**, one or more

8.1.53 <compound-subject-part> Compound Subject Part Name

Individual component of a multi-part subject (for example, subject term, code for the term).

Attributes:

@content-type **Type of Content**
@id **Document Internal Identifier**
@xml:base **Base**

Content model:

Any combination of:

- Text, numbers, or special characters
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- <alternatives> **Alternatives For Processing**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <chem-struct> **Chemical Structure (Display)**
- <inline-formula> **Formula, Inline**
- <named-content> **Named Special (Subject) Content**
- <styled-content> **Styled Special (Subject) Content**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.54 <conf-acronym> Conference Acronym (in a citation)

Within a citation (such as a <mixed-citation> or an <element-citation>), the short, popular, or jargon name for a conference (for example, “Extreme” for Extreme Markup Languages, “SIGGRAPH” for Special Interest Group on Computer Graphics).

Attributes:

@content-type **Type of Content**
@id **Document Internal Identifier**
@specific-use **Specific Use**

@xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Text, numbers, or special characters, zero or more

8.1.55 <conf-date> Conference Date (in a citation)

Within a citation (such as a <mixed-citation> or an <element-citation>), the date(s) on which a conference was held.

Attributes:

@calendar **calendar**
 @content-type **Type of Content**
 @id **Document Internal Identifier**
 @iso-8601-date **ISO-8601 Formatted Date**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Text, numbers, or special characters, zero or more

8.1.56 <conf-loc> Conference Location (in a citation)

Within a citation (such as a <mixed-citation> or an <element-citation>), the physical location(s) of a conference (for example, city, country, campus, organization location).

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- Address Elements
 - <addr-line> **Address Line**
 - <city> **City (in an address)**
 - <country> **Country (in an address)**
 - <fax> **Fax Number (in address)**
 - <institution> **Institution Name**
 - <institution-wrap> **Institution Wrapper**
 - <phone> **Phone Number: in an Address**
 - <postal-code> **Postal Code: in an Address**
 - <state> **State or Province (in an address)**

8.1.57 <conf-name> Conference Name (in a citation)

Within a citation (such as a <mixed-citation> or an <element-citation>), the full name of a conference, including any qualifiers such as “43rd Annual”.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Text, numbers, or special characters, zero or more

8.1.58 <conf-sponsor> Conference Sponsor (in a citation)

Within a citation (such as a <mixed-citation> or an <element-citation>), one organization identified as a sponsor of a conference.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

- Any combination of:
- Text, numbers, or special characters
 - <institution> **Institution Name**
 - <institution-wrap> **Institution Wrapper**

8.1.59 <content-language> Content Language

That part of the metadata of a standards document that identifies the official language(s) used in this standard.

Attributes:

@id **Document Internal Identifier**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Text, numbers, or special characters, zero or more

8.1.60 <contrib> Contributor

Wrapper element to contain the information about a single contributor, for example, an author or editor.

Attributes:

@contrib-type **Type of Contribution**
 @corresp **Corresponding Author Flag**
 @deceased **Deceased**
 @equal-contrib **Equal Contribution**
 @id **Document Internal Identifier**
 @rid **Reference to an Identifier**
 @specific-use **Specific Use**
 @xlink:actuate **Actuating the XLink Link**
 @xlink:href **Href (XLink Linking Mechanism)**
 @xlink:role **XLink Linking Role**
 @xlink:show **Showing the XLink Link**
 @xlink:title **Title of the XLink Link**
 @xlink:type **Type of XLink Link**
 @xml:base **Base**
 @xmlns:xlink **XLink Namespace Declaration**

Content model:

- The following, in order:
- <contrib-id> **Contributor Identifier**, zero or more
 - Any combination of:
 - Contributor Naming Elements
 - <anonymous> **Anonymous**
 - <collab> **Collaborative (Group) Author**
 - <collab-alternatives> **Collaboration Alternatives**
 - <name> **Name of Person (Structured)**
 - <name-alternatives> **Name Alternatives**
 - <degrees> **Degree(s)**, zero or more
 - Any combination of:

- <address> **Address/Contact Information**
- <aff> **Affiliation**
- <aff-alternatives> **Affiliation Alternatives**
- <author-comment> **Author Comment**
- <bio> **Biography**
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- <on-behalf-of> **On Behalf of**
- <role> **Role or Function Title of Contributor**
- <xref> **X(cross) Reference**

8.1.61 <contrib-group> Contributor Group

Wrapper element for information concerning a grouping of contributors, such as the primary authors

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**

Content model:

The following, in order:

- <contrib> **Contributor**, one or more
- Any combination of:
 - <address> **Address/Contact Information**
 - <aff> **Affiliation**
 - <aff-alternatives> **Affiliation Alternatives**
 - <author-comment> **Author Comment**
 - <bio> **Biography**
 - External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
 - <on-behalf-of> **On Behalf of**
 - <role> **Role or Function Title of Contributor**
 - <xref> **X(cross) Reference**

8.1.62 <contrib-id> Contributor Identifier

One identifier for a person such as a contributor. This element will hold an ORCID, a trusted publisher's identifier, a JST (Japan Science and Technology Agency) identifier, or an NII (National Individual Identifier).

Attributes:

@authenticated **Authenticated**
 @content-type **Type of Content**
 @contrib-id-type **Contributor Identifier Type**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Text, numbers, or special characters

8.1.63 <copyright-holder> Copyright Holder

Name of the organizational or personal entity that holds a copyright.

Attributes:

@content-type **Type of Content**

@id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- <institution> **Institution Name**
- <institution-wrap> **Institution Wrapper**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.64 <copyright-statement> Copyright Statement

Copyright notice or statement, suitable for printing or display.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**
 @xml:base **Base**
 @xml:lang **Language of an Element**

Content model:

Any combination of:

- Text, numbers, or special characters
- External Linking Elements
 - <email> **Email Address**
 - <ext-link> **External Link**
 - <uri> **Uniform Resource Identifier (URI)**
- Emphasis Elements
 - <bold> **Bold**
 - <fixed-case> **Fixed Case**
 - <italic> **Italic**
 - <monospace> **Monospace Text (Typewriter Text)**
 - <num> **ISO Numeric Emphasis**
 - <overline> **Overline**
 - <roman> **Roman**
 - <ruby> **Ruby Wrapper**
 - <sans-serif> **Sans Serif**
 - <sc> **Small Caps**
 - <strike> **Strike Through**
 - <underline> **Underline**
- Inline Display Elements
 - <inline-graphic> **Inline Graphic**
 - <private-char> **Private Character (Custom or Unicode)**
- <named-content> **Named Special (Subject) Content**
- <styled-content> **Styled Special (Subject) Content**
- Baseline Change Elements
 - <sub> **Subscript**
 - <sup> **Superscript**

8.1.65 <copyright-year> Copyright Year

The year of copyright.

Attributes:

@content-type **Type of Content**
 @id **Document Internal Identifier**
 @specific-use **Specific Use**